STATE OF MICHIGAN
GRETCHEN WHITMER
GOVERNOR
DEPARTMENT OF TECHNOLOGY, MANAGEMENT & BUDGET
LANSING
TRICIA L. FOSTER
DIRECTOR

Connecting Michigan Communities Grant
Confidential Treatment Form and the Freedom of Information Act

CONFIDENTIAL TREATMENT FORM AND THE FREEDOM OF INFORMATION ACT. All portions of the Applicant's proposal and resulting award are subject to disclosure as required under Michigan's Freedom of Information Act (FOIA), MCL 15.231, et seq. However, some information may be exempt from disclosure. Under MCL 18.1261(13)(b), records containing "a trade secret as defined under section 2 of the uniform trade secrets act, 1998 PA 448, MCL 445.1902," are exempt from disclosure under FOIA. In addition, "financial or proprietary information" submitted with a proposal is exempt from disclosure under FOIA. An applicant's failure to comply with this Section is grounds for rejecting an applicant's proposal as non-responsive. As a part of its proposal, each applicant must follow the procedure below.

1. SUBMIT A COMPLETED "CONFIDENTIAL TREATMENT FORM" (CT FORM) WITH YOUR APPLICATION. Completion and submission of the CT Form is required regardless of whether the Applicant seeks confidential treatment of information. Failure to submit a completed CT Form may be cause for disqualification from the application process.

    a. Complete and sign Section 1 of the CT Form if the Applicant does NOT request confidential treatment of information contained in its proposal; or

    b. Complete and sign Section 2 of the CT Form if the Applicant requests confidential treatment of certain information. Applicant must also submit a "Public Copy" of the proposal with the trade secret, financial, and proprietary information redacted and clearly labeled as the "Public Copy."

2. FOIA REQUESTS. If a FOIA request is made for an Applicant's proposal, the Public Copy may be distributed to the public along with the Applicant's CT Form. The CT Form is a public document and serves as an explanation for the redactions to the Public Copy. Do not put any trade secret, financial, or proprietary information in the CT Form. Do not redact the CT Form itself.

3. NO ADVICE. The State will not advise an Applicant as to the nature or content of documents entitled to protection from disclosure under FOIA or other laws, as to the interpretation of such laws, or as to the definition of trade secret or financial or proprietary information. Nothing contained in this provision will modify or amend requirements and obligations imposed on the State by FOIA or other applicable law.

4. FAILURE TO REQUEST CONFIDENTIAL TREATMENT. Failure to request material be treated as confidential as specified herein relieves the State, its agencies, and personnel from any responsibility for maintaining material in confidence.

5. Applicants containing a request to maintain an entire proposal as confidential may be rejected as non-responsive. The State reserves the right to determine whether material designated as

exempt by an Applicant falls under MCL 18.1261 or other applicable FOIA exemptions. If a FOIA request is made for materials that the Applicant has identified as trade secret, financial, or proprietary information, the State has the final authority to determine whether the materials are exempt from disclosure under FOIA.

6. Applicant forever releases the State, its departments, subdivisions, officers, and employees from all claims, rights, actions, demands, damages, liabilities, expenses and fees, which arise out of or relate to the disclosure of all or a portion of an Applicant's proposal submitted under this grant program. Applicant must defend, indemnify and hold the State, its departments, subdivisions, officers, and employees harmless, without limitation, from and against all actions, claims, losses, liabilities, damages, costs, attorney fees, and expenses (including those required to establish the right to indemnification), arising out of or relating to any FOIA request, including potential litigation and appeals, related to the portion of Applicant's proposal submitted under this grant program that the Applicant has identified as a trade secret, or financial or proprietary information. The State will notify the Applicant in writing if indemnification is sought. The State is entitled to: (i) regular updates on proceeding status; (ii) participate in the defense of the proceeding; (iii) employ its own counsel; and to (iv) retain control of the defense, or any portion thereof, if the State deems necessary. Applicant will not, without the State's written consent (not to be unreasonably withheld), settle, compromise, or consent to the entry of any judgment in or otherwise seek to terminate any claim, action, or proceeding. If a State employee, official, or law is involved or challenged, the State may control the defense of that portion of the claim. Any litigation activity on behalf of the State, or any of its subdivisions under this Section, must be coordinated with the Department of Attorney General. An attorney designated to represent the State may not do so until approved by the Michigan Attorney General and appointed as a Special Assistant Attorney General.

CONFIDENTIAL TREATMENT FORM (CT FORM)

INSTRUCTIONS: Complete either Section 1 or Section 2 of this CT Form and sign where indicated. This CT Form must be signed by the individual who signed the grant application. A completed CT Form must be submitted with your proposal, regardless of whether your proposal contains confidential information. Failure to submit a completed CT Form with your application is grounds for rejecting the proposal as non-responsive. See Section 4.1.5 of the CMIC 2.0 Grant Application Instructions Overview for additional information.

Section 1. Confidential Treatment Is Not Requested
This section must be completed, signed, and submitted with the proposal if the Applicant does not request confidential treatment of any material contained in the proposal.

By signing below, the Applicant affirms that confidential treatment of material contained in the proposal is not requested.

____
Project Name

____________________________ ______________
Signature Date

____
[Printed Name]

____
[Title]

____
[Company]

Section 2. Confidential Treatment Is Requested
The section must be completed, signed, and submitted with the proposal if bidder requests confidential treatment of any material contained in the proposal. Submission of a completed CT Form is required to request confidential treatment.

Provide the information in the table below. Applicant may add rows or additional pages using the same format shown in the table. Applicant must specifically identify the information to be protected as confidential and state the reasons why protection is necessary. The CT Form will not be considered fully complete unless, for each confidentiality request, the Applicant: (1) identifies whether the material is a trade secret (TS), financial information (FI), or proprietary information (PI); (2) explains the specific legal grounds that support treatment of the material as TS, FI, or PI; and (3) provides the contact information for the person at bidder's organization authorized to respond to inquiries by the State concerning the material. Applicants must not simply cite to an applicable act or case name; rather, bidders must provide a complete justification as to how the material falls within the scope of an applicable act or relevant case law.

Application page #, paragraph #, and section #	State whether the material is a trade secret (TS), financial information (FI), or proprietary information (PI)	Explain the specific grounds in State or other applicable law which supports treatment of the material as TS, FI, or PI. Do not simply cite to the applicable act. Provide a complete justification as to how the material falls within the scope of the applicable act or relevant case law.	Provide the Applicant contact information
Attachment 1 (other than the first page) and Attachment 2 (other than the first page) requested on page 5 of the application. Attachment 9 (other than the first page) requested on page 12 of the application.	(TS) and (PI)	Spectrum Mid-America, LLC.'s, ("Spectrum" or "Charter") service area maps and the budgetary engineering designs, diagrams, and maps are trade secrets that are not subject to public disclosure pursuant to MCL 18.1261(13)(b) and MCL 15.243(d). The service area maps and budgetary engineering designs, diagrams, and maps constitute information that Charter derives independent economic value from not being generally known and not readily ascertainable to its competitors who could use this information to compete with Charter and solicit Charter's customers, including targeted marketing. MCL 445.1902(d)(i). This information is maintained by Charter in a non-public, confidential manner that is reasonable under the circumstances to maintain its secrecy. MCL 445.1902(d)(ii). See also, *Merrill Lynch, Pierce, Fenner & Smith, Inc. v. Ran*, 67 F.Supp.2d 764 (E.D. Mich., 1999). Charter's service area maps and budgetary engineering designs, diagrams, and maps also constitute proprietary information which are not subject to public disclosure pursuant to MCL 18.1261(13)(b) and MCL 15.243(d). This information constitute propriety information because the service area maps and budgetary engineering designs, diagrams, and maps have not been publicly disseminated, are not available from other sources, and their public release would cause significant competitive harm to Charter as described above. See, *Detroit News, Inc. v. Police and Firemen Retirement System of the City of Detroit*, 252 Mich. App. 59; 651 N.W.2d 127 (2002). In addition, these service area maps and budgetary engineering designs, diagrams, and maps are exempt from public disclosure pursuant to MCL 445.243(z) because disclosure would provide a means of identifying Charter and its infrastructure that may result in Charter becoming a victim of a cybersecurity incident by disclosing detailed information about Charter's system infrastructure and hardware. Public release of this information would allow someone wishing to disrupt Charter's services offered over those facilities to do so in a targeted manner.	

Attachment 5 requested on page 9.	(TS) and (PI)	Charter created this organizational chart specifically for this Application, is not otherwise publicly available, and it is a trade secret that is not subject to public disclosure pursuant to MCL 18.1261(13)(b) and MCL 15.243(d).	
Question 20 on page 9.	(FI) and (PI)	The project budget included with Charter's application are financial and proprietary information that is not subjection to disclosure pursuant to MCL 18.1261(13)(b) and MCL 15.243(d). In addition to being financial information, this information constitutes propriety information because the financial plan has not been publicly disseminated, are not available from other sources, and the public release would cause significant competitive harm because the information would be valuable to Charter's competitors, providing insight into its business practices and planning. See, *Detroit News, Inc. v. Police and Firemen Retirement System of the City of Detroit*, 252 Mich. App. 59; 651 N.W.2d 127 (2002).	
Question 49 on page 24.	(TS) and (PI)	Charter's marketing strategies, tactics, and methods is information that Charter derives independent economic value from not being generally known and not readily ascertainable to its competitors who could use this information to compete with Charter and solicit Charter's customers, including targeted marketing. MCL 445.1902(d)(i). This information is maintained by Charter in a non-public, confidential manner that is reasonable under the circumstances to maintain its secrecy. MCL 445.1902(d)(ii). See also, *Merrill Lynch, Pierce, Fenner & Smith, Inc. v. Ran*, 67 F.Supp.2d 764 (E.D. Mich., 1999).	

By signing below, the Applicant affirms that confidential treatment of material contained in its proposal is requested and has attached to this form a redacted "Public Copy" of the Applicant's proposal.

Charter Connect Kingsley
Project Name

Marilyn J. Passmore
Signature

12-30-2020
Date

Marilyn J. Passmore
[Printed Name]

Director, State Government Affairs
[Title]

Charter Communications
[Company]

PUBLIC COPY

STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY, MANAGEMENT & BUDGET
LANSING

GRETCHEN WHITMER
GOVERNOR

BROM STIBITZ
DIRECTOR

Connecting Michigan Communities 2.0 Grant Application

Please read through the entire Grant Information and Application package before you begin to respond to the application questions. This will help ensure you understand the full scope of the application as well as the details you will need to provide to complete the application.

Application Deadline: All grant applications are due by 4:00 p.m. EST, on Monday, January 4, 2021.

Submission Guidelines: Applicants must email their applications and all attachments to: DTMB-CMICGrant@michigan.gov. Applications must be complete, and attachments clearly labeled with the question or statement number from the application form. Completed application, attachments, and supporting documentation must be received by the Department of Technology, Management, and Budget (DTMB), Center for Shared Solutions by 4:00 p.m. EST on Monday, January 4, 2021, to be considered for funding. Applicants will receive an email confirmation in receipt of their submission. It is the applicant's responsibility to ensure the application is received by DTMB prior to the submission deadline. Applications submitted to the wrong email address or received after the deadline will be rejected. Official application submission date and time will be determined by the time stamp accompanying the application email. Applications dated and time stamped in any other way will be rejected. If a confirmation receipt is not received within two business days, applicants must contact the CMIC Grant Program Office at (517) 335-3727.

Questions and Contact: If you have questions after reviewing the application and supporting documentation, please see the Frequently Asked Questions (FAQ) document available on the grant website: www.michigan.gov/CMICGrant. The FAQ will be updated throughout the application process. Questions and comments can also be submitted via email to: DTMB-CMICGrant@michigan.gov.

Application Checklist

This checklist is part of your application and should be returned along with your completed application and attachments.

Application Submission Checklist:

- ☑ Public application is complete and file name meets the designated naming structure.
- ☑ Non-Public application is complete and file name meets the designated naming structure.
- ☑ Confidential Treatment Form is complete.
- ☑ Attachments have been gathered and file names meet the designated naming structure.
  - ☑ Attachment 1: Map of proposed service area in .pdf format (including both last mile coverage and middle mile routes)
  - ☑ Attachment 2: Map of proposed service area in a GIS-compatible file format (including both last mile coverage and middle mile routes)
  - ☑ Attachment 3: Spreadsheet of street addresses that are part of the proposed service area in .xlsx format
  - ☑ Attachment 4: Match commitment letters or evidence
  - ☑ Attachment 5: Applicant organizational chart
  - ☑ Attachment 6: Resumes of key officers, management personnel, and proposed project management team
  - ☑ Attachment 7: Three years of audited financial statements.
  - ☑ Attachment 8: Affidavit of commitment to offer the proposed service and cost in the proposed service area for a minimum of three years after project completion
  - ☑ Attachment 9: Budgetary engineering designs, diagrams, and maps that show the proposed project
  - ☑ Attachment 10: Evidence of network scalability
  - ☑ Attachment 11: Additional evidence of project readiness
  - ☐ Attachment 12: Demonstration of customer interest in the proposed project
  - ☐ Attachment 13: Demonstration of interest/impact/support from businesses
  - ☐ Attachment 14: Demonstration of interest/impact/support from the agricultural community
  - ☐ Attachment 15: Demonstration of interest/impact/support from CAIs
  - ☐ Attachment 16: Evidence of application for a SPIN
  - ☑ Attachment 17: Demonstration of interest/impact/support from communities

File naming structure: Applicants are to use the name of their organization followed by public application, non-public application, or the attachment number and file type (e.g. ABCTelecom_Attachment_1.pdf).

Applicant and Project Information, Contact Information, and Summary

1. Project Name:

Charter Connect_Kingsley

2. Applicant Name:

Spectrum Mid-America, LLC, "Spectrum"

DBA (if applicable):

Mailing Address:

4670 East Fulton, Suite 102, Ada, MI 49301

3. Primary Grant Contact:

Marilyn Passmore, Director-Government Affairs

Primary Contact Phone Number:

616-607-2377

Primary Contact Email Address:

Marilyn.Passmore@Charter.com

Primary Contact Organization (if not part of the applicant's organization):

4. Application Author Name:

Marilyn Passmore, Director-Government Affairs

Application Author Email:

Marilyn.Passmore@Charter.com

5. Eligibility Status: Select the means by which the applicant is eligible to apply for the grant:

- ☐ Licensed under the Michigan Telecommunications Act (1991 PA 179, MCL 484.2101 to 484.2603)
- ☑ Franchise holder under the Uniform Video Services Local Franchise Act (2006 PA 480, MCL 484.3301 to 484.3315)
- ☐ Broadband service provider currently providing service in Michigan

6. Are you registered with the Michigan Public Service Commission's Intrastate Telecommunications Service Providers Registry (ITSP)?

☐Yes ☑ No ☐Unsure

7. Have you provided broadband coverage data to Connect Michigan in the last five years?

☐ Yes ☑ No ☐ Unsure

8. Applicant Identification Numbers: Please provide the following identification numbers for the applicant (if available):

Federal Employer Identification Number (EIN):

45-4593320, Spectrum Mid-America, LLC

Michigan Tax Identification Number:

Michigan Vendor Identification Number:

Federal Communications Commission Registration Number (FRN):

Service Provider Identification Number (SPIN):

9. Project Summary (250 words max.):

Project will enable Spectrum to extend service to 36 unserved homes in the Kingsley area (Blair Township, Mayfield Township).

Residents in the proposed project area will have access to Spectrum Internet with speeds up to 940 Mbps download and up to 35 Mbps upload and 30/4 for qualifying Spectrum Internet Assist customers. All rates, speeds and terms of service mentioned throughout this application are subject to change. Additionally, Spectrum Business can provide dedicated commercial connectivity with broadband speeds exceeding 1 Gigabit symmetrical. This is made capable by our highly scalable hybrid fiber/coax DOCSIS Network, upgradeable to support additional bandwidth and speeds to meet market demands. Providing broadband connectivity to this unserved area of Blair Township and Mayfield Township in Kingsley, MI will enable residents to engage in on-line commerce, telemedicine, improve and increase educational opportunities for students, and allow use of smart devices in the home enabling energy efficiencies. Total project cost is $186,285.00 and applicant match is $105,440.88.

Locations Passed and Proposed Service:

Attachment 1: Map of proposed service area in .pdf format (including both last mile coverage and middle mile routes)
Name of Attachment 1:

Redacted in Part, Charter_Connect_Kingsley_Attachment 1_Public.pdf

Attachment 2: Map of proposed service area in GIS-compatible file format (including both last mile coverage and middle mile routes)
Name of Attachment 2:

Redacted in Part, Charter_Connect_Kingsley_Attachment 2_Public.pdf

10. Please provide a brief description of the proposed service area (250 words max.):

Spectrum is proposing to expand broadband service in the Kingsley area (Blair Township, Mayfield Township). The proposed service area is largely rural and comprised of residential homes and acreages.

Please refer to the maps and census block information found in Attachments 1, 2, and 3 for more detailed information on the geographic areas included in this application.

Please note that Charter's internal definition of "middle-mile" differs from the definition of the same term in the Application. Accordingly, Charter identifies "middle-mile" facilities in the Attachments for the sole purpose of the Application.

Attachment 3: Spreadsheet of street addresses that are part of the proposed service area in .xlsx format.
Name of Attachment 3:

Charter_Connect_Kingsley_Attachment 3_Public.xlsx

11. Use the following format to complete Attachment 3

Number	Street	Address	City	State	Zip Code
123	Main St	123 Main St	Anytown	MI	48823

12. Does the project include a middle mile component?
☑Yes ☐No

13. Locations Passed: Please indicate the total number of locations by type that will be able to receive improved broadband services as a result of the proposed project:

Households	36
Businesses	0
Community Anchor Institutions	0
Total Locations Passed	36

14. Are any vacant lots included in the total number of locations passed listed above?
☐Yes ☑No

If yes, these vacant lots should be anticipated for growth in the next five years according to a local, county, or regional master plan or economic development plan. Please list the name of the relevant plan and the jurisdiction implementing the plan.

Plan Name:

Jurisdiction:

15. Please list the jurisdictions impacted by the proposed service area:

City(ies)/Village(s):

Township(s):

Blair Township, Mayfield Township

County(ies):

Grand Traverse

State House District(s):

104

State Senate District(s):

37

16. Please provide a brief description of the broadband service to be provided including, but not limited to, the technology to be used, will bandwidth be dedicated or shared, etc. (250 words max.):

Spectrum's network utilizes a hybrid fiber-coax (HFC) architecture, which combines the use of fiber optic cable with coaxial cable. We deliver our signals via fiber optic cable from the headend to a group of nodes, and use coaxial cable to deliver the signal from individual nodes to the homes served by that node. Our hybrid network design provides high capacity, signal quality and two-way signal capabilities for the support of interactive services. Post construction, residents in the proposed project area will have access to starting speeds of 100Mbps up to Spectrum Internet Gig with download speeds of up to 940 Mbps. As the market demands faster speeds, Spectrum expects to meet the needs of our customers by continuing to upgrade our network based on the latest DOCSIS specifications. Additionally, Spectrum Enterprise has the capability, via contract, to provide broadband speeds in excess of 1 Gigabit symmetrical.

The FCC recently reported that Charter had one of the fastest, most consistent broadband Internet download speeds in the industry, including at peak times of the day when customer Internet usage is the highest.[1]
[1] See Ninth Measuring Broadband America Fixed Broadband Report, A Report on Consumer Fixed Broadband Performance in the United States, FCC Office of Engineering and Technology (Aug. 3, 2020), pp. 15-16.

Project Costs and Budget

17. Total Project Cost: Please complete the table below

Total Project Cost	$186,285.00
Total Grant Request	$91,279.65
Total Match Amount	$95,005.35
Total Match Percentage	51%

Attachment 4: Match commitment letters or evidence
Name of Attachment 4:

N/A

18. Total matching funds: Please complete the table below summarizing the source, amount, and type of matching funds contributed to the project. Applicants should also indicate if the match is secured or not. Attach additional sheets if necessary.

Source	Amount	Type	Secured?
Spectrum Investment	$95,005.35	☑Cash ☐In-Kind	☑Yes ☐No
		☐Cash ☐In-Kind	☐Yes ☐No
		☐Cash ☐In-Kind	☐Yes ☐No
		☐Cash ☐In-Kind	☐Yes ☐No
		☐Cash ☐In-Kind	☐Yes ☐No
		☐Cash ☐In-Kind	☐Yes ☐No

19. If matching funds or in-kind contributions listed above are not yet secured, please describe the process remaining to secure the funds and the anticipated timeline to do so, (250 words max.):

Not Applicable. Spectrum has the necessary funds to meet the obligation listed as match funds.

20. Project Budget: Please use the following table to provide a budget for the proposed project.

Category	Match Amount	Grant Amount	Total
Buildings and Labor	Redacted	Redacated	Redacted
Last Mile Construction Labor	Redacted	Redacted	Redacted
Middle Mile Construction Labor	Redacted	Redacted	Redacted
Construction Material	Redacted	Redacted	Redacted
Customer Premise Equipment	Redacted	Redacted	Redacted
Customer Premise Installation	Redacted	Redacted	Redacted
Electronics	Redacted	Redacted	Redacted
Permits	Redacted	Redacted	Redacted
Professional Services and Engineering	Redacted	Redacte d	Redacted
Other:	Redacted	Redacted	Redacted
		Total	Redacted

21. Please briefly describe why this project needs funding from the CMIC Grant program and why the project could not proceed without this funding (250 words max.):

This area remains unserved because of the economic challenges associated with serving this area at a reasonable cost. The Connecting Michigan Communities grant program will make it serviceable by Spectrum with a combination of private investment from the company and a public funding grant from the State.

Experience and Financial Wherewithal

Attachment 5: Applicant organizational chart
Name of Attachment 5:

Redacted

Attachment 6: Resumes of key officers, management personnel, and proposed project management team
Name of Attachment 6:

Charter_Spectrum Mid-America LLC_ Attachment 6_Resumes_Officers_Management_Proposed

22. Please provide a brief history of your organization including experience relevant to the proposed project, (250 words max.):

Charter Communications, Inc. (NASDAQ: CHTR) is America's fastest growing TV, internet and voice company. Spectrum is committed to integrating the highest quality service with superior entertainment and communications products. Spectrum is at the intersection of technology and entertainment, facilitating communications that connect more than 30 million residential and business customers in 41 states. Our commitment to serving customers and exceeding their expectations is the bedrock of Spectrum's business strategy and it's the philosophy that guides its 95,000+ employees. Spectrum delivers a wide range of TV, internet and voice services to residential and business customers through the Spectrum brand. Spectrum's broadband internet offerings currently include no data caps, usage-based pricing, early termination or modem fees.

Spectrum has operated, developed, and managed cable systems in Michigan for over 27 years and fully deployed DOCSIS technology throughout its service area; Spectrum serves approximately 833,000 customers in Michigan.

Attachment 7: Three years of audited financial statements

Name of Attachment 7:

Charter 10K Annual Filing 2017_Attachment 7_Public.PDF; Charter 10K Annual Filing 2018_A

23. Please provide a brief statement to accompany your attached audited financial statements and documentation (250 words max.):

Spectrum Mid-America, LLC is a subsidiary of, and managed by, its parent company Charter Communications, Inc. Accordingly, Spectrum Mid-America, LLC hereby relies on the financial statements of Charter Communications, Inc., the last three years of which are attached.

Long-Term Viability

24. Use the template below to complete a five-year stand-alone project financial plan/forecast.

Five-Year Stand-Alone Project Financial Plan					
Project Name: Charter	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue	See Answer	25 below			
Expenses					
Anticipated Grant Funds					
Cash Flow					
Cumulative Cash Flow					

25. Please provide a brief narrative to accompany your five-year stand-alone project financial plan/forecast (400 words max.):

Please see responses to questions 24 and 25 and refer to Charter's 10K filings as evidence of our financial viability and descriptions related to future plans. Please refer to build out schedule in Question 28.

Attachment 8: Affidavit of commitment to offer the proposed service and cost in the proposed service area for a minimum of three years after project completion.
Name of Attachment 8:

Charter Connect -Kingsley_Attachment 8_Affidavit of Commitment_Public.PDF

Readiness and Scalability

Attachment 9: Budgetary engineering designs, diagrams, and maps that show the proposed project. Design documents must clearly demonstrate the applicant's complete understanding of the project and ability to provide the proposed solution. This information must be certified by a Professional Engineer registered in Michigan.
Name of Attachment 9:

Redacted in Part, Charter_Connect-Kingsley_Attachment_9_Public.PDF

26. Please provide a brief statement to accompany your attached engineering designs, diagrams, and maps indicating your readiness to build, manage, and operate the proposed network, (400 words max.):

As the second largest high-speed Internet, video, phone and mobile provider in the United States, Spectrum has a proven record of success. See response to Questions 9, 16, 26 and 27.After construction, residents in the proposed project area will have access to Spectrum Internet Gig with download speeds of up to 940 Mbps. With Spectrum Internet, customers can simultaneously stream videos, download music and more without sacrificing performance. Spectrum provides free modems and the fastest, most powerful in-home Wi-Fi to do more on more devices. When needed, we can provide dedicated commercial builds to provide broadband speeds in excess of 1 Gigabit symmetrical. All of this is made capable by our scalable hybrid fiber/coax DOCSIS Network which is upgradeable to support additional bandwidth and speeds. As the market demands faster speeds, Spectrum expects to meet the needs of our customers by continuing to upgrade our network based on the latest DOCSIS specifications. Spectrum will retain ownership of the broadband plant and maintain plant 24/7--365 days a year. All addresses would have access to our full suite of services including Internet, Phone, mobile and Cable Television.

Attachment 10: Evidence of network scalability

Name of Attachment 10:

See response to Questions 9, 16, 26 and 27.

27. Please provide a description and evidence that the proposed infrastructure is scalable to meet the anticipated future connectivity demands of the proposed service area. Please indicate the end- user connection speed to which the proposed network is designed to scale. This information must be certified by the equipment manufacturer or a professional engineer, (250 words max.):

The design for the proposed project is based upon the current industry standards as developed by the Society for Cable Television Engineers (SCTE) and Spectrum standards of broadband deployment. The designs have been reviewed and approved by a certified Professional Engineer registered in Michigan. Spectrum has operated, developed, and managed cable systems in Michigan for over 27 years and fully deployed DOCSIS technology throughout its service area.

28. Please use the table below to complete a project schedule outlining individual tasks and their timing by quarter and year. Attach additional pages if necessary. All projects must be complete by September 30, 2025.

Task	2021	2022				2023				2024				2025		
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Receive Chtr Funding	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Field Walk-Out	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Design	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Send out for Bid	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Submit Permit	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Power Supply	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Order Material	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
U-Ground Construction	☐	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Aerial Construction	☐	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Splicing	☐	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Activation	☐	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Address Release	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

29. Please indicate the anticipated date upon which service to the last location in the proposed project area will be turned on:

December 26, 2022

30. Please list any factors that would change or delay the proposed schedule:

Spectrum expects to complete project by 12/2/22, subject to delays including timing of grant awards, pole attachment make-ready work required to install facilities, permitting delays, ability to access relevant locations, or other delays outside Spectrum's reasonable control, including pandemic-related.

31. Have all the required local/city/county/state approvals necessary for this project to proceed been obtained?

☐Yes ☑No

If not, what remains to be done and what is required for completing the process of obtaining approvals? Include this information in the project schedule.

Spectrum will obtain necessary right-of-way permits to construct project upon notification of grant. Spectrum already has a Michigan Uniform Video Franchise with the community that covers this area, and will need to obtain rights of entry where necessary.

32. Have state environmental review requirements been met, if applicable?

☐Yes ☑No

If not, what remains to be done and what is required for completing the process of obtaining approvals? Also Include this information in the project schedule.

Spectrum doesn't believe any state environmental review is required for Project Area. Accordingly, state environmental review requirements are not applicable. But to the extent we encounter such requirement in the proposed area as we build out, we will obtain the applicable review.

33. Does this project affect/is the project located in or near local, state, or federal historic or potentially historic, architectural, or archeological resources?
☐Yes ☑No

If not, what remains to be done and what is required for completing the process of obtaining approvals? Include this information in the project schedule.

The proposed location does not appear to have the potential to impact local/state/federal historical architectural or archeological resources.

34. Please briefly describe how the proposed project will leverage existing broadband networks, where practical, or be built in conjunction with other broadband infrastructure project(s), (250 words max.):

Spectrum proposes to extend existing broadband infrastructure to the proposed project area; by extending its network to the proposed project area Spectrum will be able to provide the same services in the proposed project area as in its adjacent service area. Since the project will be connected to existing facilities, giving it economies of scale, Spectrum will not be required to build new centralized head ends for receiving and distributing.

Attachment 11: Additional evidence of project readiness

Name of Attachment 11:

Charter_ Connect_Kingsley_ Attachment 11_ Blair Township Franchise_Public.PDF; Charter_Connect

35. Please provide any additional evidence of your project's readiness. This evidence can include, but is not limited to, letters of intent, memorandums of understanding, land/tower lease agreements, right-of-way agreements, permits, etc. Provide a short narrative to accompany this additional evidence, (250 words max.):

Spectrum already holds a valid Michigan Uniform Video Franchise for the communities in the proposed service area. Moreover, Spectrum provides services to other areas of the State. See franchise agreements attached.

Community and Economic Development

Attachment 12: Demonstration of customer interest in the proposed project
Name of Attachment 12:

36. Please provide a brief statement to accompany the demonstration of customer interest you have attached to this application. This description should include the method used for gauging customer interest and the results, (250 words max.):

Spectrum has received requests for service from multiple home-owners/residents located in the proposed service area. In addition, Spectrum has responded to inquiries from elected officials regarding the possibility of expanding broadband service in their community.

Spectrum also analyzed the FCC National Broadband Maps of this area and did a competitive analysis to determine that the proposed project area did not include providers already meeting the minimum speed threshold of 25/3.

Attachment 13: Demonstration of interest/impact/support from businesses
Name of Attachment 13:

37. Please provide a brief description of the businesses needing improved broadband service in the proposed project area and the level of improvement needed. Attach statements or evidence regarding the benefits from the proposed connectivity solution and how it will impact those businesses (250 words max.):

High speed internet can accelerate business productivity allowing for new innovation, opportunities and possible expansion. The pandemic has forced many to work from home or conduct business from home. Everyone is adapting to home as the new workplace. In addition, increased telehealth and distance learning have certainly added to the importance broadband plays in economic vitality and development within the community. Broadband brings an opportunity for direct access to education and health care that rural residents who would otherwise have to travel long distances for college courses and medical treatment. Slow download speeds do not allow residents/businesses to update programs and/or add new programs. In several cases, computers or payment devices are timed out before they finish what may be a very lengthy download or complete a transaction.

Spectrum has received requests for service from homeowners, many of whom operate home-based businesses, located in the proposed service area.

In addition, Spectrum has responded to inquiries from elected officials regarding the possibility of expanding broadband service in their community. Spectrum also analyzed the FCC National Broadband Maps of this area and did a competitive analysis to determine the proposed project area did not include providers already meeting the minimum speed threshold of 25/3.

Attachment 14: Demonstration of interest/impact/support from the agricultural community

Name of Attachment 14:

38. If the proposed service area has a significant agricultural presence, please briefly describe how the proposed service will impact farmers and the agricultural community. Attach statements or evidence regarding the benefits from the proposed connectivity solution and how it will impact the agricultural community (250 words max.):

Broadband is necessary to modern agriculture and allows for farmers and ranchers to follow commodity markets, communicate with customers, diagnose equipment issues, upload yield information and access new markets around the world. Without a reliable internet connection, tasks like yield mapping and soil analysis for hydration and fertilization, are limited. With broadband, machinery can be updated while operating, increasing efficiencies for the equipment and the farm as a whole.

Spectrum has received requests for service from homeowners with home-based businesses located in the proposed service area, some of which may be agriculturally based. In addition, Spectrum has responded to inquiries from elected officials regarding the possibility of expanding broadband service in their community.

Spectrum also analyzed the FCC National Broadband Maps of this area and did a competitive analysist to determine the proposed project area did not include providers already meeting the minimum speed threshold of 25/3.

Attachment 15: Demonstration of interest/impact/support from CAIs

Name of Attachment 15:

39. Please provide a brief description of the community anchor institutions (CAIs) needing improved broadband service in the proposed project area and the level of improvement needed. Attach statements or evidence regarding the benefits from the proposed connectivity solution and how it will impact those CAIs (250 words max).

The pandemic has forced many to work from home, conduct medical appointments from home and worship from home. Broadband connectivity provides direct access to public safety, educational information, spiritual and health care to rural residents who would otherwise travel to partake in similar services.

Spectrum has received requests for service from individuals located in the proposed service area. In addition, Spectrum has responded to inquiries from elected officials regarding the possibility of expanding broadband service in their community. Spectrum also analyzed the FCC National Broadband Maps of this area and did a competitive analysist to determine the proposed project area did not include providers already meeting the minimum speed threshold of 25/3.

40. In the table below, please list the specific community anchor institutions (CAIs) to be served by the proposed project. Attach additional sheets if necessary.

CAI Name	Address	Type (healthcare, library, school, etc.)

Attachment 16: Evidence of application for a SPIN (if applicable)
Name of Attachment 16:

N/A

41. If the proposed project includes connections to schools or libraries, please provide your SPIN or evidence of application for a SPIN from the FCC Universal Service Administrative Company (USAC) and demonstration of your knowledge of E-rate and working with the FCC/USAC, (250 words max.):

Attachment 17: Demonstration of interest/impact/support from communities
Name of Attachment 17:

Charter Connect_Kingsley_Attachment 17_Blair Township Broadband Grant Support Letter_Confidenti

42. Please provide a brief description of the communities needing improved broadband service in the proposed project area and the level of improvement needed. Attach statements or evidence regarding the benefits from the proposed connectivity solution and how it will impact those communities (250 words max).

See attached letter of support from Blair Township in Kingsley.

Spectrum high-speed Internet will allow customers the ability to telecommute, engage in distance learning, e-commerce and telemedicine activities, download music, stream movies, and more without sacrificing performance. Spectrum does not currently impose data caps or extra fees, and customers have the freedom of unlimited internet service subject to Spectrum's Terms of Service. Providing broadband service in this unserved area will enable businesses to engage in online sales and marketing, improve manufacturing processes and energy efficiencies, increase the community's attractiveness for entrepreneurs and startups, and foster economic development opportunities in the county which will aid in the creation and retention of jobs.

Spectrum maintains a focus on ensuring that the broadband user experience is a positive one. In the years ahead, cable providers will deploy revolutionary 10 Gbps networks within their footprints. See Press Release, NCTA, Introducing 10G: The Next Great Leap for Broadband (Jan. 7, 2019), https://www.ncta.com/media/mediar-room/introducing-10g. Successful 10 Gbps field tests by cable providers in residential settings have already occurred, and CableLabs has released specifications for DOCSIS 4.0, a new technical standard, to bring 10 Gbps speed capabilities to consumers. 10 Gbps will deliver to customers broadband speeds 10 times faster than what is delivered by today's networks and will have the speed and capacity to change the way we live.

43. Is broadband included in a local, county, or regional economic development plan, master plan, or similar up-to-date planning document, or does the community in which the proposed service is to be deployed have a specific broadband/technology plan in place?
☑Yes ☐No

If yes, please list the name of the relevant plan and the jurisdiction implementing the plan.

Plan Name:

Grand Traverse County Strategic Technology Plan -
https://www.grandtraverse.org/AgendaCenter/ViewFile/Item/947?fileID=2898

Jurisdiction:

Grand Traverse Co.

Affordability and Service Limitations

44. Using the table below, please indicate the download and upload speeds of the services to be offered in the proposed service area offered over the initial five years of the project (attach additional sheets if necessary). The non-discounted or rack rate monthly pricing of unbundled internet-only service should be included for each service offered, as well as the monthly data allowance for customers (if applicable):

Download Speed (Mbps)	Upload Speed (Mbps)	Monthly Cost	Monthly Data Allowance (GB)
See Attachment 18			

45. Do you participate in the federal Lifeline program?
☐Yes ☑No

46. Do you plan to offer a lower-cost monthly subscription plan for low-income households in the proposed service area?
☑Yes ☐No

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If yes, please briefly describe the program including the type of service to be offered, the monthly cost for qualifying household, and how you plan to determine household eligibility for such a program, (400 words max.):

Eligible low-income households can receive access to Spectrum Internet Assist which offers 30 Mbps high-speed internet, along with Security Suite and an internet modem, at no additional charge. Spectrum Internet Assist requires no contracts, and as always, there are currently no data caps or hidden fees.

To qualify for this program, one or more members of the household must currently receive assistance under one of the following programs:

1) National School Lunch Program (NSLP),
2) Community Eligibility Provision (CEP) of the NSLP or
3) Supplemental Security Income (For Applicants 65+ Years of Age).

Pricing, speeds and terms of service are subject to change.

More information available at https://www.spectrum.com/browse/content/spectrum-internet-assist

47. Does any of the proposed service area include (wholly or partially) an eligible distressed area (a list of eligible distressed areas can be found here: https://www.michigan.gov/mshda/0,4641,7- 141-48987_75951-181277--,00.html)?
☐ Yes ☑ No

If yes, please list the distressed community(ies) impacted by the proposed service area:

Adoption Strategy

48. Please describe any proposed digital literacy training events, materials, and/or resources that will be provided to residents or businesses impacted by the proposed connectivity. Include the number and type of events, including commitments from any partners included in the digital literacy training and the anticipated outcomes from related activities. The description must provide clear detail and contain measurable metrics (400 words max.):

Spectrum supports nonprofit organizations that educate community members on the benefits of broadband and how to use it to improve their lives. We award grants across the country to help accomplish this goal. Additionally,Spectrum promotes broadband adoption by being engaged and working regularly with a wide range of education, non-profit, government, and library partners to distribute fliers and raise awareness of Spectrum Internet Assist, our low-cost high-speed broadband program.

For more information on Spectrum's efforts to promote digital literacy, please visit: https://corporate.charter.com/digital-education

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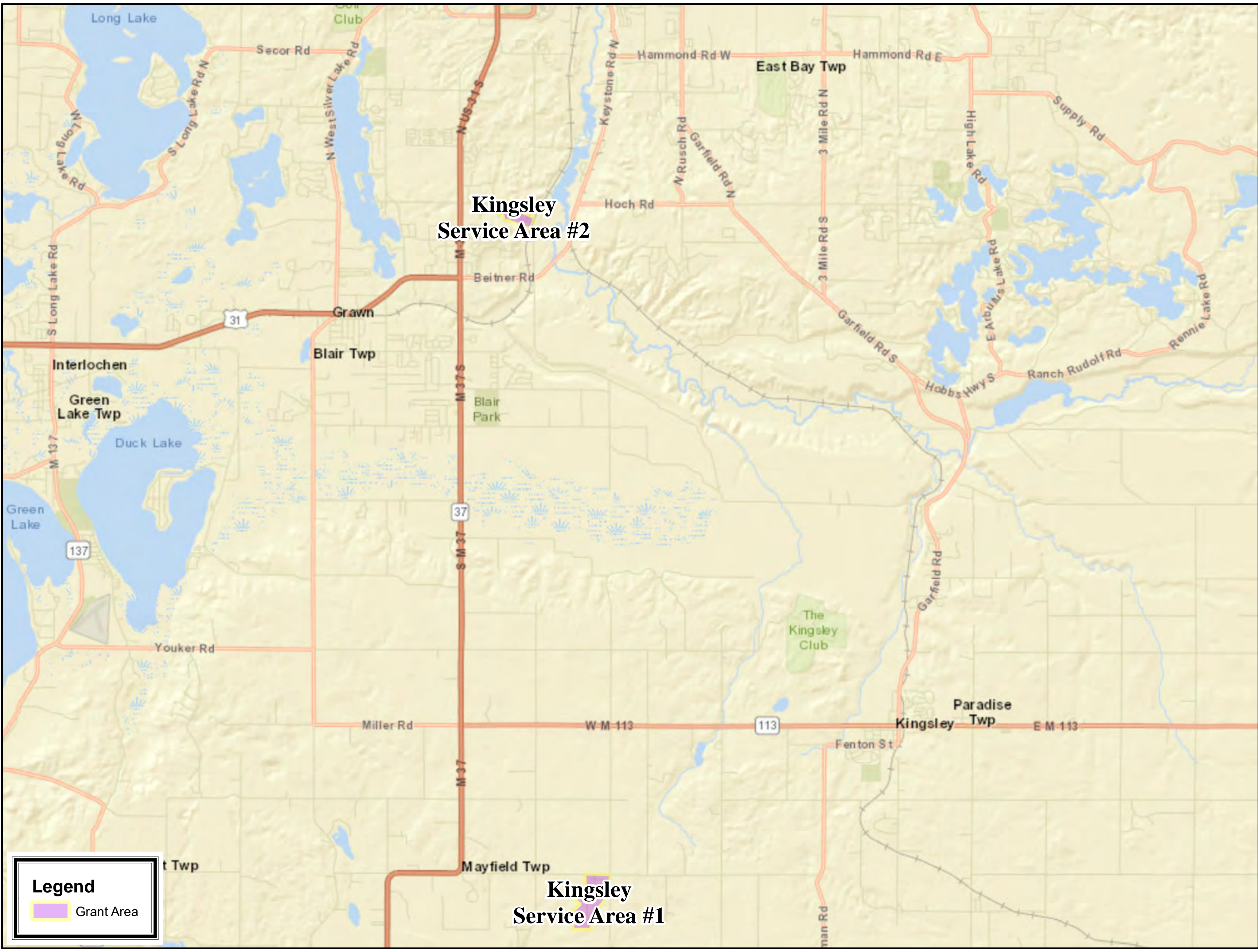
49. Please describe the materials and method(s) to be used for providing residents and businesses with information promoting the use of an internet connection for improving quality of life, access to resources, economic opportunity, etc., in the proposed service area. Partnerships with local CAIs that build awareness for enriching online opportunities for residents and businesses are highly encouraged. Examples of these opportunities include, but are not limited to, telehealth applications, access to government services, e-learning, job and career readiness programs, public safety information, cybersecurity training, etc. This description must provide clear detail and contain measurable metrics (400 words max.):

Redacted.



Kingsley
Service Area #2
Kingsley
Service Area #1
Legend
Grant Area
Long Lake
Secor Rd
East Bay Twp
Hammond Rd W
Hammond Rd E
Hoch Rd
Beitner Rd
Grawn
Blair Twp
Interlochen
Green
Lake Twp
Duck Lake
Green
Lake
Blair
Park
Youker Rd
Miller Rd
W M 113
E M 113
Kingsley
Paradise
Twp
Fenton St
The
Kingsley
Club
Mayfield Twp
Supply Rd
Ranch Rudolf Rd
Hobbs Hwy S
Garfield Rd S
Garfield Rd

REDACTED

W Center Rd

Laredo Dr

Center Place Dr

Schichtel Rd

Pebblebrook Dr

Remington Dr

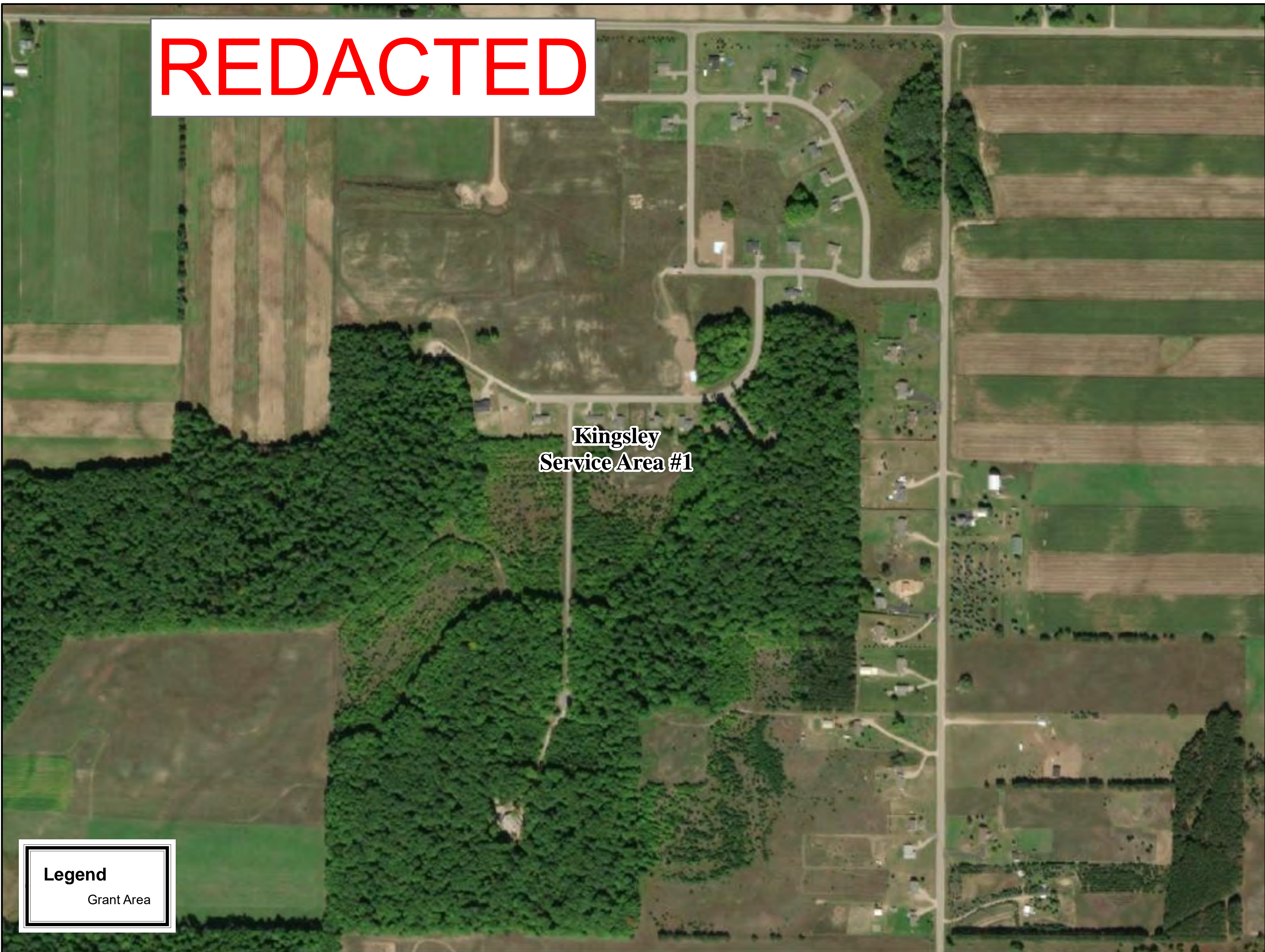
Kingsley
Service Area #1

Hollowbrook Trl

Schichtel Rd

Legend

Grant Area


REDACTED
Kingsley
Service Area #1
Legend
Grant Area

REDACTED

Elmer's

chool Rd

Garfield Twp

Rennie School Rd

Kingsley
Service Area #2

Rennie School Rd

illiams Rd

Legend

Grant Area

REDACTED
Kingsley
Service Area #2
Legend
Grant Area

Charter
COMMUNICATIONS

Charter_Connect-Kingsley_Attachment_2_PUBLIC

REDACTED

Attachment 3

Number	Street	Address	City2	State	Zip Code
3315	RENNIE SCHOOL RD	3315 RENNIE SCHOOL R	TRAVERSE	MI	49685
3211	RENNIE SCHOOL	3211 RENNIE SCHOOL	TRAVERSE	MI	49685
3073	RENNIE SCHOOL RD	3073 RENNIE SCHOOL R	TRAVERSE	MI	49685
3081	RENNIE SCHOOL	3081 RENNIE SCHOOL	TRAVERSE	MI	49685
3269	RENNIE SCHOOL RD	3269 RENNIE SCHOOL R	TRAVERSE	MI	49685
3380	RENNIE SCHOOL RD	3380 RENNIE SCHOOL R	TRAVERSE	MI	49685
3435	RENNIE SCHOOL RD	3435 RENNIE SCHOOL R	TRAVERSE	MI	49685
3355	RENNIE SCHOOL RD	3355 RENNIE SCHOOL R	TRAVERSE	MI	49685
2307	REMINGTON TRL	2307 REMINGTON TRL	KINGSLEY	MI	49649
2137	KODIAK TRL	2137 KODIAK TRL	KINGSLEY	MI	49649
22181	LAREDO DR	22181 LAREDO DR	KINGSLEY	MI	49649
2283	REMINGTON TRL	2283 REMINGTON TRL	KINGSLEY	MI	49649
2315	REMINGTON TRL	2315 REMINGTON TRL	KINGSLEY	MI	49649
2261	REMINGTON TRL	2261 REMINGTON TRL	KINGSLEY	MI	49649
2148	LAREDO DR	2148 LAREDO DR	KINGSLEY	MI	49649
2122	LAREDO DR	2122 LAREDO DR	KINGSLEY	MI	49649
9090	CENTER PL DR	9090 CENTER PL DR	KINGSLEY	MI	49649
9622	HOLLOWBROOK TRL	9622 HOLLOWBROOK T	KINGSLEY	MI	49649
2164	LAREDO DR	2164 LAREDO DR	KINGSLEY	MI	49649
2107	LAREDO DR	2107 LAREDO DR	KINGSLEY	MI	49649
2156	PEBBLEBROOK DR	2156 PEBBLEBROOK DR	KINGSLEY	MI	49649
2106	KODIAK TRL	2106 KODIAK TRL	KINGSLEY	MI	49649
2100	PEBBLEBROOK DR	2100 PEBBLEBROOK DR	KINGSLEY	MI	49649
2093	LAREDO DR	2093 LAREDO DR	KINGSLEY	MI	49649
2122	PEBBLEBROOK DR	2122 PEBBLEBROOK DR	KINGSLEY	MI	49649
2079	LAREDO DR	2079 LAREDO DR	KINGSLEY	MI	49649
2178	PEBBLEBROOK DR	2178 PEBBLEBROOK DR	KINGSLEY	MI	49649
2224	LAREDO DR	2224 LAREDO DR	KINGSLEY	MI	49649
2121	PEBBLEBROOK DR	2121 PEBBLEBROOK DR	KINGSLEY	MI	49649
2243	REMINGTON TRL	2243 REMINGTON TRL	KINGSLEY	MI	49649
2136	LAREDO DR	2136 LAREDO DR	KINGSLEY	MI	49649
2222	REMINGTON TRL	2222 REMINGTON TRL	KINGSLEY	MI	49649
9038	CENTER PL DR	9038 CENTER PL DR	KINGSLEY	MI	49649
2139	LAREDO DR	2139 LAREDO DR	KINGSLEY	MI	49649
2229	REMINGTON TRL	2229 REMINGTON TRL	KINGSLEY	MI	49649
9025	CENTER PL DR	9025 CENTER PL DR	KINGSLEY	MI	49649

Corporate Structure Chart

Charter Communications, Inc.

and Relevant Subsidiaries

Michigan Broadband Grant Application

As of December 9, 2020

REDACTED

About Spectrum: Spectrum is a suite of advanced communications services offered by Charter Communications, Inc. (NASDAQ:CHTR), a leading broadband connectivity company and cable operator serving more than 30 million customers in 41 states. Over an advanced communications network, the company offers a full range of state-of-the-art residential and business services including Spectrum Internet®, TV, Mobile and Voice.

For small and medium-sized companies, Spectrum Business® delivers the same suite of broadband products and services coupled with special features and applications to enhance productivity, while for larger businesses and government entities, Spectrum Enterprise provides highly customized, fiber-based solutions. Spectrum Reach® delivers tailored advertising and production for the modern media landscape. The company also distributes award-winning news coverage, sports and high-quality original programming to its customers through Spectrum Networks and Spectrum Originals. More information about Charter can be found at corporate.charter.com.

Management Personnel – Michigan

Sean O’Donnell, Regional Vice President, Charter Communications	
Date	**Title, Summary**
2019 – present	Regional Vice President, Great Lakes Region (MI, IN, Northern OH, and Western PA) Charter Communications Executive Leader with more than twenty years industry experience in both technical and operating capacities. Results-focused with the proven ability to build high performing teams that deliver industry leading customer experience and financial performance metrics. Special talents in identifying people, process, and technology opportunities to make incremental improvements to business performance. Responsible for installation, service, network reliability, construction and field financial performance for 2.25 million customer relationships in a network of 3.8 million homes and businesses across 4 states; Led a team of 2,200 employees and up to 400 contract resources. Selected Results: • Implemented network reliability and performance improvement processes that led to a 14% reduction in service call volume from 2019 to 2020 • Led company construction completion and deployment timeline metrics.
2011 - 2019	Area Vice President, Central States (MO and IL), Charter Communications
2009 - 2011	Senior Vice President, Regional Operations (MT, WY, CO and UT), Cablevision Systems / Bresnan Communications
2005 - 2009	Regional Vice President and General Manager (MT) , Cablevision Systems / Bresnan Communications
2005	Vice President of Operations, Corporate - Charter Communications
2003 - 2005	Vice President of Information Technology – Charter Communications
2002 - 2003	Director of Information Technology – Charter Communications

David M. Slowik, Area Vice President, Charter Communications	
Date	**Title, Summary**
2012 - present	Area Vice President (MI, IN), Charter Communications Successful communications industry professional with over thirty years of experience in developing and implementing strategies to drive results. • Results oriented leader with proven track record of success. • Strong management skills. Able to work effectively with and lead cross-functional teams. • Leads Field Operations team for this connectivity company and cable operator with major employment centers in Walker, Saginaw and Livonia. Five direct reports and nine hundred plus employees. • Drives positive customer experience on every transaction resulting in long term customer satisfaction to drive shareholder value. Specific areas of focus include network plant maintenance, construction and customer field fulfillment. • Key measures of success include key metrics related to operational performance, network quality, and personnel management. • Consistently ranked in top performance management metrics for the company.
2010 - 2012	Vice President/General Manager (WI), Charter Communications
2009 - 2012	Associate Vice President and General Manager (MI), Charter Communications
2008 - 2009	Sales and Marketing Director (MI), Charter Communications
2007 - 2008	Vice President/General Manager (East MI), Charter Communications
2004 - 2007	Director of Marketing and Sales (North MI), Charter Communications
2000 - 2004	Area Director of Marketing and Sales (TN), Comcast Corporation
1998 - 2000	Vice President of Marketing (IN), Insight Communications

Project Management Team

Cory L. Boggs, Regional Director, Field Operations, Project Manager Office, Charter Communications	
Date	**Title, Summary**
2015 - Current	Regional Director, Field Operations PMO (MI, IN, OH & PA), Charter Communications Specialized in professional organization of tasks, people and services within the communications & connectivity industry. Adaptable to any environment and known for building and leading project teams to meet project deliverables including technical and financial skills with management credibility beyond question. • Manages a Regional Project Management team, supporting Field Fulfillment, Regional Service Center/Dispatch and Field Engineering disciplines. • Responsible to prepare Field Operations for Great Lakes Region with new product & lifecycle roll outs, focusing on scope which will impact our customer and Fulfillment Technician team. Works closely with Field Operations corporate Process Engineering team to develop, protect and implement standard Field Fulfillment & RSC process and procedures. • Supports Field Engineering initiatives, in partnership with Corporate Engineering, to develop best practices to support Node Health and Construction programs.
2013 - 2015	Regional Director, Engineering PMO (MI & IN), Comcast Corporation
2012 - 2013	Manager, Engineering Operations (IN), Comcast Corporation
2011 - 2012	Project Manager, Fiber & Engineering (IN), Comcast Corporation
2006 - 2011	Learning & Development Specialist, Care, Comcast
2005 - 2006	Customer Account Executive, Care, Comcast

Lloyd Collins, Director, Field Operations, Charter Communications	
Date	**Title, Summary**
2018 - current	Director, Field Operations (MI), Charter Communications Responsible for directing and managing the engineering, construction, CB fiber fulfillment staff, and Hybrid Fiber/Coax network. Implement and enhance consistent engineering practices to ensure stable product delivery aligned with company initiatives and expectations. Support the KMA operations with expertise, including technical services and plant maintenance. Direct project planning, capital budgeting and assist with business plan development. Ensure a high degree of cross functional communication and participation in line with product deployment and support. Partners with KMA Senior Management and Sr. Director, Regional Engineering to plan and evaluate capital needs for development and expansion of the KMA. Implement and enhance consistent practices to ensure stable service delivery aligned with Region initiatives and expectations. • Responsible for directing and managing engineering, construction, CB fiber fulfillment staff, and Hybrid Fiber/Coax network. • Provide engineering support and direction for new or existing technologies and current operational initiatives. • Successfully manage technical operations, network operations and strategic planning of rebuilds for output to the outside plant, dispatch, and new product deployment • Direct and develop field leadership and staff for complex fiber projects that adhere to Service Level Agreement obligations • Plan and oversee the development of staff and approve performance reviews
2016 - 2018	Director, Field Engineering, Charter Communications
2005 - 2016	Director of Operations, Charter Communications
2003 - 2005	Engineering Manager, Charter Communications
2000 - 2003	Technical Operations Manager, Charter Communications

Charter
COMMUNICATIONS

<table>
<tr><th colspan="2">Patrick Delisi, Construction Manager, Charter Communications</th></tr>
<tr><th>Date</th><th>Title, Summary</th></tr>
<tr><td>2016 - current</td><td>Construction Manager (East MI), Charter Communications
Manage internal and external construction partners for new construction, maintenance and rebuild projects; responsible for safety and quality of construction planning
Achieve budgeted Construction financial objectives; implement effective performance measures for direct reports to front line leadership by assisting with performance planning
Fulfill system, corporate and FCC requirements by compiling and generating timely reports and statistics on construction activities
Represent Charter by developing and maintaining positive relationships with external partners; utilities, developers, permitting agencies and government officials
Manage and resolve construction issues with customer and contractors
Coordinate with engineers and developers in designing system plant; draw and sketch installation and location of equipment and cable; complete bill of materials needed for planned construction
Ensure adherence to terms and conditions of construction agreements; perform quality control site inspections for internal and external labor</td></tr>
<tr><td>2014 - 2016</td><td>Manager of System Engineering, Charter Communications</td></tr>
<tr><td>2013 - 2014</td><td>Maintenance Technical Operations Supervisor, Charter Communications</td></tr>
<tr><td>2008 - 2013</td><td>Technical Operations Manager, Charter Communications</td></tr>
<tr><td>2006 - 2007</td><td>Network Operations Supervisor, Comcast Corporation</td></tr>
<tr><td>1998 - 2006</td><td>Maintenance and Construction Manager, Media One/Comcast Corporation</td></tr>
</table>

<table>
<tr><th colspan="2">Richard Rousseau, Construction Manager, Charter Communications</th></tr>
<tr><th>Date</th><th>Title, Summary</th></tr>
<tr><td>2005 - present</td><td>Construction Manager (West MI), Charter Communications
Manage internal and external construction partners for new construction, maintenance and rebuild projects; responsible for safety and quality of construction planning
Achieve budgeted Construction financial objectives; implement effective performance measures for direct reports to front line leadership by assisting with performance planning
Fulfill system, corporate and FCC requirements by compiling and generating timely reports and statistics on construction activities
Represent Charter by developing and maintaining positive relationships with external partners; utilities, developers, permitting agencies and government officials
Manage and resolve construction issues with customer and contractors
Coordinate with engineers and developers in designing system plant; draw and sketch installation and location of equipment and cable; complete bill of materials needed for planned construction
Ensure adherence to terms and conditions of construction agreements; perform quality control site inspections for internal and external labor</td></tr>
<tr><td>2001 - 2005</td><td>Field Technician, Charter Communications</td></tr>
<tr><td>1997 - 2001</td><td>Manufacturing Engineer, Dura Automotive, Inc.</td></tr>
</table>

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2017

or

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the Transition Period From to
Commission File Number: 001-33664

Charter Communications, Inc.
(Exact name of registrant as specified in its charter)

Delaware	**84-1496755**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification Number)*
400 Atlantic Street **Stamford, Connecticut 06901**	**(203) 905-7800**
(Address of principal executive offices including zip code)	*(Registrant's telephone number, including area code)*

Securities registered pursuant to section 12(b) of the Act:

Title of each class	Name of Exchange which registered
Class A Common Stock, $.001 Par Value	NASDAQ Global Select Market

Securities registered pursuant to section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrants have submitted electronically and posted on their corporate website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrants were required to submit and post such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See definition of "large accelerated filer," "accelerated filer," and "smaller reporting company" in Rule 12b-2 of the Exchange Act.:

Large accelerated filer ☒ Accelerated filer ☐ Non-accelerated filer ☐ Smaller reporting company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of the registrant of outstanding Class A common stock held by non-affiliates of the registrant at June 30, 2017 was approximately $68.0 billion, computed based on the closing sale price as quoted on the NASDAQ Global Select Market on that date. For purposes of this calculation only, directors, executive officers and the principal controlling shareholders or entities controlled by such controlling shareholders of the registrant are deemed to be affiliates of the registrant.

There were 238,506,059 shares of Class A common stock outstanding as of December 31, 2017. There was 1 share of Class B common stock outstanding as of the same date.

Documents Incorporated By Reference

Information required by Part III is incorporated by reference from Registrant's proxy statement or an amendment to this Annual Report on Form 10-K to be filed by April 30, 2018.

CHARTER COMMUNICATIONS, INC.
FORM 10-K — FOR THE YEAR ENDEDDECEMBER 31, 2017

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This annual report on Form 10-K is for the year endedDecember 31, 2017. The United States Securities and Exchange Commission ("SEC") allows us to "incorporate by reference" information that we file with the SEC, which means that we can disclose important information to you by referring you directly to those documents. Information incorporated by reference is considered to be part of this annual report. In addition, information that we file with the SEC in the future will automatically update and supersede information contained in this annual report. In this annual report, "Charter," "we," "us" and "our" refer to Charter Communications, Inc. and its subsidiaries.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS:

This annual report includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), regarding, among other things, our plans, strategies and prospects, both business and financial including, without limitation, the forward-looking statements set forth in Part I. Item 1. under the heading "Business" and in Part II. Item 7. under the heading "Management's Discussion and Analysis of Financial Condition and Results of Operations" in this annual report. Although we believe that our plans, intentions and expectations reflected in or suggested by these forward-looking statements are reasonable, we cannot assure you that we will achieve or realize these plans, intentions or expectations. Forward-looking statements are inherently subject to risks, uncertainties and assumptions, including, without limitation, the factors described in Part I. Item 1A. under "Risk Factors" and in Part II. Item 7. under the heading, "Management's Discussion and Analysis of Financial Condition and Results of Operations" in this annual report. Many of the forward-looking statements contained in this annual report may be identified by the use of forward-looking words such as "believe," "expect," "anticipate," "should," "planned," "will," "may," "intend," "estimated," "aim," "on track," "target," "opportunity," "tentative," "positioning," "designed," "create," "predict," "project," "initiatives," "seek," "would," "could," "continue," "ongoing," "upside," "increases" and "potential," among others. Important factors that could cause actual results to differ materially from the forward-looking statements we make in this annual report are set forth in this annual report and in other reports or documents that we file from time to time with the SEC, and include, but are not limited to:

- our ability to efficiently and effectively integrate acquired operations;
- our ability to sustain and grow revenues and cash flow from operations by offering video, Internet, voice, mobile, advertising and other services to residential and commercial customers, to adequately meet the customer experience demands in our markets and to maintain and grow our customer base, particularly in the face of increasingly aggressive competition, the need for innovation and the related capital expenditures;
- the impact of competition from other market participants, including but not limited to incumbent telephone companies, direct broadcast satellite operators, wireless broadband and telephone providers, digital subscriber line ("DSL") providers, fiber to the home providers, video provided over the Internet by (i) market participants that have not historically competed in the multichannel video business, (ii) traditional multichannel video distributors, and (iii) content providers that have historically licensed cable networks to multichannel video distributors, and providers of advertising over the Internet;
- general business conditions, economic uncertainty or downturn, unemployment levels and the level of activity in the housing sector;
- our ability to obtain programming at reasonable prices or to raise prices to offset, in whole or in part, the effects of higher programming costs (including retransmission consents);
- our ability to develop and deploy new products and technologies including mobile products, our cloud-based user interface, Spectrum Guide®, and downloadable security for set-top boxes, and any other cloud-based consumer services and service platforms;
- the effects of governmental regulation on our business including costs, disruptions and possible limitations on operating flexibility related to, and our ability to comply with, regulatory conditions applicable to us as a result of the Time Warner Cable Inc. and Bright House Networks, LLC Transactions;
- any events that disrupt our networks, information systems or properties and impair our operating activities or our reputation;
- the ability to retain and hire key personnel;
- the availability and access, in general, of funds to meet our debt obligations prior to or when they become due and to fund our operations and necessary capital expenditures, either through (i) cash on hand, (ii) free cash flow, or (iii) access to the capital or credit markets; and
- our ability to comply with all covenants in our indentures and credit facilities, any violation of which, if not cured in a timely manner, could trigger a default of our other obligations under cross-default provisions.

All forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by this cautionary statement. We are under no duty or obligation to update any of the forward-looking statements after the date of this annual report.

PART I

Item 1. *Business.*

Introduction

We are the second largest cable operator in the United States and a leading broadband communications services company providing video, Internet and voice services to approximately 27.2 million residential and business customers at December 31, 2017. In addition, we sell video and online advertising inventory to local, regional and national advertising customers and fiber-delivered communications and managed information technology ("IT") solutions to large enterprise customers. We also own and operate regional sports networks and local sports, news and community channels and sell security and home management services in the residential marketplace.

Our core strategy is to deliver high quality products at competitive prices, combined with outstanding service. This strategy, combined with simple, easy to understand pricing and packaging, is central to our goal of growing our customer base while also selling more services to each customer. We expect to execute this strategy by managing our operations in a consumer-friendly, efficient and cost-effective manner. Our operating strategy includes insourcing much of our customer care and field operations workforces, which results in higher quality service transactions. While an insourced operating model can increase field operations and customer care costs associated with each service transaction, the higher quality nature of insourced labor service transactions significantly reduces the volume of service transactions per customer, more than offsetting the higher investment made in each service transaction. As we reduce the number of service transactions and recurring costs per customer relationship, we effectively pass those savings on to our customers in the form of products and prices that we believe provide more value than what our competitors offer. The combination of offering competitively priced products and high quality service, allows us to increase the number of customers we serve over our fixed network and increase the number of products we sell to each customer, while at the same time reducing the number of service transactions per relationship, improving customer satisfaction and reducing churn, which results in lower costs to acquire and serve customers. We are also reducing our operating costs per customer relationship by providing customers with the ability to communicate with us through a variety of new forums that they may favor over telephonic communications. These forums include our customer website, mobile device applications, online chat and social media, which are less costly for us to provide than direct telephonic communications. Ultimately, our operating strategy enables us to offer high quality, competitively priced services profitably, while continuing to invest in new products and services.

Our principal executive offices are located at 400 Atlantic Street, Stamford, Connecticut 06901. Our telephone number is (203) 905-7800, and we have a website accessible at www.charter.com. Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, and all amendments thereto, are available on our website free of charge as soon as reasonably practicable after they have been filed. The information posted on our website is not incorporated into this annual report.

The Transactions

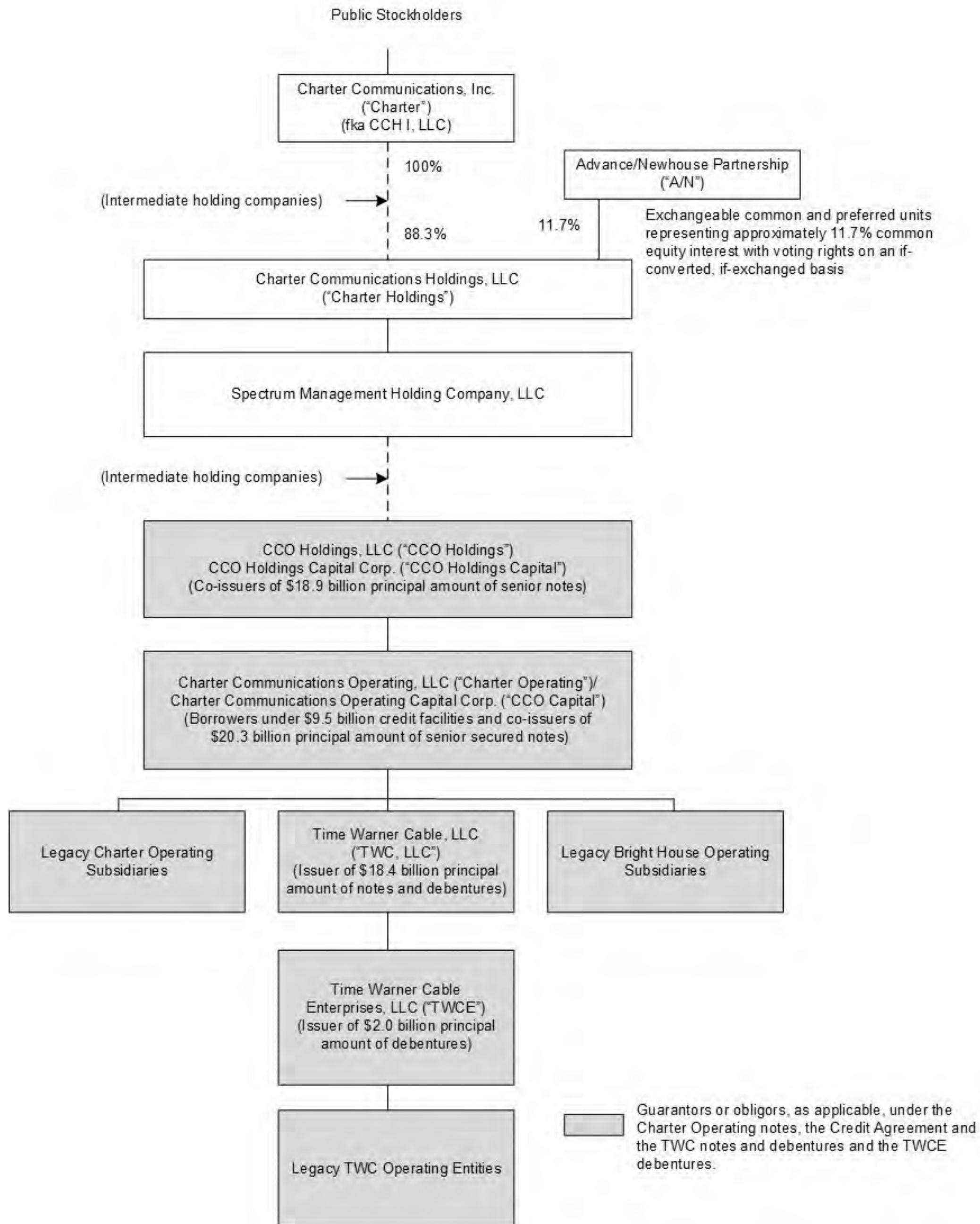
On May 18, 2016, the transactions contemplated by the Agreement and Plan of Mergers dated as of May 23, 2015 (the "Merger Agreement"), by and among Time Warner Cable Inc. ("Legacy TWC"), Charter Communications, Inc. prior to the closing of the Merger Agreement ("Legacy Charter"), CCH I, LLC, previously a wholly owned subsidiary of Legacy Charter and certain other subsidiaries of CCH I, LLC were completed (the "TWC Transaction," and together with the Bright House Transaction described below, the "Transactions"). As a result of the TWC Transaction, CCH I, LLC became the new public parent company that holds the operations of the combined companies and was renamed Charter Communications, Inc.

Also, on May 18, 2016, Legacy Charter and Advance/Newhouse Partnership ("A/N"), the former parent of Bright House Networks, LLC ("Legacy Bright House"), completed their previously announced transaction, pursuant to a definitive Contribution Agreement (the "Contribution Agreement"), under which Charter acquired Legacy Bright House (the "Bright House Transaction"). Pursuant to the Bright House Transaction, Charter became the owner of the membership interests in Legacy Bright House and the other assets primarily related to Legacy Bright House (other than certain excluded assets and liabilities and non-operating cash).

In connection with the TWC Transaction, Legacy Charter and Liberty Broadband completed their previously announced transactions pursuant to their investment agreement, in which Liberty Broadband purchased shares of Charter Class A common stock to partially finance the cash portion of the TWC Transaction consideration, and in connection with the Bright House Transaction, Liberty Broadband purchased shares of Charter Class A common stock (the "Liberty Transaction"). See Note 3 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data," for more information on the Transactions.

Corporate Entity Structure

The chart below sets forth our entity structure and that of our direct and indirect subsidiaries. The chart does not include all of our affiliates and subsidiaries and, in some cases, we have combined separate entities for presentation purposes. The equity ownership percentages shown below are approximations. Indebtedness amounts shown below are principal amounts as of December 31, 2017. See Note 9 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data," which also includes the accreted values of the indebtedness described below.



Products and Services

We offer our customers subscription-based video services, including video on demand ("VOD"), high definition ("HD") television, and digital video recorder ("DVR") service, Internet services and voice services. As of December 31, 2017, 74% of our footprint was all-digital enabling us to offer more HD channels, faster Internet speeds and better video picture quality and we intend to transition the remaining portions of our Legacy TWC and Legacy Bright House footprints to all-digital. Our video, Internet, and voice services are offered to residential and commercial customers on a subscription basis, with prices and related charges based on the types of service selected, whether the services are sold as a "bundle" or on an individual basis, and the equipment necessary to receive our services. Bundled services are available to substantially all of our passings, and approximately 59% of our customers subscribe to a bundle of services.

All customer statistics as of December 31, 2017 include the operations of Legacy TWC, Legacy Bright House and Legacy Charter, each of which is based on individual legacy company reporting methodology. These methodologies differ and their differences may be material. Statistical reporting will be conformed over time to a single reporting methodology. The following table summarizes our customer statistics for video, Internet and voice as of December 31, 2017 and 2016 (in thousands except per customer data and footnotes).

	Approximate as of December 31,	
	2017 [(a)]	**2016** [(a)(b)]
Customer Relationships [(c)]		
Residential	25,639	24,801
Small and Medium Business	1,560	1,404
Total Customer Relationships	27,199	26,205
Residential Primary Service Units ("PSUs")		
Video	16,544	16,836
Internet	22,545	21,374
Voice	10,427	10,327
	49,516	48,537
Monthly Residential Revenue per Residential Customer[(d)]	$ 109.75	$ 109.57
Small and Medium Business PSUs		
Video	453	400
Internet	1,358	1,219
Voice	912	778
	2,723	2,397
Monthly Small and Medium Business Revenue per Customer[(e)]	$ 207.36	$ 213.87
Enterprise PSUs [(f)]	114	97

(a) We calculate the aging of customer accounts based on the monthly billing cycle for each account. On that basis, as of December 31, 2017 and 2016, customers include approximately 245,800 and 208,400 customers, respectively, whose accounts were over 60 days past due, approximately19,500 and 15,500 customers, respectively, whose accounts were over 90 days past due, and approximately12,600 and 8,000 customers, respectively, whose accounts were over 120 days past due.

(b) In the second quarter of 2017, we conformed the seasonal customer program in the Legacy Bright House footprint to our program. Prior to the plan change, Legacy Bright House customers enrolling in the seasonal plan were charged a one-time fee and counted as customer disconnects, and as new connects, when moving off the seasonal plan. Under our seasonal plan, residential customers pay a reduced monthly fee while the seasonal plan is active and remain reported as customers. Excluding the impact of customer activity related to Legacy Bright House's previous seasonal plan, residential customer relationships and video, Internet and voice PSUs at December 31, 2016 would have been higher by approximately 10,000, 8,000, 12,000 and 7,000 respectively.

(c) Customer relationships include the number of customers that receive one or more levels of service, encompassing video, Internet and voice services, without regard to which service(s) such customers receive. Customers who reside in residential

multiple dwelling units ("MDUs") and that are billed under bulk contracts are counted based on the number of billed units within each bulk MDU. Total customer relationships excludes enterprise customer relationships.

(d) Monthly residential revenue per residential customer is calculated as total residential video, Internet and voice annual revenue divided by twelve divided by average residential customer relationships during the respective year.

(e) Monthly small and medium business revenue per customer is calculated as total small and medium business annual revenue divided by twelve divided by average small and medium business customer relationships during the respective year.

(f) Enterprise PSUs represent the aggregate number of fiber service offerings counting each separate service offering as an individual PSU.

Residential Services

Video Services

Our video customers receive a package of basic programming which, in our all-digital markets, generally includes a digital set-top box that provides an interactive electronic programming guide with parental controls, access to pay-per-view services, including VOD (available to nearly all of our passings), digital music channels and the option to view certain video services on third party devices. Customers have the option to purchase additional tiers of services including premium channels which provide original programming, commercial-free movies, sports, and other special event entertainment programming. Substantially all of our video programming is available in HD. We also offer certain video packages containing a limited number of channels via our cable television systems.

In the vast majority of our footprint, we offer VOD service which allows customers to select from approximately 35,000 titles at any time. VOD includes standard definition, HD and three dimensional ("3D") content. VOD programming options may be accessed for free if the content is associated with a customer's linear subscription, or for a fee on a transactional basis. VOD services are also offered on a subscription basis included in a digital tier premium channel subscription or for a monthly fee. Pay-per-view channels allow customers to pay on a per-event basis to view a single showing of a one-time special sporting event, music concert, or similar event on a commercial-free basis.

Our goal is to provide our video customers with the programming they want, when they want it, on any device. DVR service enables customers to digitally record programming and to pause and rewind live programming. Customers can also use our Spectrum TV application available on mobile devices, residential devices and on our website, to watch up to 250 channels of cable TV, view VOD programming, remotely control digital set-top boxes while in the home and to program DVRs remotely. Customers also have access to programmer authenticated applications and websites (known as TV Everywhere services) such as HBO Go®, Fox Now®, Discovery Go® and WatchESPN®.

In certain markets, we have launched Spectrum Guide®, a network or "cloud-based" user interface that can run on traditional set-top boxes, with a look and feel that is similar to that of the Spectrum TV App. Spectrum Guide® is designed to allow our customers to enjoy a state-of-the-art video experience on the majority of our set-top boxes, including accessing third-party video applications such as Netflix. The guide enables customers to find video content more easily across cable TV channels and VOD options. We plan to continue to deploy Spectrum Guide across our footprint and enhance this technology in 2018 and beyond.

Internet Services

In 2017, we completed our launch of Spectrum pricing and packaging ("SPP") and now offer an entry level Internet download speed of at least 100 megabits per second ("Mbps") across 99% of our footprint and 200 Mbps across 17% of our footprint, which among other things, allows several people within a single household to stream HD video content online while simultaneously using our Internet service for non-video purposes. Additionally, leveraging DOCSIS 3.1 technology, we had introduced speed offerings of 940 Mbps ("Spectrum Internet Gig") in 17% of our footprint as of December 31, 2017. Finally, we offer a security suite with our Internet services which, upon installation by customers, provides protection against computer viruses and spyware and includes parental control features.

We offer an in-home WiFi product that provides customers with high performance wireless routers to maximize their in-home wireless Internet experience. Additionally, we offer an out-of-home WiFi service ("Spectrum WiFi") in most of our footprint to our Internet customers at designated "hot spots." In 2018, we expect to continue to expand WiFi accessibility to our customers through our network of WiFi hotspots.

Voice Services

We provide voice communications services using voice over Internet protocol ("VoIP") technology to transmit digital voice signals over our network. Our voice services include unlimited local and long distance calling to the United States, Canada, Mexico and Puerto Rico, voicemail, call waiting, caller ID, call forwarding and other features and offers international calling either by the minute, or through packages of minutes per month. For customers that subscribe to both our voice and video offerings, caller ID on TV is also available in most areas.

Mobile Services

Our mobile strategy is built on the long-term vision of an integrated fixed/wireless network with differentiated products, and the ability to maximize the potential of our existing cable business. We intend to launch our Spectrum-branded mobile service in 2018 to residential customers via our mobile virtual network operator (“MVNO”) reseller agreement with Verizon Wireless. In the second phase, we plan to use our WiFi network in conjunction with additional unlicensed or licensed spectrum to improve network performance and expand capacity to offer consumers a superior wireless service. In furtherance of this second phase, we have experimental wireless licenses from the Federal Communications Commission ("FCC") that we are utilizing to test next generation wireless services in several markets around the country. We currently plan to only offer our Spectrum mobile service to residential customers subscribing to our Internet service. In the future, we may also offer mobile service to our small and medium business customers on similar terms. We believe Spectrum-branded mobile services will drive more sales of our core products, create longer customer lives and increase profitability and cash flow over time. As we launch our new mobile services, we expect an initial funding period to grow a new product as well as negative working capital impacts from the timing of device-related cash flows when we provide the handset or tablet to customers pursuant to equipment installment plans.

We are exploring working with a variety of partners and vendors in a number of operational areas within the wireless space, including: creating common operating platforms; technical standards development and harmonization; device forward and reverse logistics; and emerging wireless technology platforms. The efficiencies created are expected to provide more choice, innovative products and competitive prices for customers. We intend to consider and pursue opportunities in the mobile space which may include entering into joint ventures or partnerships with wireless or cable providers which may require significant investment. There is no assurance we will enter into such arrangements or that if we do, that they will be successful.

Commercial Services

We offer scalable broadband communications solutions for businesses and carrier organizations of all sizes, selling Internet access, data networking, fiber connectivity to cellular towers and office buildings, video entertainment services and business telephone services.

Small and Medium Business

Spectrum Business offers Internet, voice and video services to small and medium businesses over our hybrid fiber coaxial network that are similar to those that we provide to our residential customers. Spectrum Business includes a full range of video programming and entry-level Internet speeds of 100 Mbps downstream and 10 Mbps upstream. Additionally, customers can upgrade their Internet speeds to 200 or 300 Mbps downstream. Spectrum Business also includes a set of business services including web hosting, e-mail and security, and multi-line telephone services with more than 30 business features including web-based service management, that are generally not available to residential customers.

Enterprise Solutions

Spectrum Enterprise offers fiber-delivered communications and managed IT solutions to larger businesses, as well as high-capacity last-mile data connectivity services to wireless and wireline carriers, Internet Service Providers (“ISPs”) and other competitive carriers on a wholesale basis. Spectrum Enterprise's product portfolio includes fiber Internet access, voice trunking services, hosted voice, Ethernet services that privately and securely connect geographically dispersed client locations, and video solutions designed to meet the needs of hospitality, education, and health care clients. In addition, Spectrum Enterprise is beginning market field trials of an innovative Hybrid Software-Defined Wide Area Network, that enables businesses to leverage the performance of Ethernet, the ubiquity of Internet connectivity and the flexibility of a software-defined solution to solve a wide array of business communications and networking challenges. Our managed IT portfolio includes Cloud Infrastructure as a Service and Cloud Desktop as a Service, and managed hosting, application, and messaging solutions, along with other related IT and professional services. Our large serviceable footprint allows us to effectively serve business customers with multiple sites across given

geographic regions. These customers can benefit from obtaining advanced services from a single provider simplifying procurement and potentially reducing their costs.

Advertising Services

Our advertising sales division, Spectrum Reach®, offers local, regional and national businesses the opportunity to advertise in individual and multiple markets on cable television networks and digital outlets. We receive revenues from the sale of local advertising across various platforms for networks such as MTV®, CNN® and ESPN®. In any particular market, we typically insert local advertising on up to 60 channels. Our large footprint provides opportunities for advertising customers to address broader regional audiences from a single provider and thus reach more customers with a single transaction. Our size also provides scale to invest in new technology to create more targeted and addressable advertising capabilities.

Available advertising time is generally sold by our advertising sales force. In some markets, we have formed advertising interconnects or entered into representation agreements with other video distributors, including, among others, Verizon Communications Inc.'s ("Verizon") fiber optic service ("FiOS") and AT&T Inc.'s ("AT&T") U-verse and DIRECTV platforms, under which we sell advertising on behalf of those operators. In other markets, we enter into representation agreements under which another operator in the area will sell advertising on our behalf. These arrangements enable us and our partners to deliver linear commercials across wider geographic areas, replicating the reach of local broadcast television stations to the extent possible. In addition, we enter into interconnect agreements from time to time with other cable operators, which, on behalf of a number of video operators, sells advertising time to national and regional advertisers in individual or multiple markets.

Additionally, we sell the advertising inventory of our owned and operated local sports, news and lifestyle channels, of our regional sports networks that carry Los Angeles Lakers' basketball games and other sports programming and of SportsNet LA, a regional sports network that carries Los Angeles Dodgers' baseball games and other sports programming.

We are in the process of deploying advanced advertising products such as our Audience App, which uses our proprietary set-top box viewership data (all anonymized and aggregated) to optimize linear inventory, and household addressability, which allows for more finite targeting, within various parts of our footprint. These new products will be distributed across more of our footprint in 2018.

Other Services

Regional Sports and News Networks

We have an agreement with the Los Angeles Lakers for rights to distribute all locally available Los Angeles Lakers' games through 2033. We broadcast those games on our regional sports network, Spectrum SportsNet. We also manage 16 local news channels, including Spectrum News NY1, a 24-hour news channel focused on New York City, 10 local sports channels and one local lifestyle community channel, and we own 26.8% of Sterling Entertainment Enterprises, LLC (doing business as SportsNet New York), a New York City-based regional sports network that carries New York Mets' baseball games as well as other regional sports programming.

American Media Productions, LLC ("American Media Productions"), an unaffiliated third party, owns SportsNet LA, a regional sports network carrying the Los Angeles Dodgers' baseball games and other sports programming. In accordance with agreements with American Media Productions, we act as the network's exclusive affiliate and advertising sales representative and have certain branding and programming rights with respect to the network. In addition, we provide certain production and technical services to American Media Productions. The affiliate, advertising, production and programming agreements continue through 2038.

Security and Home Management

We provide security and home management services to our residential customers in certain markets. Our broadband cable system connects the customer's in-home system to our emergency response center for traditional security, fire and medical emergency monitoring and dispatch. The service also allows customers to remotely arm or disarm their security system, monitor their home via indoor and outdoor cameras, and remotely operate key home functions, including setting and controlling lights, thermostats and door locks.

Pricing of Our Products and Services

Our revenues are principally derived from the monthly fees customers pay for the services we provide. We typically charge a one-time installation fee which is sometimes waived or discounted in certain sales channels during certain promotional periods.

Our SPP generally offers a standardized price for each tier of service, bundle of services, and add-on service, regardless of market and emphasizes triple play bundles of video, Internet and voice services. Our most popular and competitive services are combined in core packages at what we believe are attractive prices. We believe our approach:

- offers simplicity for customers to understand our offers, and for our employees in service delivery;
- drives our ability to package more services at the time of sale, thus increasing revenue per customer;
- offers a higher quality and more value-based set of services, including faster Internet speeds, more HD channels, lower equipment fees and a more transparent pricing structure;
- drives higher customer satisfaction, lower service calls and churn; and
- allows for gradual price increases at the end of promotional periods.

Our Network Technology and Customer Premise Equipment

Our network includes three key components: a national backbone, regional/metro networks and a “last-mile” network. Both our national backbone and regional/metro network components utilize a redundant Internet Protocol ("IP") ring/mesh architecture. The national backbone component provides connectivity from regional demarcation points to nationally centralized content, connectivity and services. The regional/metro network components provide connectivity between the regional demarcation points and headends within a specific geographic area and enable the delivery of content and services between these network components.

Our last-mile network utilizes a hybrid fiber coaxial cable (“HFC”) architecture, which combines the use of fiber optic cable with coaxial cable. In most systems, we deliver our signals via fiber optic cable from the headend to a group of nodes, and use coaxial cable to deliver the signal from individual nodes to the homes served by that node. For our fiber Internet, Ethernet, carrier wholesale, SIP and PRI Spectrum Enterprise customers, fiber optic cable is extended from individual nodes to the customer’s site. For certain new build and MDU sites, we increasingly bring fiber to the customer site. Our design standard is six strands of fiber to each node, with two strands activated and four strands reserved for spares and future services. This design standard allows these additional strands to be utilized for additional residential traffic capacity, and enterprise customer needs as they arise. We believe that this hybrid network design provides high capacity and signal quality. The design also provides two-way signal capabilities for the support of interactive services.

HFC architecture benefits include:

- bandwidth capacity to enable traditional and two-way video and broadband services;
- dedicated bandwidth for two-way services; and
- signal quality and high service reliability.

Approximately 98% of our estimated passings are served by systems that have bandwidth of 750 megahertz or greater as ofDecember 31, 2017. This bandwidth capacity enables us to offer HD television, DOCSIS-based Internet services and voice services.

An all-digital platform enables us to offer a larger selection of HD channels, faster Internet speeds and better picture quality while providing greater plant security and enabling lower installation and disconnect service truck rolls. We are currently all-digital in 74% of our footprint and intend to transition the remaining portions of our Legacy TWC and Legacy Bright House footprints.

We have been introducing our new set-top box, WorldBox, to consumers in certain markets. The WorldBox design has opened the set-top box market to new vendors and reduced our set-top box costs. WorldBox also includes more advanced features and functionality than older set-top boxes, including faster processing times, IP capabilities with increased speed, additional simultaneous recordings, increased DVR storage capacity, and a greater degree of flexibility for consumers to take Charter-provisioned set-top boxes with them, if and when, they move residences. We have also been introducing our new cloud-based user interface, Spectrum Guide®, to our video customers in certain markets. Spectrum Guide® improves video content search and discovery, and fully enables our on-demand offering. In addition, Spectrum Guide® can function on the majority of our set-top boxes, reducing costs and customer disruption to swap equipment for new functionality.

Management, Customer Operations and Marketing

Our operations are centralized, with senior executives located at several key corporate offices, responsible for coordinating and overseeing operations, including establishing company-wide strategies, policies and procedures. Sales and marketing, network operations, field operations, customer operations, engineering, advertising sales, human resources, legal, government relations, information technology and finance are all directed at the corporate level. Regional and local field operations are responsible for

customer premise service transactions and maintaining and constructing that portion of our network which is located outdoors. In 2018, our field operations group continues to focus on standardizing practices, processes, procedures and metrics.

We continue to focus on improving the customer experience through enhanced product offerings, reliability of services, and delivery of quality customer service. As part of our operating strategy, we are committed to investments and hiring plans that continue to insource most of our customer operations workload. In-house domestic call centers handled approximately 75% of our customer service calls and are managed centrally to ensure a consistent, high quality customer experience. Routing calls by particular call types to specific agents that only handle such call types, enables agents to become experts in addressing specific customer needs, thus creating a better customer experience. We also continue to migrate our call centers to full virtualization which allows calls to be routed across our call centers regardless of the location origin of the call, reducing call wait times, and saving costs. A new call center agent desktop interface tool, already used at Legacy Charter, is being developed for Legacy TWC and Legacy Bright House. This new desktop interface tool will enable virtualization of all call centers, regardless of legacy billing platform, and will better serve our customers.

We also provide customers with the opportunity to interact with us through a variety of forums in addition to telephonic communications, including through our customer website, mobile device applications, online chat and social media. Our customer websites and mobile applications enable customers to pay their bills, manage their accounts, order new services and utilize self-service help and support.

We sell our residential and commercial services using a national brand platform known as Spectrum®, Spectrum Business® and Spectrum Enterprise®. These brands reflect our comprehensive approach to industry-leading products, driven by speed, performance and innovation. Our marketing strategy emphasizes the sale of our bundled services through targeted direct response marketing programs to existing and potential customers, and increases awareness and the value of the Spectrum brand. Our marketing organization creates and executes marketing programs intended to grow customer relationships, increase the number of services we sell per relationship, retain existing customers and cross-sell additional products to current customers. We monitor the effectiveness of our marketing efforts, customer perception, competition, pricing, and service preferences, among other factors, in order to increase our responsiveness to our customers and to improve our sales and customer retention. The marketing organization manages the majority of the sales channels including direct sales, on-line, outbound telemarketing and stores.

Programming

We believe that offering a wide variety of video programming choices influences a customer's decision to subscribe and retain our cable video services. We obtain basic and premium programming, usually pursuant to written contracts from a number of suppliers. Media corporation consolidation has, however, resulted in fewer suppliers and additional selling power on the part of programming suppliers. Our programming contracts are generally for a fixed period of time, usually for multiple years, and are subject to negotiated renewal. Recently, we have begun entering into agreements to co-produce original content which give us the right to provide our customers with certain exclusive content, for a period of time.

Programming is usually made available to us for a license fee, which is generally paid based on the number of customers to whom we make that programming available. Programming license fees may include "volume" discounts and financial incentives to support the launch of a channel and/or ongoing marketing support, as well as discounts for channel placement or service penetration. For home shopping channels, we typically receive a percentage of the revenue attributable to our customers' purchases. We also offer VOD and pay per view channels of movies and events that are subject to a revenue split with the content provider.

Our programming costs have increased in excess of customary inflationary and cost-of-living type increases. We expect programming costs to continue to increase due to a variety of factors including, annual increases pursuant to our programming contracts, contract renewals with programmers and the carriage of incremental programming, including new services, higher expanded basic video penetration and VOD programming. Increases in the cost of sports programming and the amounts paid for broadcast station retransmission consent have been the largest contributors to the growth in our programming costs over the last few years. Additionally, the demands of large media companies who link carriage of their most popular networks to carriage and cost increases of their less popular networks, has limited our flexibility in creating more tailored and cost-sensitive programming packages for consumers.

Federal law allows commercial television broadcast stations to make an election between "must-carry" rights and an alternative "retransmission-consent" regime. When a station opts for retransmission-consent, we are not allowed to carry the station's signal without that station's permission. Continuing demands by owners of broadcast stations for cash payments at substantial increases over amounts paid in prior years in exchange for retransmission consent will increase our programming costs or require us to cease carriage of popular programming, potentially leading to a loss of customers in affected markets.

Over the past several years, increases in our video service rates have not fully offset the increases in our programming costs, and with the impact of increasing competition and other marketplace factors, we do not expect the increases in our video service rates to fully offset the increase in our programming costs for the foreseeable future. Although we pass along a portion of amounts paid for retransmission consent to the majority of our customers, our inability to fully pass programming cost increases on to our video customers has had, and is expected in the future to have, an adverse impact on our cash flow and operating margins associated with our video product. In order to mitigate reductions of our operating margins due to rapidly increasing programming costs, we continue to review our pricing and programming packaging strategies.

We currently have programming contracts that have expired and others that will expire at, or before the end, of 2018. We will seek to renew these agreements on terms that we believe are favorable. There can be no assurance, however, that these agreements will be renewed on favorable or comparable terms. To the extent that we are unable to reach agreements with certain programmers on terms that we believe are reasonable, we have been, and may in the future be, forced to remove such programming channels from our line-up, which may result in a loss of customers.

Regions

We operate in geographically diverse areas which are organized in regional clusters. These regions are managed centrally on a consolidated level. Our eleven regions and the customer relationships within each region as of December 31, 2017 are as follows (in thousands):

Regions	**Total Customer Relationships**
Carolinas	2,668
Central	2,870
Florida	2,389
Great Lakes	2,208
Northeast	2,970
Northwest	1,472
NYC	1,334
South	2,085
Southern Ohio	2,093
Texas	2,736
West	4,374

Competition

Residential Services

We face intense competition for residential customers, both from existing competitors and, as a result of the rapid development of new technologies, services and products, from new entrants.

Video competition

Our residential video service faces competition from direct broadcast satellite ("DBS") service providers, which have a national footprint and compete in all of our operating areas. DBS providers offer satellite-delivered pre-packaged programming services that can be received by relatively small and inexpensive receiving dishes. DBS providers offer aggressive promotional pricing, exclusive programming (e.g., NFL Sunday Ticket) and video services that are comparable in many respects to our residential video service. Our residential video service also faces competition from companies with fiber-based networks, primarily AT&T U-verse, Frontier Communications Corporation ("Frontier") FiOs and Verizon FiOs, which offer wireline video services in approximately 27%, 8% and 4%, respectively, of our operating areas. AT&T also owns DIRECTV, and as a combined company provides video service (via IP or satellite) and voice service (via IP or wireless) across our entire footprint, and delivers video, Internet, voice and mobile services across 45% of our passings. AT&T also announced the acquisition of Time Warner Inc. in October 2016 which is subject to regulatory approval. If approved, it is not yet clear how AT&T will use the various programming and studio assets it would acquire from Time Warner Inc. to benefit its own products on its four video platforms or what potential program access conditions, as part of any regulatory approval, might apply.

Our residential video service also faces growing competition from a number of other sources, including companies that deliver linear network programming, movies and television shows on demand and other video content over broadband Internet connections to televisions, computers, tablets and mobile devices. These newer categories of competitors include virtual multichannel video programming distributors (“V-MVPD”) such as DirecTV NOW, Sling TV, Playstation Vue, YouTube TV and Hulu Live, and direct to consumer products offered by programmers that have not traditionally sold programming directly to consumers, such as HBO Now, CBS All Access and Showtime Anytime. Other online video business models have also developed, including, (i) subscription video on demand (“SVOD”) services such as Netflix, Amazon Prime, and Hulu Plus, (ii) ad-supported free online video products, including YouTube and Hulu, some of which offer programming for free to consumers that we currently purchase for a fee, (iii) pay-per-view products, such as iTunes and Amazon Instant, and (iv) additional offerings from wireless providers which continue to integrate and bundle video services and mobile products. Historically, we have generally viewed SVOD online video services as complementary to our own video offering, and we have developed a cloud-based guide that is capable of incorporating video from many online video services currently offered in the marketplace. As the proliferation of online video services grows, however, services from V-MVPDs and new direct to consumer offerings, as well as piracy and password sharing, could negatively impact the growth of our video business.

Internet competition

Our residential Internet service faces competition from the phone companies’ DSL, fiber-to-the-home ("FTTH") and wireless broadband offerings, as well as from a variety of companies that offer other forms of online services, including wireless and satellite-based broadband services. AT&T, Frontier FiOs and Verizon’s FiOs are our primary FTTH competitors. Given the FTTH deployments of our competitors, launches of broadband services offering 1 gigabits per second (“Gbps”) speed have recently grown. Several competitors, including AT&T, Verizon's FiOs and Google, deliver 1 Gbps broadband speed in at least a portion of their footprints which overlap our footprint. DSL service is often offered at prices lower than our Internet services, although typically at speeds much lower than the minimum speeds we offer as part of SPP. Various wireless phone companies are now offering third and fourth generation (3G and 4G) wireless Internet services and some have announced that they intend to offer faster fifth generation (5G) services in the future. Some wireless phone companies offer unlimited data packages to customers. In addition, a growing number of commercial areas, such as retail malls, restaurants and airports, offer WiFi Internet service. Numerous local governments are also considering or actively pursuing publicly subsidized WiFi Internet access networks. These options offer alternatives to cable-based Internet access.

Voice competition

Our residential voice service competes with wireless and wireline phone providers, as well as other forms of communication, such as text messaging on cellular phones, instant messaging, social networking services, video conferencing and email. We also compete with “over-the-top” phone providers, such as Vonage, Skype, magicJack, Google Voice and Ooma, Inc., as well as companies that sell phone cards at a cost per minute for both national and international service. The increase in the number of different technologies capable of carrying voice services and the number of alternative communication options available to customers as well as the replacement of wireline services by wireless have intensified the competitive environment in which we operate our residential voice service. When launched, our mobile service will compete with other wireless providers such as Verizon, AT&T, T-Mobile US, Inc. ("T-Mobile") and Sprint Corporation ("Sprint").

Regional Competitors

In some of our operating areas, other competitors have built networks that offer video, Internet and voice services that compete with our services. For example, in certain markets, our residential video, Internet and voice services compete with Google Fiber, Cincinnati Bell Inc., Hawaiian Telcom, RCN Telecom Services, LLC, Grande Communications Networks, LLC and WideOpenWest Finance, LLC.

Additional competition

In addition to multi-channel video providers, cable systems compete with other sources of news, information and entertainment, including over-the-air television broadcast reception, live events, movie theaters and the Internet. Competition is also posed by fixed wireless and satellite master antenna television systems, or SMATV systems, serving MDUs, such as condominiums, apartment complexes, and private residential communities.

Business Services

We face intense competition across each of our business services product offerings. Our small and medium business video, Internet,

networking and voice services face competition from a variety of providers as described above. Our enterprise solutions also face competition from the competitors described above as well as other telecommunications carriers, such as metro and regional fiber-based carriers. We also compete with cloud, hosting and related service providers and application-service providers.

Advertising

We face intense competition for advertising revenue across many different platforms and from a wide range of local and national competitors. Advertising competition has increased and will likely continue to increase as new advertising avenues seek to attract the same advertisers. We compete for advertising revenue against, among others, local broadcast stations, national cable and broadcast networks, radio stations, print media and online advertising companies and content providers.

Security and Home Management

Our IntelligentHome service faces competition from traditional security companies, such as the ADT Corporation, service providers such as Verizon and AT&T, as well as new entrants, such as Vivint, Inc., Alarm.com, Inc. and NEST Labs, Inc.

Seasonality and Cyclicality

Our business is subject to seasonal and cyclical variations. Our results are impacted by the seasonal nature of customers receiving our cable services in college and vacation markets. Our revenue is subject to cyclical advertising patterns and changes in viewership levels. Our advertising revenue is generally higher in the second and fourth calendar quarters of each year, due in part to increases in consumer advertising in the spring and in the period leading up to and including the holiday season. U.S. advertising revenue is also cyclical, benefiting in even-numbered years from advertising related to candidates running for political office and issue-oriented advertising. Our capital expenditures and trade working capital are also subject to significant seasonality based on the timing of subscriber growth, network programs, specific projects and construction.

Regulation and Legislation

The following summary addresses the key regulatory and legislative developments affecting the cable industry and our services for both residential and commercial customers. Cable system operations are extensively regulated by the federal government (primarily the FCC), certain state governments, and many local governments. A failure to comply with these regulations could subject us to substantial penalties. Our business can be dramatically impacted by changes to the existing regulatory framework, whether triggered by legislative, administrative, or judicial rulings. Congress and the FCC have frequently revisited the subject of communications regulation and they are likely to do so again in the future. We could be materially disadvantaged in the future if we are subject to new regulations or regulatory actions that do not equally impact our key competitors. We cannot provide assurance that the already extensive regulation of our business will not be expanded in the future. In addition, we are already subject to Charter-specific conditions regarding certain business practices as a result of the FCC's approval of the Transactions.

Video Service

Must Carry/Retransmission Consent

There are two alternative legal methods for carriage of local broadcast television stations on cable systems. Federal "must carry" regulations require cable systems to carry local broadcast television stations upon the request of the local broadcaster. Alternatively, federal law includes "retransmission consent" regulations, by which popular commercial television stations can prohibit cable carriage unless the cable operator first negotiates for "retransmission consent," which may be conditioned on significant payments or other concessions. Popular stations invoking "retransmission consent" have been demanding substantial compensation increases in their recent negotiations with cable operators, thereby significantly increasing our operating costs.

Additional government-mandated broadcast carriage obligations, including those related to the FCC's newly adopted enhanced technical broadcasting option (Advanced Television Systems Committee 3.0), could disrupt existing programming commitments, interfere with our preferred use of limited channel capacity, and limit our ability to offer services that appeal to our customers and generate revenues.

Cable Equipment

In 1996, Congress enacted a statute requiring the FCC to adopt regulations designed to assure the development of an independent retail market for "navigation devices," such as cable set-top boxes. As a result, the FCC required cable operators to make a separate offering of security modules (*i.e*., a "CableCARD") that can be used with retail navigation devices. Some of the FCC's rules

requiring support for CableCARDs were vacated by the United States Court of Appeals for the District of Columbia in 2013, and another of these rules was repealed by Congress in 2014, but the basic obligation to provide separable security for retail devices remains in place. In 2016, the FCC proposed to replace its CableCARD regime with burdensome new rules that would have required us to make disaggregated "information flows" available to set-top boxes and apps supplied by third parties. That proposal was not adopted, but various parties may continue to advocate alternative regulatory approaches to reduce consumer dependency on traditional operator provided set-top boxes. It remains uncertain whether the FCC or Congress will change the legal requirements related to our set-top boxes and what the impact of any such changes might be.

Privacy and Information Security Regulation

The Communications Act of 1934, as amended (the "Communications Act") limits our ability to collect, use, and disclose customers' personally identifiable information for our video, voice, and Internet services, as well as provides requirements to safeguard such information. We are subject to additional federal, state, and local laws and regulations that impose additional restrictions on the collection, use and disclosure of consumer information. Further, the FCC, Federal Trade Commission ("FTC"), and many states regulate and restrict the marketing practices of communications service providers, including telemarketing and sending unsolicited commercial emails.

As a result of the FCC's 2017 decision to reclassify broadband Internet access service as an "information service," the FTC once again has the authority, pursuant to its authority to enforce against unfair or deceptive acts and practices, to protect the privacy of Internet service customers, including our use and disclosure of certain customer information. Although one court decision has raised questions regarding the extent of FTC jurisdiction over companies that offer both common carrier services as well as non-common carrier services, that decision has been stayed, pending review by the full Ninth Circuit Court of Appeals.

Our operations are also subject to federal and state laws governing information security. In the event of an information security breach, such rules may require consumer and government agency notification and may result in regulatory enforcement actions with the potential of monetary forfeitures. The FCC, the FTC and state attorneys general regularly bring enforcement actions against companies related to information security breaches and privacy violations.

Various security standards provide guidance to telecommunications companies in order to help identify and mitigate cybersecurity risk. One such standard is the voluntary framework released by the National Institute for Standards and Technologies ("NIST") in February 2014, in cooperation with other federal agencies and owners and operators of U.S. critical infrastructure.The NIST cybersecurity framework provides a prioritized and flexible model for organizations to identify and manage cyber risks inherent to their business. It was designed to supplement, not supersede, existing cybersecurity regulations and requirements. Several government agencies have encouraged compliance with the NIST cybersecurity framework, including the FCC, which is also considering expansion of its cybersecurity guidelines or the adoption of cybersecurity requirements. NIST recently proposed draft updates to this voluntary framework and is expected to release final revisions in 2018.

After the repeal of the FCC's 2016 privacy rules through the Congressional Review Act, many states and local authorities have considered legislative or other actions that would impose additional restrictions on our ability to collect, use and disclose certain information. Despite language in the FCC's December 2017 decision reclassifying broadband Internet access service as an "information service," that preempts state and local privacy regulations that conflict with federal policy, we expect these state and local efforts to regulate online privacy to continue in 2018. Additionally, several state legislatures are considering the adoption of new data security and cybersecurity legislation that could result in additional network and information security requirements for our business. There are also bills pending in both the U.S. House of Representatives and Senate that could impose new privacy and data security obligations. We cannot predict whether any of these efforts will be successful or preempted, or how new legislation and regulations, if any, would affect our business.

Pole Attachments

The Communications Act requires most utilities owning utility poles to provide cable systems with access to poles and conduits and simultaneously subjects the rates charged for this access to either federal or state regulation. In 2011 and again in 2015, the FCC amended its existing pole attachment rules to promote broadband deployment. The 2011 order allows for new penalties in certain cases involving unauthorized attachments, but generally strengthens the cable industry's ability to access investor-owned utility poles on reasonable rates, terms, and conditions. Additionally, the 2011 order reduces the federal rate formula previously applicable to "telecommunications" attachments to closely approximate the rate formula applicable to "cable" attachments. The 2015 order continues the reconciliation of rates, effectively closing the remaining "loophole" that potentially allowed for significantly higher rates for telecommunications than for "cable" attachments in certain scenarios, and minimizing the rate consequences of any of our services if deemed "telecommunications" for pole attachment purposes. Utility pole owners have appealed the 2015 order. Neither the 2011 order nor the 2015 order directly affect the rate in states that self-regulate (rather than

allow the FCC to regulate pole rates), but many of those states have substantially the same rate for cable and telecommunications attachments.

Some municipalities have enacted “one-touch” make-ready pole attachment ordinances, which permit third parties to alter components of our network attached to utility poles in ways that could adversely affect our businesses. Some of these ordinances have been challenged with differing results. In 2017, the FCC initiated a rulemaking that considers amending its pole attachment rules to permit a “one-touch” make-ready-like process for the poles within its jurisdiction. If adopted, these rules could have a similar effect as the municipal one-touch make-ready ordinances and adversely affect our businesses.

Cable Rate Regulation

Federal law strictly limits the potential scope of cable rate regulation. Pursuant to federal law, all video offerings are universally exempt from rate regulation, except for a cable system’s minimum level of video programming service, referred to as “basic service,” and associated equipment. Rate regulation of basic service and associated equipment operates pursuant to a federal formula, with local governments, commonly referred to as local franchising authorities, primarily responsible for administering this regulation. The majority of our local franchising authorities have never certified to regulate basic service cable rates. In 2015, the FCC adopted an order (which was subsequently upheld on appeal) reversing its historic approach to rate regulation certifications and requiring a local franchise authority interested in regulating cable rates to first make an affirmative showing that there is no “effective competition” (as defined under federal law) in the community. Very few local franchise authorities have filed the necessary rate regulation certification, and the FCC’s 2015 order should make it more difficult for such entities to assert rate regulation in the future.

There have been calls to impose expanded rate regulation on the cable industry. Confronted with rapidly increasing cable programming costs, it is possible that Congress may adopt new constraints on the retail pricing or packaging of cable programming. Any such constraints could adversely affect our operations.

Ownership Restrictions

Federal regulation of the communications field traditionally included a host of ownership restrictions, which limited the size of certain media entities and restricted their ability to enter into competing enterprises. Through a series of legislative, regulatory, and judicial actions, most of these restrictions have been either eliminated or substantially relaxed. Changes in this regulatory area could alter the business environment in which we operate.

Access Channels

Local franchise agreements often require cable operators to set aside certain channels for public, educational, and governmental access programming. Federal law also requires cable systems to designate up to 15% of their channel capacity for commercial leased access by unaffiliated third parties, who may offer programming that our customers do not particularly desire. The FCC adopted revised rules in 2007 mandating a significant reduction in the rates that operators can charge commercial leased access users and imposing additional administrative requirements that would be burdensome on the cable industry. The effect of the FCC’s revised rules was stayed by a federal court, pending a cable industry appeal and an adverse finding by the Office of Management and Budget. Although commercial leased access activity historically has been relatively limited, increased activity in this area could further burden the channel capacity of our cable systems.

Other FCC Regulatory Matters

FCC regulations cover a variety of additional areas, including, among other things: (1) equal employment opportunity obligations; (2) customer service standards; (3) technical service standards; (4) mandatory blackouts of certain network and syndicated programming; (5) restrictions on political advertising; (6) restrictions on advertising in children’s programming; (7) licensing of systems and facilities; (8) maintenance of public files; (9) emergency alert systems; (10) inside wiring and exclusive contracts for MDU complexes; and (11) disability access, including new requirements governing video-description and closed-captioning. Each of these regulations restricts our business practices to varying degrees and may impose additional costs on our operations.

It is possible that Congress or the FCC will expand or modify its regulation of cable systems in the future, and we cannot predict at this time how that might impact our business.

Copyright

Cable systems are subject to a federal copyright compulsory license covering carriage of television and radio broadcast signals.

The copyright law provides copyright owners the right to audit our payments under the compulsory license, and we are currently subject to ongoing compulsory copyright audits. The possible modification or elimination of this compulsory copyright license is the subject of continuing legislative proposals and administrative review and could adversely affect our ability to obtain desired broadcast programming.

Copyright clearances for non-broadcast programming services are arranged through private negotiations. Cable operators also must obtain music rights for locally originated programming and advertising from the major music performing rights organizations. These licensing fees have been the source of litigation in the past, and we cannot predict with certainty whether license fee disputes may arise in the future.

Franchise Matters

Our cable systems generally are operated pursuant to nonexclusive franchises, permits, and similar authorizations granted by a municipality or other state or local government entity in order to utilize and cross public rights-of-way. Cable franchises generally are granted for fixed terms and in many cases include monetary penalties for noncompliance and may be terminable if the franchisee fails to comply with material provisions. The specific terms and conditions of cable franchises vary significantly between jurisdictions. Cable franchises generally contain provisions governing cable operations, franchise fees, system construction, maintenance, technical performance, customer service standards, supporting and carrying public access channels, and changes in the ownership of the franchisee. A number of states subject cable systems to the jurisdiction of centralized state government agencies, such as public utility commissions. Although local franchising authorities have considerable discretion in establishing franchise terms, certain federal protections benefit cable operators. For example, federal law caps local franchise fees.

Prior to the scheduled expiration of our franchises, we generally initiate renewal proceedings with the granting authorities. The Communications Act, which is the primary federal statute regulating interstate communications, provides for an orderly franchise renewal process in which granting authorities may not unreasonably withhold renewals. In connection with the franchise renewal process, however, many governmental authorities require the cable operator to make additional costly commitments. Historically, we have been able to renew our franchises without incurring significant costs, although any particular franchise may not be renewed on commercially favorable terms or otherwise. If we fail to obtain renewals of franchises representing a significant number of our customers, it could have a material adverse effect on our consolidated financial condition, results of operations, or our liquidity. Similarly, if a local franchising authority's consent is required for the purchase or sale of a cable system, the local franchising authority may attempt to impose more burdensome requirements as a condition for providing its consent.

The traditional cable franchising regime has undergone significant change as a result of various federal and state actions. The FCC has adopted rules that streamline entry for new competitors (particularly those affiliated with telephone companies) and reduce certain franchising burdens for these new entrants. The FCC adopted more modest relief for existing cable operators.

At the same time, a substantial number of states have adopted new franchising laws. Again, these laws were principally designed to streamline entry for new competitors, and they often provide advantages for these new entrants that are not immediately available to existing cable operators. In many instances, these franchising regimes do not apply to established cable operators until the existing franchise expires or a competitor directly enters the franchise territory.

Internet Service

In 2015, the FCC determined that broadband Internet access services, such as those we offer, were a form of "telecommunications service" under the Communications Act and, on that basis, imposed rules banning service providers from blocking access to lawful content, restricting data rates for downloading lawful content, prohibiting the attachment of non-harmful devices, giving special transmission priority to affiliates, and offering third parties the ability to pay for priority routing. The 2015 rules also imposed a "transparency" requirement, *i.e.,* an obligation to disclose all material terms and conditions of our service to consumers.

In December 2017, the FCC adopted an order repudiating its treatment of broadband as a "telecommunications service," reclassifying broadband as an "information service," and eliminating the 2015 rules other than the transparency requirement, which it eased in significant ways. The FCC also ruled that state regulators may not impose obligations similar to federal obligations that the FCC removed. We expect that various parties will challenge the FCC's December 2017 ruling in court, and, we cannot predict how any such court challenges will be resolved. Moreover, it is possible that the FCC might further revise its approach to broadband Internet access in the future, or that Congress might enact legislation affecting the rules applicable to the service.

The FCC's December 2017 ruling does not affect other regulatory obligations on broadband Internet access providers. Notably, broadband providers are obliged by the Communications Assistance for Law Enforcement Act ("CALEA") to configure their networks in a manner that facilitates the ability of law enforcement, with proper legal authorization, to obtain information about

our customers, including the content of their Internet communications. The FCC and Congress also are considering subjecting Internet access services to the Universal Service funding requirements. These funding requirements could impose significant new costs on our Internet service. Also, the FCC and some state regulatory commissions direct certain subsidies to telephone companies deploying broadband to areas deemed to be “unserved” or “underserved.” We have opposed such subsidies when directed to areas that we serve. Despite our efforts, future subsidies may be directed to areas served by us, which could result in subsidized competitors operating in our service territories. State and local governmental organizations have also adopted Internet-related regulations. These various governmental jurisdictions are also considering additional regulations in these and other areas, such as privacy, pricing, service and product quality, imposition of local franchise fees on Internet-related revenue and taxation. The adoption of new Internet regulations or the adaptation of existing laws to the Internet could adversely affect our business.

Aside from the FCC’s generally applicable regulations, we have made certain commitments to comply with the FCC’s order in connection with the FCC’s approval of the TWC Transaction and the Bright House Transaction (discussed below).

Voice Service

The Telecommunications Act of 1996 created a more favorable regulatory environment for us to provide telecommunications and/or competitive voice services than had previously existed. In particular, it established requirements ensuring that competitive telephone companies could interconnect their networks with those providers of traditional telecommunications services to open the market to competition. The FCC has subsequently ruled that competitive telephone companies that support VoIP services, such as those we offer our customers, are entitled to interconnection with incumbent providers of traditional telecommunications services, which ensures that our VoIP services can compete in the market. Since that time, the FCC has initiated a proceeding to determine whether such interconnection rights should extend to traditional and competitive networks utilizing IP technology, and how to encourage the transition to IP networks throughout the industry. The FCC initiated a further proceeding in 2017 to consider whether additional changes to interconnection obligations are needed, including how and where companies interconnect their networks with the networks of other providers. New rules or obligations arising from these proceedings may affect our ability to compete in the provision of voice services.

The FCC has collected extensive data from providers of point to point transport (“special access”) services, such as us, and the FCC may use that data to evaluate whether the market for such services is competitive, or whether the market should be subject to further regulation, which may increase our costs or constrain our ability to compete in this market.

Further regulatory changes are being considered that could impact our voice business and that of our primary telecommunications competitors. The FCC and state regulatory authorities are considering, for example, whether certain common carrier regulations traditionally applied to incumbent local exchange carriers should be modified or reduced, and, in some jurisdictions, the extent to which common carrier requirements should be extended to VoIP providers. The FCC has already determined that certain providers of voice services using Internet Protocol technology must comply with requirements relating to 911 emergency services (“E911”), the CALEA (the statute governing law enforcement access to and surveillance of communications), Universal Service Fund contributions, customer privacy and Customer Proprietary Network Information issues, number portability, network outage reporting, rural call completion, disability access, regulatory fees, back-up power obligations, and discontinuance of service. In March 2007, a federal appeals court affirmed the FCC’s decision concerning federal regulation of certain VoIP services, but declined to specifically find that VoIP service provided by cable companies, such as we provide, should be regulated only at the federal level. As a result, some states have begun proceedings to subject cable VoIP services to state level regulation, and at least one state has asserted jurisdiction over our VoIP services. We prevailed on a legal challenge to that state’s assertion of jurisdiction. However, the state has appealed that ruling in a case which is now pending before a federal appellate court in Minnesota. Although we have registered with, or obtained certificates or authorizations from the FCC and the state regulatory authorities in those states in which we offer competitive voice services in order to ensure the continuity of our services and to maintain needed network interconnection arrangements, it is unclear whether and how these and other ongoing regulatory matters ultimately will be resolved.

Transaction-Related Commitments

In connection with approval of the Transactions, federal and state regulators imposed a number of post-merger conditions on us including but not limited to the following.

FCC Conditions

- Offer settlement-free Internet interconnection to any party that meets the requirements of our Interconnection Policy (available on Charter’s website) on terms generally consistent with the policy for seven years (with a possible reduction to five);
- Deploy and offer high-speed broadband Internet access service to an additional two million locations over five years;

- Refrain from charging usage-based prices or imposing data caps on any fixed mass market broadband Internet access service plans for seven years (with a possible reduction to five);
- Offer 30/4 Mbps discounted broadband where technically feasible to eligible customers throughout our service area for four years from the offer's commencement; and
- Continue to provide CableCARDs to any new or existing customer upon request for use in third-party retail devices for four years and continue to support such CableCARDs for seven years (in each case, unless the FCC changes the relevant rules).

The FCC conditions also contain a number of compliance reporting requirements.

DOJ Conditions

The Department of Justice ("DOJ") Order prohibits us from entering into or enforcing any agreement with a video programmer that forbids, limits or creates incentives to limit the video programmer's provision of content to online video distributors ("OVDs"). We will not be able to avail ourself of other distributors' most favored nation ("MFN") provisions if they are inconsistent with this prohibition. The DOJ's conditions are effective for seven years, although we may petition the DOJ to eliminate the conditions after five years.

State Conditions

Certain state regulators, including California, New York, Hawaii and New Jersey also imposed conditions in connection with the approval of the Transactions. These conditions include requirements related to:

- Upgrading networks within the designated state, including upgrades to broadband speeds and conversion of all households served within California and New York to an all-digital platform;
- Building out our network to households and business locations that are not currently served by cable within the designated states;
- Offering LifeLine service discounts and low-income broadband to eligible households served within the applicable states;
- Investing in service improvement programs and customer service enhancements and maintaining customer-facing jobs within the designated state;
- Continuing to make legacy service offerings available, including allowing Legacy TWC and Legacy Bright House customers to maintain their existing service offerings for a period of three years; and
- Complying with reporting requirements.

Employees

As of December 31, 2017, we had approximately 94,800 active full-time equivalent employees.

Item 1A. Risk Factors.

Risks Related to Our Business

If we are not able to successfully complete the integration of our business with that of Legacy TWC and Legacy Bright House, the anticipated benefits of the Transactions may not be fully realized or may take longer to realize than expected. In such circumstance, we may not perform as expected and the value of Charter's Class A common stock may be adversely affected.

There can be no assurances that we can successfully complete the integration of our business with that of Legacy TWC and Legacy Bright House. We now have significantly more systems, assets, investments, businesses, customers and employees than each company did prior to the Transactions. It is possible that the integration process could result in the loss of customers, the disruption of our ongoing businesses or in unexpected integration issues, higher than expected integration costs and an overall post-completion integration process that takes longer than originally anticipated. The process of integrating Legacy TWC and Legacy Bright House with the Legacy Charter operations requires significant capital expenditures and the expansion of certain operations and operating and financial systems. Management continues to devote a significant amount of time and attention to the integration process and there is a significant degree of difficulty and management involvement inherent in that process.

Even if the new businesses are successfully integrated, it may not be possible to realize the benefits that are expected to result from the Transactions, or realize these benefits within the time frame that is expected. For example, the benefits of our pricing and packaging and converting our video product to all-digital in certain Legacy TWC and Legacy Bright House systems may not be fully realized or may take longer than anticipated, or the benefits from the Transactions may be offset by costs incurred or

delays in integrating the businesses and increased operating costs. If the combined company fails to realize the anticipated benefits from the Transactions, our liquidity, results of operations, financial condition and/or share price may be adversely affected. In addition, at times, the attention of certain members of our management and resources may be focused on the integration of the businesses and diverted from day-to-day business operations, which may disrupt the business of the combined company.

We operate in a very competitive business environment, which affects our ability to attract and retain customers and can adversely affect our business, operations and financial results.

The industry in which we operate is highly competitive and has become more so in recent years. In some instances, we compete against companies with fewer regulatory burdens, better access to financing, greater personnel resources, greater resources for marketing, greater and more favorable brand name recognition, and long-established relationships with regulatory authorities and customers. Increasing consolidation in the cable industry and the repeal of certain ownership rules have provided additional benefits to certain of our competitors, either through access to financing, resources, or efficiencies of scale.

Our residential video service faces competition from a number of sources, including direct broadcast satellite services, as well as other companies that deliver movies, television shows and other video programming over broadband Internet connections to TVs, computers, tablets and mobile devices. Our residential Internet service faces competition from the phone companies' DSL, FTTH and wireless broadband offerings as well as from a variety of companies that offer other forms of online services, including wireless and satellite-based broadband services. Our residential voice service and our planned mobile service competes with wireless and wireline phone providers, as well as other forms of communication, such as text messaging on cellular phones, instant messaging, social networking services, video conferencing and email. Competition from these companies, including intensive marketing efforts with aggressive pricing, exclusive programming and increased HD broadcasting may have an adverse impact on our ability to attract and retain customers.

Overbuilds could also adversely affect our growth, financial condition, and results of operations, by creating or increasing competition. We are aware of traditional overbuild situations impacting certain of our markets, however, we are unable to predict the extent to which additional overbuild situations may occur.

Our services may not allow us to compete effectively. Competition may reduce our expected growth of future cash flows which may contribute to future impairments of our franchises and goodwill and our ability to meet cash flow requirements, including debt service requirements. For additional information regarding the competition we face, see "Business -Competition" and "-Regulation and Legislation."

We face risks relating to competition for the leisure time and discretionary spending of audiences, which has intensified in part due to advances in technology and changes in consumer expectations and behavior.

In addition to the various competitive factors discussed above, we are subject to risks relating to increasing competition for the leisure time, shifting consumer needs and discretionary spending of consumers. We compete with all other sources of entertainment, news and information delivery, as well as a broad range of communications products and services. Technological advancements, such as new video formats and Internet streaming and downloading of programming that can be viewed on televisions, computers, smartphones and tablets, many of which have been beneficial to us, have nonetheless increased the number of entertainment and information delivery choices available to consumers and intensified the challenges posed by audience fragmentation.

Newer products and services, particularly alternative methods for the distribution, sale and viewing of content will likely continue to be developed, further increasing the number of competitors that we face. The increasing number of choices available to audiences, including low-cost or free choices, could negatively impact not only consumer demand for our products and services, but also advertisers' willingness to purchase advertising from us. We compete for the sale of advertising revenue with television networks and stations, as well as other advertising platforms, such as radio, print and, increasingly, online media. Our failure to effectively anticipate or adapt to new technologies and changes in consumer expectations and behavior could significantly adversely affect our competitive position and our business and results of operations.

Our exposure to the economic conditions of our current and potential customers, vendors and third parties could adversely affect our cash flow, results of operations and financial condition.

We are exposed to risks associated with the economic conditions of our current and potential customers, the potential financial instability of our customers and their financial ability to purchase our products. If there were a general economic downturn, we may experience increased cancellations by our customers or unfavorable changes in the mix of products purchased, including an increase in the number of homes that replace their video service with Internet-delivered and/or over-air content, which would negatively impact our ability to attract customers, increase rates and maintain or increase revenue. In addition, providing video

services is an established and highly penetrated business. Our ability to gain new video subscribers is dependent to a large extent on growth in occupied housing in our service areas, which is influenced by both national and local economic conditions. Weak economic conditions may also have a negative impact on our advertising revenue. These events have adversely affected us in the past, and may adversely affect our cash flow, results of operations and financial condition if a downturn were to occur.

In addition, we are susceptible to risks associated with the potential financial instability of the vendors and third parties on which we rely to provide products and services or to which we outsource certain functions. The same economic conditions that may affect our customers, as well as volatility and disruption in the capital and credit markets, also could adversely affect vendors and third parties and lead to significant increases in prices, reduction in output or the bankruptcy of our vendors or third parties upon which we rely. Any interruption in the services provided by our vendors or by third parties could adversely affect our cash flow, results of operation and financial condition.

We face risks inherent in our commercial business.

We may encounter unforeseen difficulties as we increase the scale of our service offerings to businesses. We sell Internet access, data networking and fiber connectivity to cellular towers and office buildings, and video and business voice services to businesses and have increased our focus on growing this business. In order to grow our commercial business, we expect to continue to invest in technology, equipment and personnel focused on the commercial business. Commercial business customers often require service level agreements and generally have heightened customer expectations for reliability of services. If our efforts to build the infrastructure to scale the commercial business are not successful, the growth of our commercial services business would be limited. We depend on interconnection and related services provided by certain third parties for the growth of our commercial business. As a result, our ability to implement changes as the services grow may be limited. If we are unable to meet these service level requirements or expectations, our commercial business could be adversely affected. Finally, we expect advances in communications technology, as well as changes in the marketplace and the regulatory and legislative environment. Consequently, we are unable to predict the effect that ongoing or future developments in these areas might have on our voice and commercial businesses and operations.

Programming costs are rising at a much faster rate than wages or inflation, and we may not have the ability to reduce or moderate the growth rates of, or pass on to our customers, our increasing programming costs, which would adversely affect our cash flow and operating margins.

Video programming has been, and is expected to continue to be, our largest operating expense item. In recent years, the cable industry has experienced a rapid escalation in the cost of programming. We expect programming costs to continue to increase due to a variety of factors including amounts paid for broadcast station retransmission consent, annual increases imposed by programmers, including sports programmers, and the carriage of incremental programming, including new services and VOD programming. The inability to fully pass programming cost increases on to our customers has had, and is expected in the future to have, an adverse impact on our cash flow and operating margins associated with the video product. We have programming contracts that have expired and others that will expire at or before the end of 2018. There can be no assurance that these agreements will be renewed on favorable or comparable terms. In addition, a number of programmers have begun to sell their services through alternative distribution channels, including IP-based platforms, which are less secure than our own video distribution platforms. There is growing evidence that these less secure video distribution platforms are leading to video product theft via password sharing among consumers. Password sharing may drive down the number of customers who pay for certain programming, putting programmer revenues at risk, and which in turn may cause certain programmers to seek even higher programming fees from us. To the extent that we are unable to reach agreement with certain programmers on terms that we believe are reasonable, we have been, and may be in the future, forced to remove such programming channels from our line-up, which may result in a loss of customers. Our failure to carry programming that is attractive to our customers could adversely impact our customer levels, operations and financial results. In addition, if our Internet customers are unable to access desirable content online because content providers block or limit access by our customers as a class, our ability to gain and retain customers, especially Internet customers, may be negatively impacted.

Increased demands by owners of some broadcast stations for carriage of other services or payments to those broadcasters for retransmission consent are likely to further increase our programming costs. Federal law allows commercial television broadcast stations to make an election between “must-carry” rights and an alternative “retransmission-consent” regime. When a station opts for the retransmission consent regime, we are not allowed to carry the station’s signal without that station’s permission. In some cases, we carry stations under short-term arrangements while we attempt to negotiate new long-term retransmission agreements. If negotiations with these programmers prove unsuccessful, they could require us to cease carrying their signals, possibly for an indefinite period. Any loss of stations could make our video service less attractive to customers, which could result in less subscription and advertising revenue. In retransmission-consent negotiations, broadcasters often condition consent with respect to one station on carriage of one or more other stations or programming services in which they or their affiliates have an interest.

Carriage of these other services, as well as increased fees for retransmission rights, may increase our programming expenses and diminish the amount of capacity we have available to introduce new services, which could have an adverse effect on our business and financial results.

Our inability to respond to technological developments and meet customer demand for new products and services could adversely affect our ability to compete effectively.

We operate in a highly competitive, consumer-driven and rapidly changing environment. From time to time, we may pursue strategic initiatives, including, for example, our mobile strategy. Our success is, to a large extent, dependent on our ability to acquire, develop, adopt, upgrade and exploit new and existing technologies to address consumers' changing demands and distinguish our services from those of our competitors. We may not be able to accurately predict technological trends or the success of new products and services. If we choose technologies or equipment that are less effective, cost-efficient or attractive to customers than those chosen by our competitors, if we offer services that fail to appeal to consumers, are not available at competitive prices or that do not function as expected, or we are not able to fund the expenditures necessary to keep pace with technological developments, our competitive position could deteriorate, and our business and financial results could suffer.

The ability of some of our competitors to introduce new technologies, products and services more quickly than we do may adversely affect our competitive position. Furthermore, advances in technology, decreases in the cost of existing technologies or changes in competitors' product and service offerings may require us in the future to make additional research and development expenditures or to offer at no additional charge or at a lower price certain products and services that we currently offer to customers separately or at a premium. In addition, the uncertainty of our ability, and the costs, to obtain intellectual property rights from third parties could impact our ability to respond to technological advances in a timely and effective manner.

Our inability to maintain and expand our upgraded systems and provide advanced services such as a state of the art user interface in a timely manner, or to anticipate the demands of the marketplace, could materially adversely affect our ability to attract and retain customers. In addition, as we launch our new mobile services using virtual network operator rights from a third party, we expect an initial funding period to grow a new product as well as negative working capital impacts from the timing of device-related cash flows when we provide the handset or tablet pursuant to equipment installation plans. Consequently, our growth, financial condition and results of operations could suffer materially.

We depend on third party service providers, suppliers and licensors; thus, if we are unable to procure the necessary services, equipment, software or licenses on reasonable terms and on a timely basis, our ability to offer services could be impaired, and our growth, operations, business, financial results and financial condition could be materially adversely affected.

We depend on a limited number of third party service providers, suppliers and licensors to supply some of the services, hardware, software and operational support necessary to provide some of our services. Some of our hardware, software and operational support vendors, and service providers represent our sole source of supply or have, either through contract or as a result of intellectual property rights, a position of some exclusivity. If any of these parties breaches or terminates its agreement with us or otherwise fails to perform its obligations in a timely manner, demand exceeds these vendors' capacity, they experience operating or financial difficulties, they significantly increase the amount we pay for necessary products or services, or they cease production of any necessary product due to lack of demand, profitability or a change in ownership or are otherwise unable to provide the equipment or services we need in a timely manner, at our specifications and at reasonable prices, our ability to provide some services might be materially adversely affected, or the need to procure or develop alternative sources of the affected materials or services might delay our ability to serve our customers. In addition, the existence of only a limited number of vendors of key technologies can lead to less product innovation and higher costs. These events could materially and adversely affect our ability to retain and attract customers and our operations, business, financial results and financial condition.

Our cable systems have historically been restricted to using one of two proprietary conditional access security systems, which we believe has limited the number of manufacturers producing set-top boxes for such systems. As an alternative, we developed a new conditional access security system which can be downloaded into set-top boxes with features we specify that could be provided by a variety of manufacturers. We refer to our specified set-top box as our Worldbox. Additionally, we are developing technology to allow our two current proprietary conditional access security systems to be software downloadable into our Worldbox. In order to realize the broadest benefits of our Worldbox technology, we must now complete the support for the downloadable proprietary conditional access security systems within the Worldbox. We cannot provide assurances that this implementation will ultimately be successful or completed in the expected timeframe or at the expected budget.

Our business may be adversely affected if we cannot continue to license or enforce the intellectual property rights on which our business depends.

We rely on patent, copyright, trademark and trade secret laws and licenses and other agreements with our employees, customers, suppliers and other parties to establish and maintain our intellectual property rights in technology and the products and services used in our operations. Also, because of the rapid pace of technological change, we both develop our own technologies, products and services and rely on technologies developed or licensed by third parties. However, any of our intellectual property rights could be challenged or invalidated, or such intellectual property rights may not be sufficient to permit us to take advantage of current industry trends or otherwise to provide competitive advantages, which could result in costly redesign efforts, discontinuance of certain product or service offerings or other competitive harm. We may not be able to obtain or continue to obtain licenses from these third parties on reasonable terms, if at all. In addition, claims of intellectual property infringement could require us to enter into royalty or licensing agreements on unfavorable terms, incur substantial monetary liability or be enjoined preliminarily or permanently from further use of the intellectual property in question, which could require us to change our business practices or offerings and limit our ability to compete effectively. Even unsuccessful claims can be time-consuming and costly to defend and may divert management's attention and resources away from our business. In recent years, the number of intellectual property infringement claims has been increasing in the communications and entertainment industries, and, with increasing frequency, we are party to litigation alleging that certain of our services or technologies infringe the intellectual property rights of others.

Various events could disrupt our networks, information systems or properties and could impair our operating activities and negatively impact our reputation and financial results.

Network and information systems technologies are critical to our operating activities, both for our internal uses, such as network management and supplying services to our customers, including customer service operations and programming delivery. Network or information system shutdowns or other service disruptions caused by events such as computer hacking, dissemination of computer viruses, worms and other destructive or disruptive software, "cyber attacks," process breakdowns, denial of service attacks and other malicious activity pose increasing risks. Both unsuccessful and successful "cyber attacks" on companies have continued to increase in frequency, scope and potential harm in recent years. While we develop and maintain systems seeking to prevent systems-related events and security breaches from occurring, the development and maintenance of these systems is costly and requires ongoing monitoring and updating as techniques used in such attacks become more sophisticated and change frequently. We, and the third parties on which we rely, may be unable to anticipate these techniques or implement adequate preventive measures. While from time to time attempts have been made to access our network, these attempts have not as yet resulted in any material release of information, degradation or disruption to our network and information systems.

Our network and information systems are also vulnerable to damage or interruption from power outages, telecommunications failures, accidents, natural disasters (including extreme weather arising from short-term or any long-term changes in weather patterns), terrorist attacks and similar events. Further, the impacts associated with extreme weather or long-term changes in weather patterns, such as rising sea levels or increased and intensified storm activity, may cause increased business interruptions or may require the relocation of some of our facilities. Our system redundancy may be ineffective or inadequate, and our disaster recovery planning may not be sufficient for all eventualities.

Any of these events, if directed at, or experienced by, us or technologies upon which we depend, could have adverse consequences on our network, our customers and our business, including degradation of service, service disruption, excessive call volume to call centers, and damage to our or our customers' equipment and data. Large expenditures may be necessary to repair or replace damaged property, networks or information systems or to protect them from similar events in the future. Moreover, the amount and scope of insurance that we maintain against losses resulting from any such events or security breaches may not be sufficient to cover our losses or otherwise adequately compensate us for any disruptions to our business that may result. Any such significant service disruption could result in damage to our reputation and credibility, customer dissatisfaction and ultimately a loss of customers or revenue. Any significant loss of customers or revenue, or significant increase in costs of serving those customers, could adversely affect our growth, financial condition and results of operations.

Furthermore, our operating activities could be subject to risks caused by misappropriation, misuse, leakage, falsification or accidental release or loss of information maintained in our information technology systems and networks and those of our third-party vendors, including customer, personnel and vendor data. We provide certain confidential, proprietary and personal information to third parties in connection with our business, and there is a risk that this information may be compromised.

As a result of the increasing awareness concerning the importance of safeguarding personal information, the potential misuse of such information and legislation that has been adopted or is being considered regarding the protection, privacy and security of personal information, information-related risks are increasing, particularly for businesses like ours that process, store and transmit large amount of data, including personal information for our customers. We could be exposed to significant costs if such risks

were to materialize, and such events could damage our reputation, credibility and business and have a negative impact on our revenue. We could be subject to regulatory actions and claims made by consumers in private litigations involving privacy issues related to consumer data collection and use practices. We also could be required to expend significant capital and other resources to remedy any such security breach.

The risk described above may be increased during the period in which we are integrating our people, processes and systems as a result of the Transactions.

For tax purposes, Charter could experience a deemed ownership change in the future that could limit its ability to use its tax loss carryforwards.

Charter had approximately $10.9 billion of federal tax net operating loss carryforwards resulting in a gross deferred tax asset of approximately $2.3 billion as of December 31, 2017. These losses resulted from the operations of Charter Communications Holdings Company, LLC ("Charter Holdco") and its subsidiaries and from loss carryforwards received as a result of the TWC Transaction. Federal tax net operating loss carryforwards expire in the years 2018 through 2035. In addition, Charter had state tax net operating loss carryforwards resulting in a gross deferred tax asset (net of federal tax benefit) of approximately $359 million as of December 31, 2017. State tax net operating loss carryforwards generally expire in the years 2018 through 2037.

In the past, Charter has experienced ownership changes as defined in Section 382 of the Internal Revenue Code of 1986, as amended (the "Code"). In general, an ownership change occurs whenever the percentage of the stock of a corporation owned, directly or indirectly, by 5-percent stockholders (within the meaning of Section 382 of the Code) increases by more than 50 percentage points over the lowest percentage of the stock of such corporation owned, directly or indirectly, by such 5-percent stockholders at any time over the preceding three years. As a result, Charter is subject to an annual limitation on the use of its loss carryforwards which existed at November 30, 2009 for the first ownership change, those that existed at May 1, 2013 for the second ownership change, and those created at May 18, 2016 for the third ownership change. The limitation on Charter's ability to use its loss carryforwards, in conjunction with the loss carryforward expiration provisions, could reduce Charter's ability to use a portion of its loss carryforwards to offset future taxable income, which could result in Charter being required to make material cash tax payments. Charter's ability to make such income tax payments, if any, will depend at such time on its liquidity or its ability to raise additional capital, and/or on receipt of payments or distributions from Charter Holdco and its subsidiaries.

If Charter were to experience additional ownership changes in the future (as a result of purchases and sales of stock by its 5-percent stockholders, new issuances or redemptions of our stock, certain acquisitions of its stock and issuances, redemptions, sales or other dispositions or acquisitions of interests in its 5-percent stockholders), Charter's ability to use its loss carryforwards could become subject to further limitations.

If Legacy TWC's Separation Transactions (as defined below), including the Distribution (as defined below), do not qualify as tax-free, either as a result of actions taken or not taken by Legacy TWC or as a result of the failure of certain representations by Legacy TWC to be true, Legacy TWC has agreed to indemnify Time Warner Inc. for its taxes resulting from such disqualification, which would be significant.

As part of Legacy TWC's separation from Time Warner Inc. ("Time Warner") in March 2009 (the "Separation"), Time Warner received a private letter ruling from the Internal Revenue Service ("IRS") and Time Warner and Legacy TWC received opinions of tax counsel confirming that the transactions undertaken in connection with the Separation, including the transfer by a subsidiary of Time Warner of its 12.43% non-voting common stock interest in TW NY to Legacy TWC in exchange for 80 million newly issued shares of Legacy TWC's Class A common stock, Legacy TWC's payment of a special cash dividend to holders of Legacy TWC's outstanding Class A and Class B common stock, the conversion of each share of Legacy TWC's outstanding Class A and Class B common stock into one share of Legacy TWC common stock, and the pro-rata dividend of all shares of Legacy TWC common stock held by Time Warner to holders of record of Time Warner's common stock (the "Distribution" and, together with all of the transactions, the "Separation Transactions"), should generally qualify as tax-free to Time Warner and its stockholders for U.S. federal income tax purposes. The ruling and opinions rely on certain facts, assumptions, representations and undertakings from Time Warner and Legacy TWC regarding the past and future conduct of the companies' businesses and other matters. If any of these facts, assumptions, representations or undertakings are incorrect or not otherwise satisfied, Time Warner and its stockholders may not be able to rely on the ruling or the opinions and could be subject to significant tax liabilities. Notwithstanding the private letter ruling and opinions, the IRS could determine on audit that the Separation Transactions should be treated as taxable transactions if it determines that any of these facts, assumptions, representations or undertakings are not correct or have been violated, or for other reasons, including as a result of significant changes in the stock ownership of Time Warner or Legacy TWC after the Distribution.

Under the tax sharing agreement among Time Warner and Legacy TWC, Legacy TWC generally would be required to indemnify Time Warner against its taxes resulting from the failure of any of the Separation Transactions to qualify as tax-free as a result of (i) certain actions or failures to act by Legacy TWC or (ii) the failure of certain representations made by Legacy TWC to be true. In addition, even if Legacy TWC bears no contractual responsibility for taxes related to a failure of the Separation Transactions to qualify for their intended tax treatment, Treasury regulation section 1.1502-6 imposes on Legacy TWC several liability for all Time Warner federal income tax obligations relating to the period during which Legacy TWC was a member of the Time Warner federal consolidated tax group, including the date of the Separation Transactions. Similar provisions may apply under foreign, state or local law. Absent Legacy TWC causing the Separation Transactions to not qualify as tax-free, Time Warner has indemnified Legacy TWC against such several liability arising from a failure of the Separation Transactions to qualify for their intended tax treatment.

If we are unable to retain key employees, our ability to manage our business could be adversely affected.

Our operational results have depended, and our future results will depend, upon the retention and continued performance of our management team. Our ability to retain and hire new key employees for management positions could be impacted adversely by the competitive environment for management talent in the broadband communications industry. The loss of the services of key members of management and the inability or delay in hiring new key employees could adversely affect our ability to manage our business and our future operational and financial results.

Risks Related to Our Indebtedness

We have a significant amount of debt and may incur significant additional debt, including secured debt, in the future, which could adversely affect our financial health and our ability to react to changes in our business.

We have a significant amount of debt and may (subject to applicable restrictions in our debt instruments) incur additional debt in the future. As of December 31, 2017, our total principal amount of debt was approximately $69.0 billion.

Our significant amount of debt could have consequences, such as:

- impact our ability to raise additional capital at reasonable rates, or at all;
- make us vulnerable to interest rate increases, in part because approximately 14% of our borrowings as of December 31, 2017 were, and may continue to be, subject to variable rates of interest;
- expose us to increased interest expense to the extent we refinance existing debt with higher cost debt;
- require us to dedicate a significant portion of our cash flow from operating activities to make payments on our debt, reducing our funds available for working capital, capital expenditures, and other general corporate expenses;
- limit our flexibility in planning for, or reacting to, changes in our business, the cable and telecommunications industries, and the economy at large;
- place us at a disadvantage compared to our competitors that have proportionately less debt; and
- adversely affect our relationship with customers and suppliers.

If current debt amounts increase, our business results are lower than expected, or credit rating agencies downgrade our debt limiting our access to investment grade markets, the related risks that we now face will intensify.

The agreements and instruments governing our debt contain restrictions and limitations that could significantly affect our ability to operate our business, as well as significantly affect our liquidity.

Our credit facilities and the indentures governing our debt contain a number of significant covenants that could adversely affect our ability to operate our business, our liquidity, and our results of operations. These covenants restrict, among other things, our and our subsidiaries' ability to:

- incur additional debt;
- repurchase or redeem equity interests and debt;
- issue equity;
- make certain investments or acquisitions;
- pay dividends or make other distributions;
- dispose of assets or merge;
- enter into related party transactions; and
- grant liens and pledge assets.

Additionally, the Charter Operating credit facilities require Charter Operating to comply with a maximum total leverage covenant and a maximum first lien leverage covenant. The breach of any covenants or obligations in our indentures or credit facilities, not otherwise waived or amended, could result in a default under the applicable debt obligations and could trigger acceleration of those obligations, which in turn could trigger cross defaults under other agreements governing our long-term indebtedness. In addition, the secured lenders under our notes and the Charter Operating credit facilities could foreclose on their collateral, which includes equity interests in our subsidiaries, and exercise other rights of secured creditors.

Risks Related to Ownership Position of Liberty Broadband Corporation and Advance/Newhouse Partnership

Liberty Broadband and A/N have governance rights that give them influence over corporate transactions and other matters.

Liberty Broadband currently owns a significant amount of Charter Class A common stock and is entitled to certain governance rights with respect to Charter. A/N currently owns Charter Class A common stock and a significant amount of membership interests in our subsidiary Charter Holdings that are convertible into Charter Class A common stock and is entitled to certain governance rights with respect to Charter. Members of the Charter board of directors include directors who are also officers and directors of Liberty Broadband and directors who are current or former officers and directors of A/N. Dr. John Malone is the Chairman of Liberty Broadband, and Mr. Greg Maffei is the president and chief executive officer of Liberty Broadband. Steven Miron is the Chief Executive Officer of A/N and Michael Newhouse is an officer or director of several of A/N's affiliates. As of December 31, 2017, Liberty Broadband beneficially held approximately approximately 21% of Charter's Class A common stock (including shares owned by Liberty Interactive over which Liberty Broadband holds an irrevocable voting proxy) and A/N beneficially held approximately approximately 13% of Charter's Class A common stock, in each case assuming the conversion of the membership interests held by A/N. Pursuant to the stockholders agreement between Liberty Broadband, A/N and Charter, Liberty Broadband currently has the right to designate up to three directors as nominees for Charter's board of directors and A/N currently has the right to designate up to two directors as nominees for Charter's board of directors with one designated director to be appointed to each of the audit committee, the nominating and corporate governance committee, the compensation and benefits committee and the Finance Committee, in each case provided that each maintains certain specified voting or equity ownership thresholds and each nominee meets certain applicable requirements or qualifications.

In connection with the TWC Transaction, Liberty Broadband and Liberty Interactive entered into a proxy and right of first refusal agreement, pursuant to which Liberty Interactive granted Liberty Broadband an irrevocable proxy to vote all Charter Class A common stock owned beneficially or of record by Liberty Interactive, with certain exceptions. In addition, at the closing of the Bright House Transaction, A/N and Liberty Broadband entered into a proxy agreement pursuant to which A/N granted to Liberty Broadband a 5-year irrevocable proxy (which we refer to as the "A/N proxy") to vote, subject to certain exceptions, that number of shares of Charter Class A common stock and Charter Class B common stock, in each case held by A/N (such shares are referred to as the "proxy shares"), that will result in Liberty Broadband having voting power in Charter equal to 25.01% of the outstanding voting power of Charter, provided, that the voting power of the proxy shares is capped at 7.0% of the outstanding voting power of Charter. Therefore, giving effect to the Liberty Interactive proxy and the A/N proxy and the voting cap contained in the stockholders agreement, Liberty Broadband has 25.01% of the outstanding voting power in Charter. The stockholders agreement and Charter's amended and restated certificate of incorporation fixes the size of the board at 13 directors. Liberty Broadband and A/N are required to vote (subject to the applicable voting cap) their respective shares of Charter Class A common stock and Charter Class B common stock for the director nominees nominated by the nominating and corporate governance committee of the board of directors, including the respective designees of Liberty Broadband and A/N, and against any other nominees, except that, with respect to the unaffiliated directors, Liberty Broadband and A/N must instead vote in the same proportion as the voting securities are voted by stockholders other than A/N and Liberty Broadband or any group which includes any of them are voted, if doing so would cause a different outcome with respect to the unaffiliated directors. As a result of their rights under the stockholders agreement and their significant equity and voting stakes in Charter, Liberty Broadband and/or A/N, who may have interests different from those of other stockholders, will be able to exercise substantial influence over certain matters relating to the governance of Charter, including the approval of significant corporate actions, such as mergers and other business combination transactions.

The stockholders agreement provides A/N and Liberty Broadband with preemptive rights with respect to issuances of Charter equity in connection with certain transactions, and in the event that A/N or Liberty Broadband exercises these rights, holders of Charter Class A common stock may experience further dilution.

The stockholders agreement provides that A/N and Liberty Broadband will have certain contractual preemptive rights over issuances of Charter equity securities in connection with capital raising transactions, merger and acquisition transactions, and in certain other circumstances. Holders of Charter Class A common stock will not be entitled to similar preemptive rights with respect to such transactions. As a result, if Liberty Broadband and/or A/N elect to exercise their preemptive rights, (i) these parties would not experience the dilution experienced by the other holders of Charter Class A common stock, and (ii) such other holders of Charter Class A common stock may experience further dilution of their interest in Charter upon such exercise.

Risks Related to Regulatory and Legislative Matters

Our business is subject to extensive governmental legislation and regulation, which could adversely affect our business.

Regulation of the cable industry has increased cable operators' operational and administrative expenses and limited their revenues. Cable operators are subject to various laws and regulations including those covering the following:

- the provision of high-speed Internet service, including transparency rules;
- the provision of voice communications;
- cable franchise renewals and transfers;
- the provisioning and marketing of cable equipment and compatibility with new digital technologies;
- customer and employee privacy and data security;
- limited rate regulation of video service;
- copyright royalties for retransmitting broadcast signals;
- when a cable system must carry a particular broadcast station and when it must first obtain retransmission consent to carry a broadcast station;
- the provision of channel capacity to unaffiliated commercial leased access programmers;
- limitations on our ability to enter into exclusive agreements with multiple dwelling unit complexes and control our inside wiring;
- equal employment opportunity, emergency alert systems, disability access, technical standards, marketing practices, customer service, and consumer protection; and
- approval for mergers and acquisitions often accompanied by the imposition of restrictions and requirements on an applicant's business in order to secure approval of the proposed transaction.

Legislators and regulators at all levels of government frequently consider changing, and sometimes do change, existing statutes, rules, regulations, or interpretations thereof, or prescribe new ones. Any future legislative, judicial, regulatory or administrative actions may increase our costs or impose additional restrictions on our businesses.

As a result of the closing of the Transactions, our businesses are subject to the conditions set forth in the FCC Order and the DOJ Consent Decree and those imposed by state utility commissions and local franchise authorities, and there can be no assurance that these conditions will not have an adverse effect on our businesses and results of operations.

In connection with the Transactions, the FCC Order, the DOJ Consent Decree, and the approvals from state utility commissions and local franchise authorities incorporated numerous commitments and voluntary conditions made by the parties and imposed numerous conditions on our businesses relating to the operation of our business and other matters. Among other things, (i) we are not permitted to charge usage-based prices or impose data caps and are prohibited from charging interconnection fees for qualifying parties; (ii) we are prohibited from entering into or enforcing any agreement with a programmer that forbids, limits or creates incentives to limit the programmer's provision of content to OVD and cannot retaliate against programmers for licensing to OVDs; (iii) we are not able to avail ourself of other distributors' MFN provisions if they are inconsistent with this prohibition; (iv) we must undertake a number of actions designed to promote diversity; (v) we appointed an independent compliance monitor and comply with a broad array of reporting requirements; and (vi) we must satisfy various other conditions relating to our Internet services, including building out an additional two million locations with access to a high-speed connection of at least 60 megabits per second, and implementing a reduced price high-speed Internet program for low income families. These and other conditions and commitments relating to the Transactions are of varying duration, ranging from three to seven years. In light of the breadth and duration of the conditions and potential changes in market conditions during the time the conditions and commitments are in effect, there can be no assurance that our compliance, and ability to comply, with the conditions will not have a material adverse effect on our business or results of operations.

Changes to existing statutes, rules, regulations, or interpretations thereof, or adoption of new ones, could have an adverse effect on our business.

There are ongoing efforts to amend or expand the federal, state, and local regulation of some of the services offered over our cable systems, which may compound the regulatory risks we already face. For example, with respect to our retail broadband Internet access service, the FCC has reclassified the service twice in the last few years, with the first change adding regulatory obligations and the second change largely removing those new regulatory obligations. These changes reflect a lack of regulatory certainty in this business area, which may continue as a result of litigation, as well as future legislative or administrative changes.

Other potential legislative and regulatory changes could adversely impact our business by increasing our costs and competition and limiting our ability to offer services in a manner that that would maximize our revenue potential. These changes could include, for example, the adoption of new privacy restrictions on our collection, use and disclosure of certain customer information, new data security and cybersecurity mandates that could result in additional network and information security requirements for our business, new restraints on our discretion over programming decisions, including the provision of public, educational and governmental access programming and unaffiliated, commercial leased access programming, new restrictions on the rates we charge for video programming and the marketing of that video programming, changes to the cable industry's compulsory copyright license to carry broadcast signals, new requirements to assure the availability of navigation devices (such as set-top boxes) from third party providers, new Universal Service Fund obligations on our provision of Internet service that would add to the cost of that service; increases in government-administered broadband subsidies to rural areas that could result in subsidized overbuilding of our more rural facilities, and changes in the regulatory framework for VoIP phone service, including the scope of regulatory obligations associated with our VoIP service and our ability to interconnect our VoIP service with incumbent providers of traditional telecommunications service.

If any of these pending laws and regulations are enacted, they could affect our operations and require significant expenditures. We cannot predict future developments in these areas, and we are already subject to Charter-specific conditions regarding certain Internet practices as a result of the FCC's approval of the Transactions, but any changes to the regulatory framework for our video, Internet or VoIP services could have a negative impact on our business and results of operations.

It remains uncertain what rule changes, if any, will ultimately be adopted by Congress and the FCC and what operating or financial impact any such rules might have on us, including on our programming agreements, customer privacy and the user experience. In addition, the FCC's Enforcement Bureau has been actively investigating certain industry practices of various companies and imposing forfeitures for alleged regulatory violations.

Our cable system franchises are subject to non-renewal or termination and are non-exclusive. The failure to renew a franchise or the grant of additional franchises in one or more key markets could adversely affect our business.

Our cable systems generally operate pursuant to franchises, permits, and similar authorizations issued by a state or local governmental authority controlling the public rights-of-way. Many franchises establish comprehensive facilities and service requirements, as well as specific customer service standards and monetary penalties for non-compliance. In many cases, franchises are terminable if the franchisee fails to comply with significant provisions set forth in the franchise agreement governing system operations. Franchises are generally granted for fixed terms and must be periodically renewed. Franchising authorities may resist granting a renewal if either past performance or the prospective operating proposal is considered inadequate. Franchise authorities often demand concessions or other commitments as a condition to renewal. In some instances, local franchises have not been renewed at expiration, and we have operated and are operating under either temporary operating agreements or without a franchise while negotiating renewal terms with the local franchising authorities.

We cannot assure you that we will be able to comply with all significant provisions of our franchise agreements and certain of our franchisers have from time to time alleged that we have not complied with these agreements. Additionally, although historically we have renewed our franchises without incurring significant costs, we cannot assure you that we will be able to renew, or to renew as favorably, our franchises in the future. A termination of or a sustained failure to renew a franchise in one or more key markets could adversely affect our business in the affected geographic area.

Our cable system franchises are non-exclusive. Consequently, local and state franchising authorities can grant additional franchises to competitors in the same geographic area or operate their own cable systems. In some cases, local government entities and municipal utilities may legally compete with us on more favorable terms. Potential competitors (like Google) have recently pursued and obtained local franchises that are more favorable than the incumbent operator's franchise.

Tax legislation and administrative initiatives or challenges to our tax and fee positions could adversely affect our results of operations and financial condition.

We operate cable systems in locations throughout the United States and, as a result, we are subject to the tax laws and regulations of federal, state and local governments. From time to time, various legislative and/or administrative initiatives may be proposed that could adversely affect our tax positions. There can be no assurance that our effective tax rate or tax payments will not be adversely affected by these initiatives. Certain states and localities have imposed or are considering imposing new or additional taxes or fees on our services or changing the methodologies or base on which certain fees and taxes are computed. Potential changes include additional taxes or fees on our services which could impact our customers, changes to income tax sourcing rules and other changes to general business taxes, central/unit-level assessment of property taxes and other matters that could increase our income, franchise, sales, use and/or property tax liabilities. For example, some local franchising authorities are seeking to impose franchise fee assessments on our broadband Internet access service, and more may do so in the future. If they do so, and challenges to such assessments are unsuccessful, it could adversely impact our costs. In addition, federal, state and local tax laws and regulations are extremely complex and subject to varying interpretations. There can be no assurance that our tax positions will not be challenged by relevant tax authorities or that we would be successful in any such challenge.

Item 1B. *Unresolved Staff Comments.*

None.

Item 2. *Properties.*

Our principal physical assets consist of cable distribution plant and equipment, including signal receiving, encoding and decoding devices, headend reception facilities, distribution systems, and customer premise equipment for each of our cable systems.

Our cable plant and related equipment are generally attached to utility poles under pole rental agreements with local public utilities and telephone companies, and in certain locations are buried in underground ducts or trenches. We own or lease real property for signal reception sites, and own our service vehicles.

We generally lease space for business offices. Our headend and tower locations are located on owned or leased parcels of land, and we generally own the towers on which our equipment is located.

The physical components of our cable systems require maintenance as well as periodic upgrades to support the new services and products we introduce. See “Item 1. Business – Our Network Technology and Customer Premise Equipment.” We believe that our properties are generally in good operating condition and are suitable for our business operations.

Item 3. *Legal Proceedings.*

The legal proceedings information set forth in Note 20 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data” in this Annual Report on Form 10-K is incorporated herein by reference.

Item 4. *Mine Safety Disclosures.*

Not applicable.

PART II

Item 5. ***Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.***

(A) Market Information

Charter's Class A common stock is listed on the NASDAQ Global Select Market under the symbol "CHTR."

The following table sets forth, for the periods indicated, the range of high and low last reported sale price per share of Charter's Class A common stock on the NASDAQ Global Select Market.

Class A Common Stock

	High	Low
2016		
First quarter	$ 204.10	$ 159.53
Second quarter	$ 233.11	$ 197.91
Third quarter	$ 277.56	$ 231.77
Fourth quarter	$ 292.19	$ 244.10
2017		
First quarter	$ 333.15	$ 285.77
Second quarter	$ 353.03	$ 313.11
Third quarter	$ 402.50	$ 328.67
Fourth quarter	$ 371.09	$ 316.29

(B) Holders

As of December 31, 2017, there were approximately 14,101 holders of record of Charter's Class A common stock and one holder of Charter's Class B common stock.

(C) Dividends

Charter has not paid cash dividends on its common stock and does not intend to do so in the foreseeable future.

(D) Securities Authorized for Issuance Under Equity Compensation Plans

The following information is provided as of December 31, 2017 with respect to equity compensation plans:

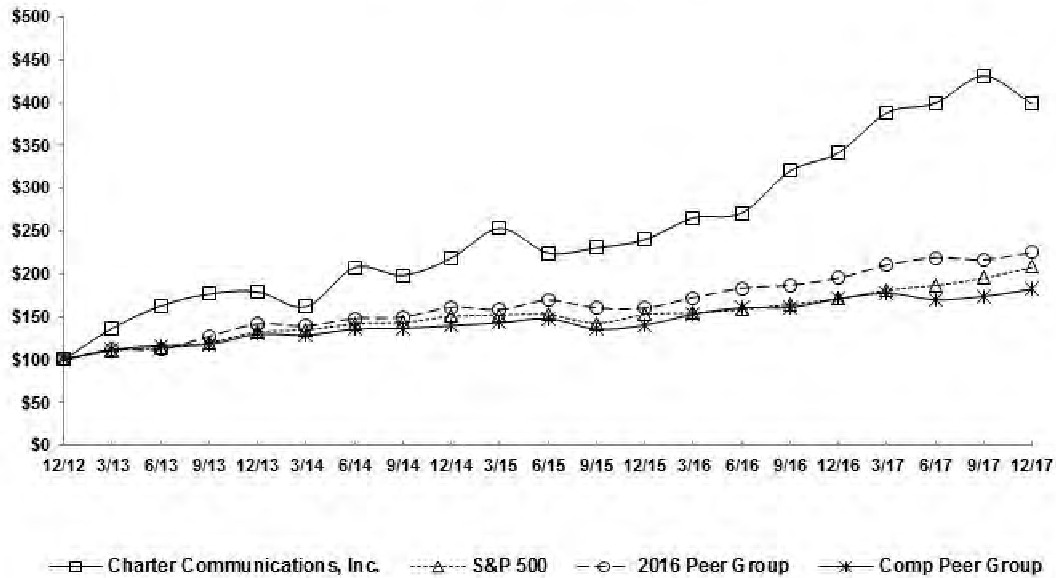
Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	Weighted Average Exercise Price of Outstanding Warrants and Rights	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans
Equity compensation plans approved by security holders	12,039,412 (1)	$ 200.07	5,844,588 (1)
Equity compensation plans not approved by security holders	—	$ —	—
TOTAL	12,039,412 (1)		5,844,588 (1)

(1) This total does not include 9,517 shares issued pursuant to restricted stock grants made under our 2009 Stock Incentive Plan, which are subject to vesting based on continued employment and market conditions.

For information regarding securities issued under our equity compensation plans, see Note 16 to our accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

(E) Performance Graph

The graph below shows the cumulative total return on Charter's Class A common stock for the period from December 31, 2012 throughDecember 31, 2017, in comparison to the cumulative total return on Standard & Poor's 500 Index and a peer group consisting of the national cable operators that are most comparable to us in terms of size and nature of operations. The Company's 2017 peer group consists of Verizon, Comcast, AT&T, T-Mobile, Sprint, Dish Network Corporation, Time Warner Inc., Viacom, Inc., CenturyLink, Inc., The Walt Disney Company, Liberty Global Plc, Cisco Systems, Inc., 21 st Century Fox, Inc., BCE Inc. and CBS Corporation. The 2017 peer group was created as a result of merger and acquisition activity that impacted our 2016 peer group index, which had consisted of Comcast and Legacy TWC, as well as to match the peer group utilized by our Compensation and Benefits Committee. The results shown assume that $100 was invested on December 31, 2012 and that all dividends were reinvested. These indices are included for comparative purposes only and do not reflect whether it is management's opinion that such indices are an appropriate measure of the relative performance of the stock involved, nor are they intended to forecast or be indicative of future performance of Charter's Class A common stock.



(F) Recent Sales of Unregistered Securities

During 2017, there were no unregistered sales of securities of the registrant.

(G) Purchases of Equity Securities by the Issuer

The following table presents Charter's purchases of equity securities completed during the fourth quarter of2017 (dollars in millions, except per share data).

Period	Total Number of Shares Purchased [(1)]	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs [(2)]	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs [(2)]
October 1 - 31, 2017	6,756,815	$ 353.40	6,748,900	$2,566
November 1 - 30, 2017	3,506,402	$ 335.97	3,495,881	$1,425
December 1 - 31, 2017	1,198,216	$ 336.03	1,190,300	$1,083

(1) Includes 7,915, 10,521 and 7,916 shares withheld from employees for the payment of taxes and exercise costs upon the exercise of stock options or vesting of other equity awards for the months of October, November and December 2017, respectively.

(2) During the three months ended December 31, 2017, Charter purchased approximately 11.4 million shares of its Class A common stock for approximately $4.0 billion. As of December 31, 2017, Charter had remaining board authority to purchase an additional $1.1 billion of Charter's Class A common stock and/or Charter Holdings common units. Charter Holdings purchased 2.1 million Charter Holdings common units from A/N at an average price per unit of $354.18, or $743 million during the three months ended December 31, 2017. In addition to open market purchases including pursuant to Rule 10b5-1 plans adopted from time to time, Charter may also buy shares of Charter Class A common stock, from time to time, pursuant to private transactions outside of its Rule 10b5-1 plan and any such repurchases would also trigger the repurchases from A/N pursuant to and to the extent provided in the Letter Agreement (defined below). See "Part II. Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations — Liquidity and Capital Resources."

Item 6. ***Selected Financial Data.***

The following table presents selected consolidated financial data for the periods indicated (dollars in millions, except per share data):

	Years Ended December 31,				
	2017	2016	2015	2014	2013
Statement of Operations Data:					
Revenues	$ 41,581	$ 29,003	$ 9,754	$ 9,108	$ 8,155
Income from operations (a)	$ 4,106	$ 2,456	$ 1,114	$ 971	$ 909
Interest expense, net	$ 3,090	$ 2,499	$ 1,306	$ 911	$ 846
Income (loss) before income taxes	$ 1,028	$ 820	$ (331)	$ 53	$ (49)
Net income (loss) attributable to Charter shareholders	$ 9,895	$ 3,522	$ (271)	$ (183)	$ (169)
Income (loss) per common share, basic	$ 38.55	$ 17.05	$ (2.68)	$ (1.88)	$ (1.83)
Income (loss) per common share, diluted	$ 34.09	$ 15.94	$ (2.68)	$ (1.88)	$ (1.83)
Weighted average shares outstanding, basic (b)	256,720,715	206,539,100	101,152,647	97,991,915	92,169,292
Weighted average shares outstanding, diluted (b)	296,703,956	234,791,439	101,152,647	97,991,915	92,169,292
Balance Sheet Data (end of period):					
Investment in cable properties	$ 142,712	$ 144,396	$ 16,375	$ 16,652	$ 16,556
Total assets	$ 146,623	$ 149,067	$ 39,316	$ 24,388	$ 17,129
Total debt	$ 70,231	$ 61,747	$ 35,723	$ 20,887	$ 14,031
Total shareholders' equity (deficit)	$ 47,531	$ 50,366	$ (46)	$ 146	$ 151
Other Financial Data:					
Ratio of earnings to fixed charges (c)	1.33	1.33	N/A	1.06	N/A
Deficiency of earnings to cover fixed charges (c)	N/A	N/A	$ 331	N/A	$ 49

(a) The year ended December 31, 2016 has been restated to reflect the adoption of Accounting Standards Update ("ASU") No. 2017-07, *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost* ("ASU 2017-07"). See Note 22 to our accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

(b) Weighted average number of shares outstanding for the years ended December 31, 2015, 2014 and 2013 have been recast to reflect the application of the Parent Merger Exchange Ratio (as defined in the Merger Agreement). See Note 3 to our accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

(c) Earnings include income (loss) before non-controlling interest and income taxes plus fixed charges. Fixed charges consist of interest expense and an estimated interest component of rent expense.

Comparability of the above information from year to year is affected by acquisitions and dispositions completed by us, including the Transactions. See "Part I. Item 1. Business" for a discussion regarding the Transactions.

Item 7. ***Management's Discussion and Analysis of Financial Condition and Results of Operations.***

Reference is made to "Part I. Item 1A. Risk Factors" and "Cautionary Statement Regarding Forward-Looking Statements," which describe important factors that could cause actual results to differ from expectations and non-historical information contained herein. In addition, the following discussion should be read in conjunction with the audited consolidated financial statements and accompanying notes thereto of Charter included in "Part II. Item 8. Financial Statements and Supplementary Data."

Overview

We are the second largest cable operator in the United States and a leading broadband communications services company providing video, Internet and voice services to approximately 27.2 million residential and business customers at December 31, 2017. In addition, we sell video and online advertising inventory to local, regional and national advertising customers and fiber-delivered communications and managed IT solutions to large enterprise customers. We also own and operate regional sports networks and local sports, news and community channels and sell security and home management services in the residential marketplace. See "Part I. Item 1. Business — Products and Services" for further description of these services, including customer statistics for different services.

In the first half of 2017, we completed the roll-out of SPP to Legacy TWC and Legacy Bright House markets simplifying our offers and improving our packaging of products, allowing us to deliver more value to new and existing customers. As of December 31, 2017, approximately 60% of our residential customers are in an SPP package. In the second half of 2017, we began converting the remaining Legacy TWC and Legacy Bright House analog markets to an all-digital platform enabling us to deliver more HD channels and higher Internet speeds. The bulk of this all-digital initiative will take place in 2018. Our corporate organization, as well as our marketing, sales and product development departments, are centralized. Field operations are managed through eleven regional areas, each designed to represent a combination of designated marketing areas. In 2017, we began migrating Legacy TWC and Legacy Bright House customer care centers to Legacy Charter's model of using virtualized, U.S.-based in-house call centers. We are focused on deploying superior products and service with minimal service disruptions as we integrate our information technology and network operations. We intend to continue to insource the Legacy TWC and Legacy Bright House workforces in our call centers and in our field operations which we expect to lead to lower customer churn and longer customer lifetimes.

Our integration activities will continue in 2018 with the expectation that by 2019 we will have substantially integrated the practices and systems of Legacy Charter, Legacy TWC and Legacy Bright House. In 2018, we will also launch our mobile product. As a result of growth costs for a new product line and implementing our operating strategy across Legacy TWC and Legacy Bright House, we cannot be certain that we will be able to grow revenues or maintain our margins at recent historical rates.

The Company realized revenue, Adjusted EBITDA and income from operations during the periods presented as follows (in millions; all percentages are calculated using whole numbers. Minor differences may exist due to rounding).

	Years ended December 31,			Growth	
	2017	2016	2015	2017 over 2016	2016 over 2015
Actual					
Revenues	$ 41,581	$ 29,003	$ 9,754	43.4%	197.3%
Adjusted EBITDA	$ 15,301	$ 10,592	$ 3,406	44.5%	211.0%
Income from operations	$ 4,106	$ 2,456	$ 1,114	67.2%	120.5%
Pro Forma					
Revenues	$ 41,581	$ 40,023	$ 37,394	3.9%	7.0%
Adjusted EBITDA	$ 15,301	$ 14,464	$ 13,004	5.8%	11.2%
Income from operations[(a)]	$ 4,106	$ 3,886	$ 3,323	5.7%	16.9%

(a) Income from operations for the year ended December 31, 2016 has been reduced from what was previously reported by $899 million to reflect the adoption of pension accounting guidance, and on a pro forma basis, income from operations for the years ended December 31, 2016 and 2015 have been reduced from what was previously reported by $915 million and $73 million, respectively. For more information, see Note 22 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Adjusted EBITDA is defined as consolidated net income (loss) plus net interest expense, income taxes, depreciation and amortization, stock compensation expense, loss on extinguishment of debt, (gain) loss on financial instruments, net, other pension benefits, other (income) expense, net and other operating (income) expenses, such as merger and restructuring costs, special charges and gain (loss) on sale or retirement of assets. See "—Use of Adjusted EBITDA and Free Cash Flow" for further information on Adjusted EBITDA and free cash flow.

Growth in total revenue, Adjusted EBITDA and income from operations was primarily due to the Transactions. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, total revenue growth was primarily due to growth in our Internet and commercial businesses. Revenue growth during 2017 was offset by lower advertising sales revenue due to a decrease in political and local advertising and an early contract termination benefit at Legacy TWC and Legacy Bright House in 2016. In addition to the items noted above, Adjusted EBITDA growth on a pro forma basis was affected by increases in programming costs and, in 2017, offset by decreases in costs to service customers and other operating costs and expenses. Income from operations on a pro forma basis was additionally affected by increases in depreciation and amortization as well as changes in merger and restructuring costs.

Approximately 91%, 90% and 91% of our revenues for years endedDecember 31, 2017, 2016 and 2015, respectively, are attributable to monthly subscription fees charged to customers for our video, Internet, voice and commercial services provided by our cable systems. Generally, these customer subscriptions may be discontinued by the customer at any time subject to a fee for certain commercial customers. The remaining 9%, 10% and 9% of revenue for fiscal years 2017, 2016 and 2015, respectively, is derived primarily from advertising revenues, franchise and other regulatory fee revenues (which are collected by us but then paid to local authorities), VOD and pay-per-view programming, installation, processing fees or reconnection fees charged to customers to commence or reinstate service, revenue from regional sports and news channels and commissions related to the sale of merchandise by home shopping services.

We incurred the following transition costs in connection with the Transactions (in millions).

	Years ended December 31,		
	2017	2016	2015
Operating expenses	$ 124	$ 156	$ 72
Other operating expenses	$ 351	$ 970	$ 70
Interest expense	$ —	$ 390	$ 521
Capital expenditures	$ 489	$ 460	$ 115

Amounts included in transition operating expenses and transition capital expenditures represent incremental costs incurred to integrate the Legacy TWC and Legacy Bright House operations and to bring the three companies' systems and processes into a uniform operating structure. Costs are incremental and would not be incurred absent the integration. Other operating expenses associated with the Transactions represent merger and restructuring costs and include advisory, legal and accounting fees, employee retention costs, employee termination costs and other exit costs. Interest expense associated with the Transactions represents interest incurred on the CCO Safari II, CCO Safari III and CCOH Safari notes issued in advance of the closing of the Transactions, the proceeds of which were held in escrow to finance the Transactions.

Critical Accounting Policies and Estimates

Certain of our accounting policies require our management to make difficult, subjective and/or complex judgments. Management has discussed these policies with the Audit Committee of Charter's board of directors, and the Audit Committee has reviewed the following disclosure. We consider the following policies to be the most critical in understanding the estimates, assumptions and judgments that are involved in preparing our financial statements, and the uncertainties that could affect our results of operations, financial condition and cash flows:

- Property, plant and equipment
    - Capitalization of labor and overhead costs
    - Valuation and impairment of property, plant and equipment
    - Useful lives of property, plant and equipment
- Intangible assets
    - Valuation and impairment of franchises
    - Valuation and impairment of goodwill
    - Valuation, impairment and amortization of customer relationships
- Income taxes
- Litigation
- Programming agreements
- Pension plans

In addition, there are other items within our financial statements that require estimates or judgment that are not deemed critical, such as the allowance for doubtful accounts and valuations of our financial instruments, but changes in estimates or judgment in these other items could also have a material impact on our financial statements.

Property, plant and equipment

The cable industry is capital intensive, and a large portion of our resources are spent on capital activities associated with extending, rebuilding, and upgrading our cable network. As of December 31, 2017 and 2016, the net carrying amount of our property, plant and equipment (consisting primarily of cable distribution systems) was approximately $33.9 billion (representing 23% of total assets) and $33.0 billion (representing 22% of total assets), respectively. Total capital expenditures for the years ended December 31, 2017, 2016 and 2015 were approximately $8.7 billion, $5.3 billion and $1.8 billion, respectively.

Capitalization of labor and overhead costs. Costs associated with network construction or upgrades, initial placement of the customer drop to the dwelling and the initial placement of outlets within a dwelling along with the costs associated with the initial deployment of customer premise equipment necessary to provide video, Internet or voice services, are capitalized. Costs capitalized include materials, direct labor and certain indirect costs. These indirect costs are associated with the activities of personnel who assist in installation activities, and consist of compensation and overhead costs associated with these support functions. While our capitalization is based on specific activities, once capitalized, we track these costs on a composite basis by fixed asset category at the cable system level, and not on a specific asset basis. For assets that are sold or retired, we remove the estimated applicable cost and accumulated depreciation. The costs of disconnecting service and removing customer premise equipment from a dwelling and the costs to reconnect a customer drop or to redeploy previously installed customer premise equipment are charged to operating expense as incurred. Costs for repairs and maintenance are charged to operating expense as incurred, while plant and equipment replacement, including replacement of certain components, betterments, and replacement of cable drops and outlets, are capitalized.

We make judgments regarding the installation and construction activities to be capitalized. We capitalize direct labor and overhead using standards developed from actual costs and applicable operational data. We calculate standards annually (or more frequently if circumstances dictate) for items such as the labor rates, overhead rates, and the actual amount of time required to perform a capitalizable activity. For example, the standard amounts of time required to perform capitalizable activities are based on studies of the time required to perform such activities. Overhead rates are established based on an analysis of the nature of costs incurred

in support of capitalizable activities, and a determination of the portion of costs that is directly attributable to capitalizable activities. The impact of changes that resulted from these studies were not material in the periods presented.

Labor costs directly associated with capital projects are capitalized. Capitalizable activities performed in connection with installations include such activities as:

- dispatching a "truck roll" to the customer's dwelling or business for service connection or placement of new equipment;
- verification of serviceability to the customer's dwelling or business (i.e., determining whether the customer's dwelling is capable of receiving service by our cable network);
- customer premise activities performed by in-house field technicians and third-party contractors in connection with the installation, replacement and betterment of equipment and materials to enable video, Internet or voice services; and
- verifying the integrity of the customer's network connection by initiating test signals downstream from the headend to the customer premise equipment, as well as testing signal levels at the utility pole or pedestal.

Judgment is required to determine the extent to which overhead costs incurred result from specific capital activities, and therefore should be capitalized. The primary costs that are included in the determination of the overhead rate are (i) employee benefits and payroll taxes associated with capitalized direct labor, (ii) direct variable costs associated with capitalizable activities, (iii) the cost of support personnel, such as care personnel and dispatchers, who assist with capitalizable installation activities, and (iv) indirect costs directly attributable to capitalizable activities.

While we believe our existing capitalization policies are appropriate, a significant change in the nature or extent of our system activities could affect management's judgment about the extent to which we should capitalize direct labor or overhead in the future. We monitor the appropriateness of our capitalization policies, and perform updates to our internal studies on an ongoing basis to determine whether facts or circumstances warrant a change to our capitalization policies. We capitalized direct labor and overhead of $1.7 billion, $991 million and $420 million, respectively, for the years ended December 31, 2017, 2016 and 2015.

Valuation and impairment of property, plant and equipment. We evaluate the recoverability of our property, plant and equipment upon the occurrence of events or changes in circumstances indicating that the carrying amount of an asset may not be recoverable. Such events or changes in circumstances could include such factors as the impairment of our indefinite life assets, changes in technological advances, fluctuations in the fair value of such assets, adverse changes in relationships with local franchise authorities, adverse changes in market conditions, or a deterioration of current or expected future operating results. A long-lived asset is deemed impaired when the carrying amount of the asset exceeds the projected undiscounted future cash flows associated with the asset. No impairments of long-lived assets to be held and used were recorded in the years ended December 31, 2017, 2016 and 2015.

We utilize the cost approach as the primary method used to establish fair value for our property, plant and equipment in connection with business combinations. The cost approach considers the amount required to replace an asset by constructing or purchasing a new asset with similar utility, then adjusts the value in consideration of physical depreciation and functional and economic obsolescence as of the valuation date. The cost approach relies on management's assumptions regarding current material and labor costs required to rebuild and repurchase significant components of our property, plant and equipment along with assumptions regarding the age and estimated remaining useful lives of our property, plant and equipment.

Useful lives of property, plant and equipment. We evaluate the appropriateness of estimated useful lives assigned to our property, plant and equipment, based on annual analysis of such useful lives, and revise such lives to the extent warranted by changing facts and circumstances. Any changes in estimated useful lives as a result of this analysis are reflected prospectively beginning in the period in which the study is completed. Our analysis of useful lives in 2017 did not indicate any significant changes in useful lives. The effect of a one-year decrease in the weighted average remaining useful life of our property, plant and equipment as of December 31, 2017 would be an increase in annual depreciation expense of approximately $943 million. The effect of a one-year increase in the weighted average remaining useful life of our property, plant and equipment as of December 31, 2017 would be a decrease in annual depreciation expense of approximately $1.4 billion.

Depreciation expense related to property, plant and equipment totaled $7.8 billion, $5.0 billion and $1.9 billion for the years ended December 31, 2017, 2016 and 2015, respectively, representing approximately 21%, 19% and 21% of costs and expenses, respectively. Depreciation is recorded using the straight-line composite method over management's estimate of the useful lives of the related assets as listed below:

Cable distribution systems	8-20 years
Customer premise equipment and installations	3-8 years
Vehicles and equipment	4-9 years
Buildings and improvements	15-40 years
Furniture, fixtures and equipment	7-10 years

Intangible assets

Valuation and impairment of franchises. The net carrying value of franchises as of December 31, 2017 and 2016 was approximately $67.3 billion (representing 46% of total assets) and $67.3 billion (representing 45% of total assets), respectively. For more information and a complete discussion of how we value and test franchise assets for impairment, see Note 6 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

We perform an impairment assessment of franchise assets annually or more frequently as warranted by events or changes in circumstances. We performed a qualitative assessment in 2017. Our assessment included consideration of a fair value appraisal performed for tax purposes in the beginning of 2017 as of a December 31, 2016 valuation date (the "Appraisal") along with a multitude of factors that affect the fair value of our franchise assets. Examples of such factors include environmental and competitive changes within our operating footprint, actual and projected operating performance, the consistency of our operating margins, equity and debt market trends, including changes in our market capitalization, and changes in our regulatory and political landscape, among other factors. Based on our assessment, we concluded that it was more likely than not that the estimated fair values of our franchise assets equals or exceeds their carrying values and that a quantitative impairment test is not required.

The Appraisal indicated that the fair value of our franchise assets exceeded carrying value by more than 40% in the aggregate. At our unit of accounting level for franchise asset impairment testing, the amount by which fair value exceeded carrying value varied based on the extent to which the unit of accounting was comprised of operations acquired in 2016. For units of accounting comprised entirely or substantially of newly-acquired operations, the Appraisal fair value exceeded carrying value by a range of 16% to 46% due to the recency of the Transactions, while fair value for units of accounting comprised of at least 25% Legacy Charter operations, exceeded carrying value by a range of 29% to 264%.

Valuation and impairment of goodwill. The net carrying value of goodwill as of December 31, 2017 and 2016 was approximately $29.6 billion (representing 20% of total assets) and $29.5 billion (representing 20% of total assets), respectively. For more information and a complete discussion on how we test goodwill for impairment, see Note 6 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data." We perform our impairment assessment of goodwill annually as of November 30. As with our franchise impairment testing, we elected to perform a qualitative assessment of goodwill in 2017 which included the fair value appraisal and other factors described above. Based on the Appraisal, we determined that the fair value of our goodwill exceeded carrying value by approximately 53%. Given the completion of the assessment and absence of significant adverse changes in factors impacting our fair value estimates, we concluded that it is more likely than not that our goodwill is not impaired.

Valuation, impairment and amortization of customer relationships. The net carrying value of customer relationships as of December 31, 2017 and 2016 was approximately $12.0 billion (representing 8% of total assets) and $14.6 billion (representing 10% of total assets), respectively. Amortization expense related to customer relationships for the years ended December 31, 2017, 2016 and 2015 was approximately $2.7 billion, $1.9 billion and $249 million, respectively. No impairment of customer relationships was recorded in the years ended December 31, 2017, 2016 and 2015. For more information and a complete discussion on our valuation methodology and amortization method, see Note 6 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Income taxes

As of December 31, 2017, Charter had approximately $10.9 billion of federal tax net operating loss carryforwards resulting in a gross deferred tax asset of approximately $2.3 billion. These losses resulted from the operations of Charter Holdco and its subsidiaries and from loss carryforwards received as a result of the TWC Transaction. Federal tax net operating loss carryforwards

expire in the years 2018 through 2035. In addition, as of December 31, 2017, Charter had state tax net operating loss carryforwards, resulting in a gross deferred tax asset (net of federal tax benefit) of approximately $359 million. State tax net operating loss carryforwards generally expire in the years 2018 through 2037. Such tax loss carryforwards can accumulate and be used to offset Charter's future taxable income. As of December 31, 2017, all of Charter's federal tax loss carryforwards are subject to Section 382 and other restrictions. Pursuant to these restrictions, Charter estimates that approximately $8.7 billion in 2018, $654 million in 2019 and an additional $226 million annually over each of the next five years of federal tax loss carryforwards, should become unrestricted and available for Charter's use. An additional $415 million is currently subject to a valuation allowance. Charter's state tax loss carryforwards are subject to similar but varying restrictions.

Income tax benefit for the year ended December 31, 2017 was recognized primarily as a result of the enactment of the Tax Cuts & Jobs Act ("Tax Reform") in December 2017. Among other things, the primary provisions of Tax Reform impacting us are the reductions to the U.S. corporate income tax rate from 35% to 21% and temporary 100% bonus depreciation for certain assets. The change in tax law required us to remeasure existing net deferred tax liabilities using the lower rate in the period of enactment resulting in an income tax benefit of approximately $9.3 billion to reflect these changes in the year ended December 31, 2017. We have reported provisional amounts for the income tax effects of Tax Reform for which the accounting is incomplete but a reasonable estimate could be determined. There were no specific impacts of Tax Reform that could not be reasonably estimated which we accounted for under prior tax law. Based on a continued analysis of the estimates and further guidance on the application of the law, it is anticipated that additional revisions may occur throughout the allowable measurement period. Overall, the changes due to Tax Reform will favorably affect income tax expense on future U.S. earnings.

In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will be realized. In evaluating the need for a valuation allowance, management takes into account various factors, including the expected level of future taxable income, available tax planning strategies and reversals of existing taxable temporary differences. Due to Legacy Charter's history of losses, Legacy Charter was historically unable to assume future taxable income in its analysis and accordingly valuation allowances were established against the deferred tax assets, net of deferred tax liabilities, from definite-lived assets for book accounting purposes. However, as a result of the TWC Transaction in 2016, deferred tax liabilities resulting from the acquisition accounting increased significantly and future taxable income that will result from the reversal of existing temporary differences for which deferred tax liabilities are recognized, is sufficient to conclude it is more likely than not that we will realize substantially all of our deferred tax assets. As a result, in 2016 Charter reversed approximately $3.3 billion of its valuation allowance and recognized a corresponding income tax benefit in the consolidated statements of operations for the year ended December 31, 2016. Approximately $87 million of valuation allowance associated with federal tax net operating loss carryforwards and approximately $50 million of valuation allowance associated with state tax loss carryforwards and other miscellaneous deferred tax assets remains on the December 31, 2017 consolidated balance sheet.

In determining our tax provision for financial reporting purposes, we establish a reserve for uncertain tax positions unless such positions are determined to be "more likely than not" of being sustained upon examination, based on their technical merits. In evaluating whether a tax position has met the more-likely-than-not recognition threshold, we presume the position will be examined by the appropriate taxing authority that has full knowledge of all relevant information. A tax position that meets the more-likely-than-not recognition threshold is measured to determine the amount of benefit to be recognized in our financial statements. The tax position is measured as the largest amount of benefit that has a greater than 50% likelihood of being realized when the position is ultimately resolved. There is considerable judgment involved in determining whether positions taken on the tax return are "more likely than not" of being sustained. We adjust our uncertain tax reserve estimates periodically because of ongoing examinations by, and settlements with, the various taxing authorities, as well as changes in tax laws, regulations and interpretations.

No tax years for Charter, Charter Holdings or Charter Holdco for income tax purposes, are currently under examination by the IRS. Charter and Charter Holdings' 2016 and 2017 tax years remain open for examination and assessment. Legacy Charter's tax years ending 2014 through the short period return dated May 17, 2016 remain subject to examination and assessment. Years prior to 2014 remain open solely for purposes of examination of Legacy Charter's loss and credit carryforwards. The IRS is currently examining Legacy TWC's income tax returns for 2011 through 2014. Legacy TWC's tax year 2015 remains subject to examination and assessment. Prior to Legacy TWC's separation from Time Warner Inc. ("Time Warner") in March 2009 (the "Separation"), Legacy TWC was included in the consolidated U.S. federal and certain state income tax returns of Time Warner. The IRS is currently examining Time Warner's 2008 through 2010 income tax returns. Time Warner's income tax returns for 2005 to 2007, which are periods prior to the Separation, were settled with the exception of an immaterial item that has been referred to the IRS Appeals Division. We do not anticipate that these examinations will have a material impact on our consolidated financial position or results of operations. In addition, we are also subject to ongoing examinations of our tax returns by state and local tax authorities for various periods. Activity related to these state and local examinations did not have a material impact on our consolidated financial position or results of operations during the year ended December 31, 2017, nor do we anticipate a material impact in the future.

Litigation

Legal contingencies have a high degree of uncertainty. When a loss from a contingency becomes estimable and probable, a reserve is established. The reserve reflects management's best estimate of the probable cost of ultimate resolution of the matter and is revised as facts and circumstances change. A reserve is released when a matter is ultimately brought to closure or the statute of limitations lapses. We have established reserves for certain matters. Although these matters are not expected individually to have a material adverse effect on our consolidated financial condition, results of operations or liquidity, such matters could have, in the aggregate, a material adverse effect on our consolidated financial condition, results of operations or liquidity.

Programming agreements

We exercise judgment in estimating programming expense associated with certain video programming contracts. Our policy is to record video programming costs based on the substance of our contractual agreements with our programming vendors, which are generally multi-year agreements that provide for us to make payments to the programming vendors at agreed upon market rates based on the number of customers to which we provide the programming service. If a programming contract expires prior to the parties' entry into a new agreement and we continue to distribute the service, we estimate the programming costs during the period there is no contract in place. In doing so, we consider the previous contractual rates, inflation and the status of the negotiations in determining our estimates. When the programming contract terms are finalized, an adjustment to programming expense is recorded, if necessary, to reflect the terms of the new contract. We also make estimates in the recognition of programming expense related to other items including the allocation of consideration exchanged between the parties among the various items in multiple-element transactions.

Judgment is also involved when we enter into agreements that result in us receiving cash consideration from the programming vendor, usually in the form of advertising sales, channel positioning fees, launch support or marketing support. In these situations, we must determine based upon facts and circumstances if such cash consideration should be recorded as revenue, a reduction in programming expense or a reduction in another expense category (e.g., marketing).

Pension plans

We sponsor two qualified defined benefit pension plans, the TWC Pension Plan and the TWC Union Pension Plan (collectively, the "TWC Pension Plans"), that provide pension benefits to a majority of Legacy TWC employees. We also provide a nonqualified defined benefit pension plan for certain employees under the TWC Excess Pension Plan. As of December 31, 2017, the accumulated benefit obligation and fair value of plan assets for the TWC Pension Plans was $3.6 billion and $3.3 billion, respectively, and the net underfunded liability of the TWC Pension Plans was recorded as a $1 million noncurrent asset, $5 million current liability and $292 million long-term liability. As of December 31, 2016, the accumulated benefit obligation and fair value of plan assets for the TWC Pension Plans was $3.3 billion and $2.9 billion, respectively, and the net underfunded liability of the TWC Pension Plans was recorded as a $1 million noncurrent asset, $6 million current liability and $309 million long-term liability.

Pension benefits are based on formulas that reflect the employees' years of service and compensation during their employment period. Actuarial gains or losses are changes in the amount of either the benefit obligation or the fair value of plan assets resulting from experience different from that assumed or from changes in assumptions. We have elected to follow a mark-to-market pension accounting policy for recording the actuarial gains or losses annually during the fourth quarter, or earlier if a remeasurement event occurs during an interim period. We use a December 31 measurement date for our pension plans.

We recognized net periodic pension benefits of $1 million and $813 million in 2017 and 2016, respectively. Net periodic pension benefit or expense is determined using certain assumptions, including the expected long-term rate of return on plan assets, discount rate and mortality assumptions. We determined the discount rate used to compute pension expense based on the yield of a large population of high-quality corporate bonds with cash flows sufficient in timing and amount to settle projected future defined benefit payments. In developing the expected long-term rate of return on assets, we considered the current pension portfolio's composition, past average rate of earnings, and our asset allocation targets. We used a discount rate of 4.20% from January 1, 2017 to September 30, 2017 and 3.88% from October 1, 2017 to December 31, 2017 to compute 2017 pension expense. A decrease in the discount rate of 25 basis points would result in a $173 million increase in our pension plan benefit obligation as of December 31, 2017 and net periodic pension expense recognized in 2017 under our mark-to-market accounting policy. Our expected long-term rate of return on plan assets used to compute 2017 pension expense was 6.50%. A decrease in the expected long-term rate of return of 25 basis points, from 6.50% to 6.25%, while holding all other assumptions constant, would result in an increase in our 2018 net periodic pension expense of approximately $8 million. See Note 21 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data" for additional discussion on these assumptions.

Results of Operations

The following table sets forth the consolidated statements of operations for the periods presented (dollars in millions, except per share data):

	Year Ended December 31,		
	2017	2016	2015
Revenues	$ 41,581	$ 29,003	$ 9,754
Costs and Expenses:			
Operating costs and expenses (exclusive of items shown separately below)	26,541	18,655	6,426
Depreciation and amortization	10,588	6,907	2,125
Other operating expenses, net	346	985	89
	37,475	26,547	8,640
Income from operations	4,106	2,456	1,114
Other Expenses:			
Interest expense, net	(3,090)	(2,499)	(1,306)
Loss on extinguishment of debt	(40)	(111)	(128)
Gain (loss) on financial instruments, net	69	89	(4)
Other pension benefits	1	899	—
Other expense, net	(18)	(14)	(7)
	(3,078)	(1,636)	(1,445)
Income (loss) before income taxes	1,028	820	(331)
Income tax benefit	9,087	2,925	60
Consolidated net income (loss)	10,115	3,745	(271)
Less: Net income attributable to noncontrolling interests	(220)	(223)	—
Net income (loss) attributable to Charter shareholders	$ 9,895	$ 3,522	$ (271)
EARNINGS (LOSS) PER COMMON SHARE ATTRIBUTABLE TO CHARTER SHAREHOLDERS:			
Basic	$ 38.55	$ 17.05	$ (2.68)
Diluted	$ 34.09	$ 15.94	$ (2.68)
Weighted average common shares outstanding, basic	256,720,715	206,539,100	101,152,647
Weighted average common shares outstanding, diluted	296,703,956	234,791,439	101,152,647

Revenues. Total revenues grew $12.6 billion or 43.4% in the year ended December 31, 2017 as compared to 2016 and grew $19.2 billion or 197.3% in the year ended December 31, 2016 as compared to 2015. Revenue growth primarily reflects the Transactions and increases in the number of residential Internet and commercial business customers, price adjustments as well as growth in expanded basic video penetration offset by a decrease in limited basic video customers. The Transactions increased revenues for the years ended 2017 and 2016 as compared to the corresponding prior periods by approximately $11.4 billion and $18.6 billion, respectively. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, total revenue growth was 3.9% and 7.0% for the years ended December 31, 2017 and 2016 as compared to the corresponding prior periods.

Revenues by service offering were as follows (dollars in millions; all percentages are calculated using whole numbers. Minor differences may exist due to rounding):

	Years ended December 31, Actual					Years ended December 31, Pro Forma				
	2017	2016	2015	2017 vs. 2016 Growth	2016 vs. 2015 Growth	2017	2016	2015	2017 vs. 2016 Growth	2016 vs. 2015 Growth
Video	$ 16,641	$ 11,967	$ 4,587	39.1%	160.9%	$ 16,641	$ 16,390	$ 16,029	1.5 %	2.3%
Internet	14,105	9,272	3,003	52.1%	208.7%	14,105	12,688	11,295	11.2 %	12.3%
Voice	2,542	2005	539	26.8%	272.2%	2,542	2,905	2,842	(12.5)%	2.2%
Residential revenue	33,288	23,244	8,129	43.2%	185.9%	33,288	31,983	30,166	4.1 %	6.0%
Small and medium business	3,686	2,480	764	48.6%	224.7%	3,686	3,409	3,009	8.1 %	13.3%
Enterprise	2,210	1,429	363	54.7%	293.0%	2,210	2,025	1,818	9.1 %	11.4%
Commercial revenue	5,896	3,909	1,127	50.8%	246.7%	5,896	5,434	4,827	8.5 %	12.6%
Advertising sales	1,510	1235	309	22.3%	300.3%	1,510	1,696	1,524	(10.9)%	11.3%
Other	887	615	189	44.1%	225.0%	887	910	877	(2.6)%	4.0%
	$ 41,581	$ 29,003	$ 9,754	43.4%	197.3%	$ 41,581	$ 40,023	$ 37,394	3.9 %	7.0%

Video revenues consist primarily of revenues from basic and digital video services provided to our residential customers, as well as franchise fees, equipment and video installation revenue. Residential video customers decreased by 292,000 in 2017 and, excluding the impacts of the Transactions, increased by 42,000 in2016. The increases in video revenues are attributable to the following (dollars in millions):

	2017 compared to 2016	2016 compared to 2015
Bundle revenue allocation and price adjustments	$ 383	$ 103
Increase (decrease) in VOD and pay-per-view	35	(22)
Increase (decrease) in average basic video customers	(179)	35
TWC Transaction	3,806	6,263
Bright House Transaction	629	1,001
	$ 4,674	$ 7,380

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, residential video customers decreased by 226,000 in 2016 and the increases in video revenues is attributable to the following (dollars in millions):

	2017 compared to 2016	2016 compared to 2015
Bundle revenue allocation and price adjustments	$ 513	$ 498
Increase (decrease) in VOD and pay-per-view	32	(69)
Decrease in average basic video customers	(294)	(68)
	$ 251	$ 361

Residential Internet customers grew by 1,171,000 in 2017 and, excluding the impacts of the Transactions, grew by 461,000 customers in 2016. The increases in Internet revenues from our residential customers are attributable to the following (dollars in millions):

	2017 compared to 2016	2016 compared to 2015
Increase in average residential Internet customers	$ 599	$ 284
Price adjustments, bundle revenue allocation and service level changes	395	62
TWC Transaction	3,268	5,063
Bright House Transaction	571	860
	$ 4,833	$ 6,269

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, residential Internet customers increased by 1,463,000 in 2016 and the increases in Internet revenues is attributable to the following (dollars in millions):

	2017 compared to 2016	2016 compared to 2015
Increase in average residential Internet customers	$ 818	$ 957
Price adjustments, bundle revenue allocation and service level changes	599	436
	$ 1,417	$ 1,393

Residential voice customers grew by 100,000 in 2017 and, excluding the impacts of the Transactions, grew by 95,000 customers in 2016. The increases in voice revenues from our residential customers is attributable to the following (dollars in millions):

	2017 compared to 2016	2016 compared to 2015
Increase in average residential voice customers	$ 27	$ 28
Bundle revenue allocation and price adjustments	(319)	(18)
TWC Transaction	707	1,247
Bright House Transaction	122	209
	$ 537	$ 1,466

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, residential voice customers increased by 368,000 in 2016 and the increase in voice revenues is attributable to the following (dollars in millions):

	2017 compared to 2016	2016 compared to 2015
Increase in average residential voice customers	$ 49	$ 229
Price adjustments and bundle revenue allocation	(412)	(166)
	$ (363)	$ 63

Small and medium business PSUs increased by 326,000 in 2017 and, excluding the impacts of the Transactions, increased by 128,000 in2016. The increases in small and medium business commercial revenues are attributable to the following (dollars in millions):

	2017 compared to 2016	2016 compared to 2015
Increase in small and medium business customers	$ 295	$ 127
Price adjustments related to SPP	(118)	(38)
TWC Transaction	890	1,408
Bright House Transaction	139	219
	$ 1,206	$ 1,716

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, small and medium business PSUs increased by 291,000 in2016 and the increases in small and medium business commercial revenues is attributable to the following (dollars in millions):

	2017 compared to 2016	2016 compared to 2015
Increase in small and medium business customers	$ 393	$ 359
Price adjustments related to SPP	(116)	41
	$ 277	$ 400

Enterprise PSUs increased by 17,000 in 2017 and, excluding the impacts of the Transactions, increased by 6,000 in2016. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, enterprise PSUs increased by 16,000 in 2016. The Transactions increased enterprise commercial revenues for years ended 2017 and 2016 as compared to the corresponding prior periods by approximately $655 million and $1.0 billion, respectively. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, enterprise commercial revenues increased $185 million and $207 million during the years ended 2017 and 2016, respectively, as compared to the corresponding prior periods primarily due to growth in customers.

Advertising sales revenues consist primarily of revenues from commercial advertising customers, programmers and other vendors, as well as local cable and advertising on regional sports and news channels. Advertising sales revenues increased in 2017 and 2016 primarily due to the Transactions. The Transactions increased advertising sales revenues for the years ended 2017 and 2016 as compared to the corresponding prior periods by $425 million and $898 million, respectively. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, advertising sales revenues decreased $186 million and increased $172 million during the years ended 2017 and 2016, respectively, as compared to the corresponding prior periods primarily due to political advertising.

Other revenues consist of revenue from regional sports and news channels (excluding intercompany charges or advertising sales on those channels), home shopping, late payment fees, wire maintenance fees and other miscellaneous revenues. The increase in 2017 and 2016 was primarily due to the Transactions. The Transactions increased other revenues for the years ended 2017 and 2016 as compared to the corresponding prior periods by $255 million and $429 million, respectively. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, other revenues decreased $23 million and increased $33 million during the years ended 2017 and 2016, respectively, as compared to the corresponding prior periods primarily due to a settlement incurred in 2016 related to an early contract termination at Legacy TWC and Legacy Bright House.

Operating costs and expenses. The increases in our operating costs and expenses are attributable to the following (dollars in millions):

	2017 compared to 2016	2016 compared to 2015
Programming	$ 3,562	$ 4,356
Regulatory, connectivity and produced content	597	1,032
Costs to service customers	2,126	3,774
Marketing	713	1,078
Transition costs	(32)	84
Other	920	1,905
	$ 7,886	$ 12,229

Programming costs were approximately $10.6 billion, $7.0 billion and $2.7 billion, representing 40%, 38% and 42% of operating costs and expenses for each of the years ended December 31, 2017, 2016 and 2015, respectively. The increase in operating costs and expenses for the years ended 2017 and 2016 as compared to the corresponding prior periods was primarily due to the Transactions.

The increase in other expense is attributable to the following (dollars in millions):

	2017 compared to 2016	2016 compared to 2015
Enterprise	$ 245	$ 383
Advertising sales expense	244	405
Corporate costs	207	607
Property tax and insurance	109	198
Stock compensation expense	17	166
Other	98	146
	$ 920	$ 1,905

The increases in other expense for the years ended 2017 and 2016 as compared to the corresponding prior periods were primarily due to the Transactions.

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, increases in our operating costs and expenses, exclusive of items shown separately in the consolidated statements of operations, are attributable to the following (dollars in millions):

	2017 compared to 2016	2016 compared to 2015
Programming	$ 982	$ 661
Regulatory, connectivity and produced content	(29)	28
Costs to service customers	(144)	72
Marketing	52	59
Transition costs	(32)	84
Other	(142)	314
	$ 687	$ 1,218

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, programming costs were approximately $9.6 billion and $9.0 billion, representing 37% and 36% of total operating costs and expenses for the years ended December 31, 2016 and 2015, respectively.

Programming costs consist primarily of costs paid to programmers for basic, digital, premium, VOD, and pay-per-view programming. The increase in programming costs on a pro forma basis, assuming the Transactions occurred as of January 1, 2015, is primarily a result of contractual rate adjustments, including renewals and increases in amounts paid for retransmission consents, higher expanded basic video package customers and higher pay-per-view events offset by synergies as a result of the Transactions. We expect programming expenses will continue to increase due to a variety of factors, including annual increases imposed by programmers with additional selling power as a result of media consolidation, increased demands by owners of broadcast stations for payment for retransmission consent or linking carriage of other services to retransmission consent, and additional programming, particularly new services. We have been unable to fully pass these increases on to our customers nor do we expect to be able to do so in the future without a potential loss of customers.

Costs to service customers decreased $144 million during 2017 as compared to 2016, on a pro forma basis, assuming the Transactions occurred as of January 1, 2015, primarily due to benefits from combining Legacy TWC and Legacy Bright House into Charter, including lower employee benefit and maintenance costs, higher labor and material capitalization with increases in placement of new customer equipment and improved productivity.

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, the change in other expense is attributable to the following (dollars in millions):

	2017 compared to 2016	2016 compared to 2015
Corporate costs	$ (157)	$ 114
Stock compensation expense	(34)	49
Property, tax and insurance	(21)	—
Advertising sales expense	37	100
Enterprise	25	42
Other	8	9
	$ (142)	$ 314

Corporate costs and stock compensation expense decreased in 2017 as compared to 2016 primarily as a result of lower headcount as a result of integration synergies.

The increase in corporate costs during 2016 as compared to 2015 relates primarily to increases in the number of employees including increases in engineering and IT. The increase in advertising sales expense relates primarily to higher advertising sales revenue. Stock compensation expense increased during 2016 as compared to 2015 primarily due to increases in headcount and the value of equity issued.

Depreciation and amortization. Depreciation and amortization expense increased by $3.7 billion and $4.8 billion in 2017 and 2016 as compared to the corresponding prior periods primarily as a result of additional depreciation and amortization related to the Transactions, inclusive of the incremental amounts as a result of the higher fair values recorded in acquisition accounting and, in 2017, higher capital expenditures.

Other operating expenses, net. The changes in other operating expenses, net are attributable to the following (dollars in millions):

	2017 compared to 2016	2016 compared to 2015
Merger and restructuring costs	$ (619)	$ 900
Special charges, net	(38)	2
(Gain) loss on sale of assets, net	18	(6)
	$ (639)	$ 896

The changes in merger and restructuring costs is primarily due to approximately $262 million of contingent financing and advisory transaction fees paid at the closing of the Transactions in 2016 as well as approximately $279 million and $611 million of employee retention and employee termination costs incurred during 2017 and 2016, respectively. For more information, see Note 15 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Interest expense, net. Net interest expense increased by $591 million in 2017 from 2016 and by $1.2 billion in 2016 from 2015. The increase in 2017 as compared to 2016 is primarily due to an increase in weighted average debt outstanding of $11.7 billion primarily as a result of the issuance of notes in 2017 for general corporate purposes including stock buybacks. Interest expense associated with debt assumed from Legacy TWC also increased interest expense during the year ended December 31, 2017 compared to the corresponding period in 2016 by approximately $336 million. The increase in 2016 as compared to 2015 is primarily due to an increase of $463 million of interest expense associated with the debt incurred to fund the Transactions and $604 million associated with debt assumed from Legacy TWC.

Loss on extinguishment of debt. Loss on extinguishment of debt of $40 million, $111 million and $128 million for the years ended December 31, 2017, 2016 and 2015 primarily represents losses recognized as a result of the repurchase of CCO Holdings notes and amendments to Charter Operating's credit facilities. For more information, see Note 9 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Gain (loss) on financial instruments, net. Gains and losses on financial instruments are recognized due to changes in the fair value of our interest rate and our cross currency derivative instruments, and the foreign currency remeasurement of the fixed-rate British pound sterling denominated notes (the "Sterling Notes") into U.S. dollars. For more information, see Note 12 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Other pension benefits. Other pension benefits decreased by $898 million during 2017 compared to 2016 and increased $899 million during 2016 compared to 2015 primarily due to the pension curtailment gain of $675 million and remeasurement gain of $195 million recognized in 2016 as opposed to remeasurement losses of $55 million recognized in 2017. For more information, see Note 21 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Other expense, net. Other expense, net primarily represents equity losses on our equity-method investments. For more information, see Note 7 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Income tax benefit. We recognized income tax benefit of $9.1 billion, $2.9 billion and $60 million for the years ended December 31, 2017, 2016 and 2015, respectively. The income tax benefit for the year ended December 31, 2017 was recognized primarily through the enactment of Tax Reform which resulted in an income tax benefit of approximately $9.3 billion as well as by approximately $88 million due to the recognition of excess tax benefits resulting from share based compensation as a component of the provision for income taxes following the prospective application of accounting guidance related to employee-share based payments (see Note 22 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data.").

Income tax benefit for the year ended December 31, 2016 was the result of a reduction of substantially all of Legacy Charter's preexisting valuation allowance associated with its deferred tax assets of approximately $3.3 billion as certain of the deferred tax liabilities that were assumed in connection with the closing of the TWC Transaction will reverse and provide a source of future taxable income.

The income tax benefit in 2015 was primarily due to the deemed liquidation of Charter Holdco solely for federal and state income tax purposes, resulting in a $187 million deferred income tax benefit offset by income tax expense primarily through increases in deferred tax liabilities. For more information, see Note 17 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Net income attributable to noncontrolling interest. Net income attributable to noncontrolling interest for financial reporting purposes represents A/N's portion of Charter Holdings' net income based on its effective common unit ownership interest of approximately 10% and on the preferred dividend of $150 million and $93 million for the years ended December 31, 2017 and 2016, respectively. For more information, see Note 11 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Net income (loss) attributable to Charter shareholders. Net income attributable to Charter shareholders was $9.9 billion and $3.5 billion for the years ended December 31, 2017 and 2016, respectively, and net loss attributable to Charter shareholders was $271 million for the year ended December 31, 2015 primarily as a result of the factors described above. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, net income attributable to Charter shareholders was $1.1 billion and $159 million for the years ended December 31, 2016 and 2015, respectively.

Use of Adjusted EBITDA and Free Cash Flow

We use certain measures that are not defined by U.S. generally accepted accounting principles ("GAAP") to evaluate various aspects of our business. Adjusted EBITDA and free cash flow are non-GAAP financial measures and should be considered in addition to, not as a substitute for, consolidated net income (loss) and net cash flows from operating activities reported in accordance with GAAP. These terms, as defined by us, may not be comparable to similarly titled measures used by other companies. Adjusted EBITDA and free cash flow are reconciled to consolidated net income (loss) and net cash flows from operating activities, respectively, below.

Adjusted EBITDA eliminates the significant non-cash depreciation and amortization expense that results from the capital-intensive nature of our businesses as well as other non-cash or special items, and is unaffected by our capital structure or investment activities. However, this measure is limited in that it does not reflect the periodic costs of certain capitalized tangible and intangible assets used in generating revenues and our cash cost of financing. These costs are evaluated through other financial measures.

Free cash flow is defined as net cash flows from operating activities, less capital expenditures and changes in accrued expenses related to capital expenditures.

Management and Charter's board of directors use Adjusted EBITDA and free cash flow to assess our performance and our ability to service our debt, fund operations and make additional investments with internally generated funds. In addition, Adjusted EBITDA generally correlates to the leverage ratio calculation under our credit facilities or outstanding notes to determine compliance with the covenants contained in the facilities and notes (all such documents have been previously filed with the SEC). For the purpose of calculating compliance with leverage covenants, we use Adjusted EBITDA, as presented, excluding certain expenses paid by our operating subsidiaries to other Charter entities. Our debt covenants refer to these expenses as management fees, which fees were in the amount of $1.1 billion, $930 million and $322 million for the years ended December 31, 2017, 2016 and 2015, respectively.

	Years ended December 31,		
	2017	**2016**	**2015**
		Actual	
Consolidated net income (loss)	$ 10,115	$ 3,745	$ (271)
Plus: Interest expense, net	3,090	2,499	1,306
Income tax benefit	(9,087)	(2,925)	(60)
Depreciation and amortization	10,588	6,907	2,125
Stock compensation expense	261	244	78
Loss on extinguishment of debt	40	111	128
(Gain) loss on financial instruments, net	(69)	(89)	4
Other pension benefits	(1)	(899)	—
Other, net	364	999	96
Adjusted EBITDA	$ 15,301	$ 10,592	$ 3,406
Net cash flows from operating activities	$ 11,954	$ 8,041	$ 2,359
Less: Purchases of property, plant and equipment	(8,681)	(5,325)	(1,840)
Change in accrued expenses related to capital expenditures	820	603	28
Free cash flow	$ 4,093	$ 3,319	$ 547

	Year Ended December 31,	
	2016	2015
	Pro Forma	
Consolidated net income	$ 1,399	$ 338
Plus: Interest expense, net	2,883	2,968
Income tax expense	498	102
Depreciation and amortization	9,555	9,348
Stock compensation expense	295	246
Loss on extinguishment of debt	111	128
(Gain) loss on financial instruments, net	(89)	4
Other pension benefits	(915)	(73)
Other, net	727	(57)
Adjusted EBITDA	$ 14,464	$ 13,004

Liquidity and Capital Resources

Overview

We have significant amounts of debt. The principal amount of our debt as of December 31, 2017 was $69.0 billion, consisting of $9.5 billion of credit facility debt, $40.6 billion of investment grade senior secured notes and $18.9 billion of high-yield senior unsecured notes. Our business requires significant cash to fund principal and interest payments on our debt.

Our projected cash needs and projected sources of liquidity depend upon, among other things, our actual results, and the timing and amount of our expenditures. As we launch our new mobile services, we expect an initial funding period to grow a new product as well as negative working capital impacts from the timing of device-related cash flows when we provide the handset or tablet to customers pursuant to equipment installment plans. Free cash flow was $4.1 billion, $3.3 billion and $547 million for the years ended December 31, 2017, 2016 and 2015, respectively. As of December 31, 2017, the amount available under our credit facilities was approximately $3.6 billion and cash on hand was approximately $621 million. We expect to utilize free cash flow, cash on hand and availability under our credit facilities as well as future refinancing transactions to further extend the maturities of our obligations. The timing and terms of any refinancing transactions will be subject to market conditions among other considerations. Additionally, we may, from time to time, and depending on market conditions and other factors, use cash on hand and the proceeds from securities offerings or other borrowings to retire our debt through open market purchases, privately negotiated purchases, tender offers or redemption provisions. We believe we have sufficient liquidity from cash on hand, free cash flow and Charter Operating's revolving credit facility as well as access to the capital markets to fund our projected cash needs.

We continue to evaluate the deployment of our cash on hand and anticipated future free cash flow including to invest in our business growth and other strategic opportunities, including mergers and acquisitions as well as stock repurchases and dividends. Our target leverage remains at 4 to 4.5 times, and up to 3.5 times at the Charter Operating level. Our leverage ratio was 4.5 as of December 31, 2017. We may increase the total amount of our indebtedness to maintain leverage within our target leverage range. During the years ended December 31, 2017 and 2016, we purchased approximately 33.4 million and 5.1 million shares, respectively, of Charter Class A common stock for approximately $11.6 billion and $1.3 billion, respectively. As of December 31, 2017, Charter had remaining board authority to purchase an additional $1.1 billion of Charter's Class A common stock and/or Charter Holdings common units. Charter is not obligated to acquire any particular amount of common stock, and the timing of any purchases that may occur cannot be predicted and will largely depend on market conditions and other potential uses of capital. Purchases may include open market purchases, tender offers or negotiated transactions.

As possible acquisitions, swaps or dispositions arise, we actively review them against our objectives including, among other considerations, improving the operational efficiency, clustering, product development or technology capabilities of our business and achieving appropriate return targets, and we may participate to the extent we believe these possibilities present attractive opportunities. However, there can be no assurance that we will actually complete any acquisitions, dispositions or system swaps, or that any such transactions will be material to our operations or results.

In December 2016, Charter and A/N entered into a letter agreement (the "Letter Agreement") that requires A/N to sell to Charter or to Charter Holdings, on a monthly basis, a number of shares of Charter Class A common stock or Charter Holdings common units that represents a pro rata participation by A/N and its affiliates in any repurchases of shares of Charter Class A common stock from persons other than A/N effected by Charter during the immediately preceding calendar month, at a purchase price equal to

the average price paid by Charter for the shares repurchased from persons other than A/N during such immediately preceding calendar month. A/N and Charter both have the right to terminate or suspend the pro rata repurchase arrangement on a prospective basis once Charter or Charter Holdings have repurchased shares of Class A common stock or Charter Holdings common units from A/N and its affiliates for an aggregate purchase price of $537 million, which threshold has been met. On December 21, 2017, Charter and A/N entered into an amendment to the Letter Agreement resetting the aggregate purchase price to $400 million. Charter Holdings purchased from A/N 4.8 million and 0.8 million Charter Holdings common units at an average price per unit of $347.03 and $289.83, or $1.7 billion and $218 million during the years ended December 31, 2017 and 2016, respectively.

Free Cash Flow

Free cash flow increased $774 million and $2.8 billion during the years ended December 31, 2017 and 2016 compared to the corresponding prior periods, respectively, due to the following.

	2017 compared to 2016	2016 compared to 2015
Increase in Adjusted EBITDA	$ 4,709	$ 7,186
Increase in capital expenditures	(3,356)	(3,485)
Changes in working capital, excluding change in accrued interest, net of effects from acquisitions	(361)	1,387
Increase in cash paid for interest, net	(761)	(1,602)
(Increase) decrease in merger and restructuring costs	420	(652)
Other, net	123	(62)
	$ 774	$ 2,772

Contractual Obligations

The following table summarizes our payment obligations as of December 31, 2017 under our long-term debt and certain other contractual obligations and commitments (dollars in millions.)

	Payments by Period				
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Long-Term Debt Principal Payments [(a)]	$ 69,003	$ 2,207	$ 7,164	$ 6,864	$ 52,768
Long-Term Debt Interest Payments [(b)]	44,013	3,762	6,850	6,315	27,086
Capital and Operating Lease Obligations [(c)]	1,512	286	434	297	495
Programming Minimum Commitments [(d)]	164	103	61	—	—
Other [(e)]	13,626	1,917	1,870	1,152	8,687
	$ 128,318	$ 8,275	$ 16,379	$ 14,628	$ 89,036

(a) The table presents maturities of long-term debt outstanding as of December 31, 2017. Refer to Notes 9 and 20 to our accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data" for a description of our long-term debt and other contractual obligations and commitments.

(b) Interest payments on variable debt are estimated using amounts outstanding at December 31, 2017 and the average implied forward London Interbank Offering Rate ("LIBOR") rates applicable for the quarter during the interest rate reset based on the yield curve in effect at December 31, 2017. Actual interest payments will differ based on actual LIBOR rates and actual amounts outstanding for applicable periods.

(c) We lease certain facilities and equipment under noncancelable capital and operating leases. Capital lease obligations represented $123 million of total capital and operating lease obligations as of December 31, 2017. Leases and rental costs charged to expense for the years ended December 31, 2017, 2016 and 2015, were $321 million, $215 million and $49 million, respectively.

(d) We pay programming fees under multi-year contracts typically based on a flat fee per customer, which may be fixed for the term, or may in some cases escalate over the term. Programming costs included in the accompanying statement of operations were approximately $10.6 billion, $7.0 billion and $2.7 billion, for the years ended December 31, 2017, 2016 and 2015, respectively. Certain of our programming agreements are based on a flat fee per month or have guaranteed

minimum payments. The table sets forth the aggregate guaranteed minimum commitments under our programming contracts.

(e) "Other" represents other guaranteed minimum commitments, including rights negotiated directly with content owners for distribution on company-owned channels or networks, commitments related to our role as an advertising and distribution sales agent for third party-owned channels or networks, commitments to our customer premise equipment vendors and contractual obligations related to third-party network augmentation.

The following items are not included in the contractual obligations table because the obligations are not fixed and/or determinable due to various factors discussed below. However, we incur these costs as part of our operations:

- We rent utility poles used in our operations. Generally, pole rentals are cancelable on short notice, but we anticipate that such rentals will recur. Rent expense incurred for pole rental attachments for the years ended December 31, 2017, 2016 and 2015 was $167 million, $115 million and $53 million, respectively.
- We pay franchise fees under multi-year franchise agreements based on a percentage of revenues generated from video service per year. We also pay other franchise related costs, such as public education grants, under multi-year agreements. Franchise fees and other franchise-related costs included in the accompanying statement of operations were $705 million, $534 million and $212 million for the years ended December 31, 2017, 2016 and 2015, respectively.
- We have $291 million in letters of credit, of which $137 million is secured under the Charter Operating credit facility, primarily to our various casualty carriers as collateral for reimbursement of workers' compensation, auto liability and general liability claims.
- Minimum pension funding requirements have not been presented in the table above as such amounts have not been determined beyond 2017. We made no cash contributions to the qualified pension plans in 2017; however, we are permitted to make discretionary cash contributions to the qualified pension plans in 2018. For the nonqualified pension plan, we contributed $18 million during 2017 and will continue to make contributions in 2018 to the extent benefits are paid.

See "Part I. Item 1. Business — Transaction-Related Commitments" for a listing of commitments as a result of the Transactions.

Historical Operating, Investing, and Financing Activities

Cash and Cash Equivalents. We held $621 million and $1.5 billion in cash and cash equivalents as of December 31, 2017 and 2016, respectively.

Operating Activities. Net cash provided by operating activities increased $3.9 billion during the year ended December 31, 2017 compared to the year ended December 31, 2016, primarily due to an increase in Adjusted EBITDA of $4.7 billion offset by an increase in cash paid for interest, net of $761 million as a result of the Transactions and long-term debt issued for general corporate purposes including stock buybacks.

Net cash provided by operating activities increased $5.7 billion during the year ended December 31, 2016 compared to the year ended December 31, 2015, primarily due to an increase in Adjusted EBITDA of $7.2 billion offset by an increase in cash paid for interest, net of $1.6 billion primarily as a result of the Transactions.

Investing Activities. Net cash used in investing activities for the years ended December 31, 2017, 2016 and 2015, was $8.1 billion, $11.3 billion and $17.0 billion, respectively. The changes in cash used were primarily due to the acquisition of Legacy TWC and Legacy Bright House in 2016 as well as increases in capital expenditures as a result of the Transactions.

Financing Activities. Net cash used in financing activities increased $9.5 billion during the year ended December 31, 2017 compared to the year ended December 31, 2016 primarily due to increases in the purchase of treasury stock and noncontrolling interest as well as a decrease in equity issued offset by an increase in borrowings of long-term debt exceeding repayments.

Net cash provided in financing activities decreased $9.9 billion during the year ended December 31, 2016 compared to the year ended December 31, 2015 primarily due to a decrease in borrowings of long-term debt exceeding repayments as well as increases in the purchase of treasury stock and noncontrolling interest offset by an increase in equity issued for the acquisition of Legacy TWC and Legacy Bright House in 2016.

Capital Expenditures

We have significant ongoing capital expenditure requirements. Capital expenditures were $8.7 billion, $5.3 billion and $1.8 billion for the years ended December 31, 2017, 2016 and 2015, respectively. The increase was driven by the Transactions. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, the increase during 2017 as compared to 2016 was driven

by higher CPE purchases for SPP, our all-digital initiative and early inventory purchases to operationally stage 2018 activity, higher support capital investments and line extensions. See the table below for more details.

The actual amount of our capital expenditures in 2018 will depend on a number of factors, including our all-digital transition in the Legacy TWC and Legacy Bright House markets, further spend related to product development and growth rates of both our residential and commercial businesses.

Our capital expenditures are funded primarily from cash flows from operating activities and borrowings on our credit facility. In addition, our accrued liabilities related to capital expenditures increased by $820 million, $603 million and $28 million for the years ended December 31, 2017, 2016 and 2015, respectively.

The following tables present our major capital expenditures categories on an actual and pro forma basis, assuming the Transactions occurred as of January 1, 2015, in accordance with National Cable and Telecommunications Association ("NCTA") disclosure guidelines for the years ended December 31, 2017, 2016 and 2015. The disclosure is intended to provide more consistency in the reporting of capital expenditures among peer companies in the cable industry. These disclosure guidelines are not required disclosures under GAAP, nor do they impact our accounting for capital expenditures under GAAP (dollars in millions):

	Year ended December 31,		
	2017	2016	2015
	Actual		
Customer premise equipment [(a)]	$ 3,385	$ 1,864	$ 582
Scalable infrastructure [(b)]	2,007	1,390	523
Line extensions [(c)]	1,176	721	194
Upgrade/rebuild [(d)]	572	456	128
Support capital [(e)]	1,541	894	413
Total capital expenditures	$ 8,681	$ 5,325	$ 1,840
Capital expenditures included in total related to:			
Commercial services	$ 1,298	$ 824	$ 260
Transition [(f)]	$ 489	$ 460	$ 115

	Year ended December 31,	
	2016	2015
	Pro Forma	
Customer premise equipment [(a)]	$ 2,761	$ 2,650
Scalable infrastructure [(b)]	2,009	1,702
Line extensions [(c)]	1,005	977
Upgrade/rebuild [(d)]	610	594
Support capital [(e)]	1,160	1,046
Total capital expenditures	$ 7,545	$ 6,969

(a) Customer premise equipment includes costs incurred at the customer residence to secure new customers and revenue generating units. It also includes customer installation costs and customer premise equipment (e.g., set-top boxes and cable modems).

(b) Scalable infrastructure includes costs not related to customer premise equipment, to secure growth of new customers and revenue generating units, or provide service enhancements (e.g., headend equipment).

(c) Line extensions include network costs associated with entering new service areas (e.g., fiber/coaxial cable, amplifiers, electronic equipment, make-ready and design engineering).

(d) Upgrade/rebuild includes costs to modify or replace existing fiber/coaxial cable networks, including betterments.

(e) Support capital includes costs associated with the replacement or enhancement of non-network assets due to technological and physical obsolescence (e.g., non-network equipment, land, buildings and vehicles).

(f) Transition represents incremental costs incurred to integrate the Legacy TWC and Legacy Bright House operations and to bring the three companies' systems and processes into a uniform operating structure.

Debt

As of December 31, 2017, the accreted value of our total debt was approximately$70.2 billion, as summarized below (dollars in millions):

	December 31, 2017			
	Principal Amount	Accreted Value [(a)]	Interest Payment Dates	Maturity Date [(b)]
CCO Holdings, LLC:				
5.250% senior notes due 2021	$ 500	$ 497	3/15 & 9/15	3/15/2021
5.250% senior notes due 2022	1,250	1,235	3/30 & 9/30	9/30/2022
5.125% senior notes due 2023	1,000	993	2/15 & 8/15	2/15/2023
4.000% senior notes due 2023	500	495	3/1 & 9/1	3/1/2023
5.125% senior notes due 2023	1,150	1,143	5/1 & 11/1	5/1/2023
5.750% senior notes due 2023	500	496	3/1 & 9/1	9/1/2023
5.750% senior notes due 2024	1,000	992	1/15 & 7/15	1/15/2024
5.875% senior notes due 2024	1,700	1,687	4/1 & 10/1	4/1/2024
5.375% senior notes due 2025	750	745	5/1 & 11/1	5/1/2025
5.750% senior notes due 2026	2,500	2,464	2/15 & 8/15	2/15/2026
5.500% senior notes due 2026	1,500	1,489	5/1 & 11/1	5/1/2026
5.875% senior notes due 2027	800	794	5/1 & 11/1	5/1/2027
5.125% senior notes due 2027	3,250	3,216	5/1 & 11/1	5/1/2027
5.000% senior notes due 2028	2,500	2,462	2/1 & 8/1	2/1/2028
Charter Communications Operating, LLC:				
3.579% senior notes due 2020	2,000	1,988	1/23 & 7/23	7/23/2020
4.464% senior notes due 2022	3,000	2,977	1/23 & 7/23	7/23/2022
4.908% senior notes due 2025	4,500	4,462	1/23 & 7/23	7/23/2025
3.750% senior notes due 2028	1,000	985	2/15 & 8/15	2/15/2028
4.200% senior notes due 2028	1,250	1,238	3/15 & 9/15	3/15/2028
6.384% senior notes due 2035	2,000	1,981	4/23 & 10/23	10/23/2035
6.484% senior notes due 2045	3,500	3,466	4/23 & 10/23	10/23/2045
5.375% senior notes due 2047	2,500	2,506	5/1 & 11/1	5/1/2047
6.834% senior notes due 2055	500	495	4/23 & 10/23	10/23/2055
Credit facilities	9,479	9,387		Varies
Time Warner Cable, LLC:				
6.750% senior notes due 2018	2,000	2,045	1/1 & 7/1	7/1/2018
8.750% senior notes due 2019	1,250	1,337	2/14 & 8/14	2/14/2019
8.250% senior notes due 2019	2,000	2,148	4/1 & 10/1	4/1/2019
5.000% senior notes due 2020	1,500	1,579	2/1 & 8/1	2/1/2020
4.125% senior notes due 2021	700	730	2/15 & 8/15	2/15/2021
4.000% senior notes due 2021	1,000	1,045	3/1 & 9/1	9/1/2021
5.750% sterling senior notes due 2031 [(c)]	845	912	6/2	6/2/2031
6.550% senior debentures due 2037	1,500	1,686	5/1 & 11/1	5/1/2037
7.300% senior debentures due 2038	1,500	1,788	1/1 & 7/1	7/1/2038
6.750% senior debentures due 2039	1,500	1,724	6/15 & 12/15	6/15/2039
5.875% senior debentures due 2040	1,200	1,258	5/15 & 11/15	11/15/2040
5.500% senior debentures due 2041	1,250	1,258	3/1 & 9/1	9/1/2041
5.250% sterling senior notes due 2042 [(d)]	879	847	7/15	7/15/2042
4.500% senior debentures due 2042	1,250	1,137	3/15 & 9/15	9/15/2042
Time Warner Cable Enterprises LLC:				
8.375% senior debentures due 2023	1,000	1,232	3/15 & 9/15	3/15/2023
8.375% senior debentures due 2033	1,000	1,312	7/15 & 1/15	7/15/2033
	$ 69,003	$ 70,231		

[a] The accreted values presented in the table above represent the principal amount of the debt less the original issue discount at the time of sale, deferred financing costs, and, in regards to the Legacy TWC debt assumed, fair value premium adjustments as a result of applying acquisition accounting plus the accretion of those amounts to the balance sheet date. However, the amount that is currently payable if the debt becomes immediately due is equal to the principal amount of the debt. In regards to the Sterling Notes, the principal amount of the debt and any premium or discount is remeasured into US dollars as of each balance sheet date. We have availability under our credit facilities of approximately $3.6 billion as of December 31, 2017.

[b] In general, the obligors have the right to redeem all of the notes set forth in the above table in whole or in part at their option, beginning at various times prior to their stated maturity dates, subject to certain conditions, upon the payment of the outstanding principal amount (plus a specified redemption premium) and all accrued and unpaid interest.

[c] Principal amount includes £625 million valued at $845 million as of December 31, 2017 using the exchange rate as of December 31, 2017.

[d] Principal amount includes £650 million valued at $879 million as of December 31, 2017 using the exchange rate as of December 31, 2017.

See Note 9 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data” for further details regarding our outstanding debt and other financing arrangements, including certain information about maturities, covenants and restrictions related to such debt and financing arrangements. The agreements and instruments governing our debt and financing arrangements are complicated and you should consult such agreements and instruments which are filed with the SEC for more detailed information.

At December 31, 2017, Charter Operating had a consolidated leverage ratio of approximately 3.0 to 1.0 and a consolidated first lien leverage ratio of 2.9 to 1.0. Both ratios are in compliance with the ratios required by the Charter Operating credit facilities of 5.0 to 1.0 consolidated leverage ratio and 4.0 to 1.0 consolidated first lien leverage ratio. A failure by Charter Operating to maintain the financial covenants would result in an event of default under the Charter Operating credit facilities and the debt of CCO Holdings. See “Part I. Item 1A. Risk Factors — The agreements and instruments governing our debt contain restrictions and limitations that could significantly affect our ability to operate our business, as well as significantly affect our liquidity.”

Recently Issued Accounting Standards

See Note 22 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data” for a discussion of recently issued accounting standards.

Item 7A. ***Quantitative and Qualitative Disclosures About Market Risk.***

We use derivative instruments to manage interest rate risk on variable debt and foreign exchange risk on the Sterling Notes, and do not hold or issue derivative instruments for speculative trading purposes.

Cross-currency derivative instruments are used to effectively convert £1.275 billion aggregate principal amount of fixed-rate British pound sterling denominated debt, including annual interest payments and the payment of principal at maturity, to fixed-rate U.S. dollar denominated debt. The cross-currency derivative instruments have maturities of June 2031 and July 2042. We are required to post collateral on the cross-currency derivative instruments when such instruments are in a liability position. In May 2016, we entered into a collateral holiday agreement for 80% of both the 2031 and 2042 cross-currency swaps, which eliminates the requirement to post collateral for three years. The fair value of our cross-currency derivatives included in other long-term liabilities on our consolidated balance sheets was $25 million and $251 million as of December 31, 2017 and 2016, respectively. For more information, see Note 12 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

As of December 31, 2017 and 2016, the weighted average interest rate on the credit facility debt was approximately 3.4% and 2.9%, respectively, and the weighted average interest rate on the senior notes was approximately 5.7% and 5.9%, respectively, resulting in a blended weighted average interest rate of 5.4% and 5.4%, respectively. The interest rate on approximately 86% and 87% of the total principal amount of our debt was effectively fixed, including the effects of our interest rate swap agreements, as of December 31, 2017 and 2016, respectively. All of our interest rate derivatives were expired as of December 31, 2017.

The table set forth below summarizes the fair values and contract terms of financial instruments subject to interest rate risk maintained by us as of December 31, 2017 (dollars in millions):

	2018	2019	2020	2021	2022	Thereafter	Total	Fair Value
Debt:								
Fixed Rate	$ 2,000	$ 3,250	$ 3,500	$ 2,200	$ 4,250	$ 44,324	$ 59,524	$ 63,443
Average Interest Rate	6.75%	8.44%	4.19%	4.32%	4.70%	5.70%	5.67%	
Variable Rate	$ 207	$ 207	$ 207	$ 207	$ 207	$ 8,444	$ 9,479	$ 9,440
Average Interest Rate	3.60%	3.90%	3.98%	4.01%	4.05%	4.39%	4.34%	

Interest rates on variable-rate debt are estimated using the average implied forward LIBOR for the year of maturity based on the yield curve in effect at December 31, 2017 including applicable bank spread.

Item 8. ***Financial Statements and Supplementary Data.***

Our consolidated financial statements, the related notes thereto, and the reports of independent accountants are included in this annual report beginning on page F-1.

Item 9. ***Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.***

None.

Item 9A. ***Controls and Procedures.***

Conclusion Regarding the Effectiveness of Disclosure Controls and Procedures

As of the end of the period covered by this report, under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we have evaluated the effectiveness of the design and operation of disclosure controls and procedures with respect to the information generated for use in this annual report. The evaluation was based upon reports and certifications provided by a number of executives. Based on, and as of the date of that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that the disclosure controls and procedures were effective to provide reasonable assurances that information required to be disclosed in the reports we file or submit under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms.

In designing and evaluating the disclosure controls and procedures, our management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable, not absolute, assurance of achieving the desired control objectives, and management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based upon the above evaluation, we believe that our controls provide such reasonable assurances.

During the quarter ended December 31, 2017, there was no change in our internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Management’s Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) for the Company. Our internal control system was designed to provide reasonable assurance to our management and board of directors regarding the preparation and fair presentation of published financial statements.

Management has assessed the effectiveness of our internal control over financial reporting as of December 31, 2017. In making this assessment, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”) in *Internal Control — Integrated Framework* (2013). Based on management’s assessment utilizing these criteria we believe that, as of December 31, 2017, our internal control over financial reporting was effective.

Our independent auditors, KPMG LLP, have audited our internal control over financial reporting as stated in their report on page F-2.

Item 9B. ***Other Information.***

None.

PART III

Item 10. ***Directors, Executive Officers and Corporate Governance.***

The information required by Item 10 will be included in Charter's 2018 Proxy Statement (the "Proxy Statement") under the headings "Election of Class A Directors," "Section 16(a) Beneficial Ownership Reporting Requirements," and "Code of Ethics," or in amendment to this Annual Report on Form 10-K and is incorporated herein by reference.

Item 11. ***Executive Compensation.***

The information required by Item 11 will be included in the Proxy Statement under the headings "Executive Compensation," "Election of Class A Directors – Director Compensation" and "Compensation Discussion and Analysis," or in an amendment to this Annual Report on Form 10-K and is incorporated herein by reference. Information contained in the Proxy Statement or an amendment to this Annual Report on Form 10-K under the caption "Report of Compensation and Benefits Committee" is furnished and not deemed filed with the SEC.

Item 12. ***Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.***

The information required by Item 12 will be included in the Proxy Statement under the heading "Security Ownership of Certain Beneficial Owners and Management" or in amendment to this Annual Report on Form 10-K and is incorporated herein by reference.

Item 13. ***Certain Relationships and Related Transactions, and Director Independence.***

The information required by Item 13 will be included in the Proxy Statement under the heading "Certain Relationships and Related Transactions" and "Election of Class A Directors" or in amendment to this Annual Report on Form 10-K and is incorporated herein by reference.

Item 14. ***Principal Accounting Fees and Services.***

The information required by Item 14 will be included in the Proxy Statement under the heading "Accounting Matters" or in amendment to this Annual Report on Form 10-K and is incorporated herein by reference.

PART IV

Item 15. ***Exhibits and Financial Statement Schedules.***

(a) The following documents are filed as part of this annual report:

(1) Financial Statements.

A listing of the financial statements, notes and reports of independent public accountants required by "Part II. Item 8. Financial Statements and Supplementary Data" begins on page F-1 of this annual report.

(2) Financial Statement Schedules.

No financial statement schedules are required to be filed by Items 8 and 15(c) because they are not required or are not applicable, or the required information is set forth in the applicable financial statements or notes thereto.

(3) The index to the exhibits begins on page E-1 of this annual report.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, Charter Communications, Inc. has duly caused this annual report to be signed on its behalf by the undersigned, thereunto duly authorized.

CHARTER COMMUNICATIONS, INC.,
Registrant

By: /s/ Thomas M. Rutledge
Thomas M. Rutledge
Chairman and Chief Executive Officer

Date: February 2, 2018

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Richard R. Dykhouse and Kevin D. Howard, and each of them (with full power to each of them to act alone), his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign on his or her behalf individually and in each capacity stated below any and all amendments (including post-effective amendments) to this annual report, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents and either of them, or their substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of Charter Communications, Inc. and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Thomas M. Rutledge Thomas M. Rutledge	Chairman, Chief Executive Officer, Director (Principal Executive Officer)	February 2, 2018
/s/ Christopher L. Winfrey Christopher L. Winfrey	Chief Financial Officer (Principal Financial Officer)	February 2, 2018
/s/ Kevin D. Howard Kevin D. Howard	Senior Vice President – Finance, Controller and Chief Accounting Officer (Principal Accounting Officer)	February 2, 2018
/s/ Eric L. Zinterhofer Eric L. Zinterhofer	Director	February 2, 2018
/s/ W. Lance Conn W. Lance Conn	Director	February 2, 2018
/s/ Kim C. Goodman Kim C. Goodman	Director	February 2, 2018
/s/ Craig A. Jacobson Craig A. Jacobson	Director	February 2, 2018
/s/ Gregory Maffei Gregory Maffei	Director	February 2, 2018
/s/ John C. Malone John C. Malone	Director	February 2, 2018
/s/ John D. Markley, Jr. John D. Markley, Jr.	Director	February 2, 2018
/s/ David C. Merritt David C. Merritt	Director	February 2, 2018
/s/ Steven Miron Steven Miron	Director	February 2, 2018
/s/ Balan Nair Balan Nair	Director	February 2, 2018
/s/ Michael Newhouse Michael Newhouse	Director	February 2, 2018
/s/ Mauricio Ramos Mauricio Ramos	Director	February 2, 2018

Exhibit Index

Exhibits are listed by numbers corresponding to the Exhibit Table of Item 601 in Regulation S-K.

Exhibit	Description
2.1	Agreement and Plan of Mergers, dated as of May 23, 2015, among Time Warner Cable Inc., Charter Communications, Inc., CCH I, LLC, Nina Corporation I, Inc., Nina Company II, LLC and Nina Company III, LLC (incorporated by reference to Exhibit 2.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 29, 2015 (File No. 001-33664)).
2.2	Contribution Agreement, dated March 31, 2015, by and among Advance/Newhouse Partnership, A/NPC Holdings LLC, Charter Communications, Inc., CCH I, LLC, and Charter Communications Holding Company, LLC (incorporated by reference to Exhibit 2.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 1, 2015 (File No. 001-33664)).
3.1	Amended and Restated Certificate of Incorporation of Charter Communications, Inc. (incorporated by reference to Exhibit 3.1 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
3.2	By-laws of Charter Communications, Inc. as of May 18, 2016 (incorporated by reference to Exhibit 3.2 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
4.1(a)	Amended and Restated Stockholders Agreement, dated March 31, 2015, by and among Charter Communications, Inc., Liberty Broadband Corporation and Advance/Newhouse Partnership (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 1, 2015 (File No. 001-33664)).
4.1(b)	Second Amended and Restated Stockholders Agreement, dated May 23, 2015, by and among Charter Communications, Inc., CCH I, LLC, Liberty Broadband Corporation and Advance/Newhouse Partnership (incorporated by reference to Annex C to the registration statement on Form S-4 filed by CCH I, LLC on June 26, 2015 (File No. 333-205240)).
10.1	Indenture dated as of May 10, 2011, by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K of Charter Communications, Inc. filed on May 16, 2011 (File No. 001-33664)).
10.2	Third Supplemental Indenture dated as of January 26, 2012 by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K of Charter Communications, Inc. filed on February 1, 2012 (File No. 001-33664))
10.3	Fourth Supplemental Indenture dated August 22, 2012 relating to the 5.25% Senior Notes due 2022 by and among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 10.1 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed on November 6, 2012 (File No. 001-33664)).
10.4	Fifth Supplemental Indenture dated December 17, 2012 relating to the 5.125% Senior Notes due 2023 by and among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 10.9 to the annual report on Form 10-K of Charter Communications, Inc. filed February 22, 2013 (File No. 001-33664)).
10.5	Sixth Supplemental Indenture relating to the 5.25% senior notes due 2021, dated as of March 14, 2013, by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed March 15, 2013 (File No. 001-33664)).
10.6	Seventh Supplemental Indenture relating to the 5.75% senior notes due 2023, dated as of March 14, 2013, by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed March 15, 2013 (File No. 001-33664)).
10.7	Eighth Supplemental Indenture relating to the 5.75% senior notes due 2024, dated as of May 3, 2013, by and among CCO Holdings, LLC and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 10.7 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed on May 7, 2013 (File No. 001-33664)).
10.8	Indenture dated as of November 5, 2014, by and among CCO Holdings, LLC, CCO Holdings Capital Corp. and CCOH Safari, LLC, as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K of Charter Communications, Inc. filed on November 10, 2014 (File No. 001-33664)).

10.9	Third Supplemental Indenture, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.10	Fourth Supplemental Indenture, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.11	Fifth Supplemental Indenture, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.12	Exchange and Registration Rights Agreement, dated as of April 21, 2015 relating to the 5.125% Senior Notes due 2023, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.13	Exchange and Registration Rights Agreement relating to the 5.375% Senior Notes due 2025, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.14	Exchange and Registration Rights Agreement relating to the 5.875% Senior Notes due 2027, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.3 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.15	Indenture, dated as of July 23, 2015, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp. and CCO Safari II, LLC, as issuers, and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 27, 2015 (File No. 001-33664)).
10.16	First Supplemental Indenture, dated as of July 23, 2015, among CCO Safari II, LLC, as escrow issuer, CCH II, LLC, as limited guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on July 27, 2015 (File No. 001-33664)).
10.17	Exchange and Registration Rights Agreement, dated July 23, 2015 relating to the 3.579% Senior Secured Notes due 2020, 4.464% Senior Secured Notes due 2022, 4.908% Senior Secured Notes due 2025, 6.384% Senior Secured Notes due 2035, 6.484% Senior Secured Notes due 2045 and 6.834% Senior Secured Notes due 2055, between CCO Safari II, LLC and Goldman, Sachs & Co., Credit Suisse Securities (USA) LLC, Merrill Lynch, Pierce, Fenner & Smith Incorporated, Deutsche Bank Securities Inc. and UBS Securities LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 27, 2015 (File No. 001-33664)).
10.18	Indenture, dated as of November 20, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp. and CCOH Safari, LLC, as issuers, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on November 25, 2015 (File No. 001-33664)).
10.19	First Supplemental Indenture, dated as of November 20, 2015, between CCOH Safari, LLC, as escrow issuer, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on November 25, 2015 (File No. 001-33664)).
10.20	Exchange and Registration Rights Agreement, dated November 20, 2015 relating to the 5.750% Senior Notes due 2026, between CCOH Safari, LLC and Credit Suisse Securities (USA) LLC, Goldman, Sachs & Co., Merrill Lynch, Pierce, Fenner & Smith Incorporated, UBS Securities LLC and Deutsche Bank Securities Inc., as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on November 25, 2015 (File No. 001-33664)).
10.21	Sixth Supplemental Indenture, dated as of February 19, 2016, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 22, 2016 (File No. 001-33664)).

10.22	Exchange and Registration Rights Agreement, dated February 19, 2016, relating to the 5.875% Senior Notes due 2024, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Deutsche Bank Securities Inc., Credit Suisse Securities (USA) LLC, Goldman, Sachs & Co., Merrill Lynch, Pierce, Fenner & Smith Incorporated, UBS Securities LLC, Citigroup Global Markets Inc. and Wells Fargo Securities, LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 22, 2016 (File No. 001-33664)).
10.23	Seventh Supplemental Indenture, dated as of April 21, 2016, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 27, 2016 (File No. 001-33664)).
10.24	Exchange and Registration Rights Agreement, dated April 21, 2016, relating to the 5.500% Senior Notes due 2026, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Merrill Lynch, Pierce, Fenner & Smith Incorporated, Citigroup Global Markets Inc., Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co., UBS Securities LLC and Wells Fargo Securities, LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 27, 2016 (File No. 001-33664)).
10.25	Second Supplemental Indenture, dated as of May 18, 2016, by and among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Safari II, LLC and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.26	Third Supplemental Indenture, dated as of May 18, 2016, by and among CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.27	Second Supplemental Indenture, dated as of May 18, 2016, by and among CCO Holdings, LLC, CCO Holdings Capital Corp., CCOH Safari, LLC and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.28	Third Supplemental Indenture, dated as of February 6, 2017, among CCO Holdings, LLC, CCO Holdings Capital Corp., and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated herein by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 6, 2017 (File No. 001-33664)).
10.29	Exchange and Registration Rights Agreement, dated February 6, 2017, relating to the 5.125% Senior Notes due 2027, among CCO Holdings, LLC, CCO Holdings Capital Corp., and Merrill Lynch, Pierce, Fenner & Smith Incorporated, Citigroup Global Markets Inc., Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co., UBS Securities LLC, and Wells Fargo Securities, LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 6, 2017 (File No. 001-33664)).
10.30	Exchange and Registration Rights Agreement, dated March 29, 2017, relating to the 5.125% Senior Notes due 2027, among CCO Holdings, LLC, CCO Holdings Capital Corp., and Deutsche Bank Securities Inc., Merrill Lynch, Pierce, Fenner & Smith Incorporated, Citigroup Global Markets Inc., Credit Suisse Securities (USA) LLC, Goldman, Sachs & Co., UBS Securities LLC, and Wells Fargo Securities, LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on March 31, 2017 (File No. 001-33664)).
10.31	Fifth Supplemental Indenture, dated as of April 20, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on April 26, 2017 (File No. 001-33664)).
10.32	Exchange and Registration Rights Agreement, dated April 20, 2017, relating to the 5.125% Senior Notes due 2027, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Citigroup Global Markets Inc., as a representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 26, 2017 (File No. 001-33664)).
10.33	Exchange and Registration Rights Agreement, dated April 20, 2017, relating to the 5.375% Senior Notes due 2047, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Citigroup Global Markets Inc., as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 26, 2017 (File No. 001-33664)).
10.34	Sixth Supplemental Indenture, dated as of July 6, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on July 12, 2017 (File No. 001-33664)).

10.35	Exchange and Registration Rights Agreement, dated July 6, 2017, relating to the 3.750% Senior Notes due 2028, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 12, 2017 (File No. 001-33664)).
10.36	Exchange and Registration Rights Agreement, dated July 6, 2017, relating to the 5.375% Senior Notes due 2047, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on July 12, 2017 (File No. 001-33664)).
10.37	Fourth Supplemental Indenture, dated as of August 8, 2017, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on August 14, 2017 (File No. 001-33664)).
10.38	Exchange and Registration Rights Agreement, dated August 8, 2017, relating to the 5.000% Senior Notes due 2028, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on August 14, 2017 (File No. 001-33664)).
10.39	Seventh Supplemental Indenture, dated as of September 18, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on September 21, 2017 (File No. 001-33664)).
10.40	Exchange and Registration Rights Agreement, dated September 18, 2017, relating to the 4.200% Senior Secured Notes due 2028, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated and Citigroup Global Markets Inc., as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on September 21, 2017 (File No. 001-33664)).
10.41	Exchange and Registration Rights Agreement, dated September 18, 2017, relating to the 5.375% Senior Secured Notes due 2047, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated and Citigroup Global Markets Inc., as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on September 21, 2017 (File No. 001-33664)).
10.42	Fifth Supplemental Indenture, dated as of October 17, 2017, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on October 20, 2017 (File No. 001-33664)).
10.43	Exchange and Registration Rights Agreement, dated October 17, 2017, relating to the 5.000% Senior Notes due 2028, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on October 20, 2017 (File No. 001-33664)).
10.44	Exchange and Registration Rights Agreement, dated October 17, 2017, relating to the 4.000% Senior Notes due 2023, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on October 20, 2017 (File No. 001-33664)).
10.45	Eighth Supplemental Indenture, dated as of December 21, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, the subsidiary guarantor parties thereto and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.5 to the current report on Form S-3 filed by Charter Communications, Inc. on December 22, 2017 (File No. 333-222241)).
10.46	Indenture, dated as of April 30, 1992 (the "TWCE Indenture"), as amended by the First Supplemental Indenture, dated as of June 30, 1992, among Time Warner Entertainment Company, L.P. ("TWE"), Time Warner Companies, Inc. ("TWCI"), certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibits 10(g) and 10(h) to TWCI's current report on Form 8-K dated June 26, 1992 and filed with the SEC on July 15, 1992 (File No. 1-8637)). (P)
10.47	Second Supplemental Indenture to the TWCE Indenture, dated as of December 9, 1992, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.2 to Amendment No. 1 to TWE's Registration Statement on Form S-4 dated and filed with the SEC on October 25, 1993 (Registration No. 33-67688) (the "TWE October 25, 1993 Registration Statement")). (P)

10.48	Third Supplemental Indenture to the TWCE Indenture, dated as of October 12, 1993, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.3 to the TWE October 25, 1993 Registration Statement). (P)
10.49	Fourth Supplemental Indenture to the TWCE Indenture, dated as of March 29, 1994, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.4 to TWE's Annual Report on Form 10-K for the year ended December 31, 1993 and filed with the SEC on March 30, 1994 (File No. 1-12878)). (P)
10.5	Fifth Supplemental Indenture to the TWCE Indenture, dated as of December 28, 1994, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.5 to TWE's Annual Report on Form 10-K for the year ended December 31, 1994 and filed with the SEC on March 30, 1995 (File No. 1-12878)). (P)
10.51	Sixth Supplemental Indenture to the TWCE Indenture, dated as of September 29, 1997, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.7 to Historic TW Inc.'s ("Historic TW") Annual Report on Form 10-K for the year ended December 31, 1997 and filed with the SEC on March 25, 1998 (File No. 1-12259) (the "Time Warner 1997 Form 10-K")).
10.52	Seventh Supplemental Indenture to the TWCE Indenture, dated as of December 29, 1997, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.8 to the Time Warner 1997 Form 10-K).
10.53	Eighth Supplemental Indenture to the TWCE Indenture, dated as of December 9, 2003, among Historic TW, TWE, Warner Communications Inc. ("WCI"), American Television and Communications Corporation ("ATC"), TWC and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.10 to Time Warner Inc.'s ("Time Warner") Annual Report on Form 10-K for the year ended December 31, 2003 (File No. 1-15062)).
10.54	Ninth Supplemental Indenture to the TWCE Indenture, dated as of November 1, 2004, among Historic TW, TWE, Time Warner NY Cable Inc., WCI, ATC, TWC and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.1 to Time Warner's Quarterly Report on Form 10-Q for the quarter ended September 30, 2004 (File No. 1-15062)).
10.55	Tenth Supplemental Indenture to the TWCE Indenture, dated as of October 18, 2006, among Historic TW, TWE, TW NY Cable Holding Inc. ("TW NY"), Time Warner NY Cable LLC ("TW NY Cable"), TWC, WCI, ATC and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.1 to Time Warner's current report on Form 8-K dated and filed October 18, 2006 (File No. 1-15062)).
10.56	Eleventh Supplemental Indenture to the TWCE Indenture, dated as of November 2, 2006, among TWE, TW NY, TWC and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 99.1 to Time Warner's current report on Form 8-K dated and filed November 2, 2006 (File No. 1-15062)).
10.57	Twelfth Supplemental Indenture to the TWCE Indenture, dated as of September 30, 2012, among Time Warner Cable Enterprises LLC ("TWCE"), TWC, TW NY, Time Warner Cable Internet Holdings II LLC ("TWC Internet Holdings II") and The Bank of New York Mellon, as trustee, supplementing the Indenture dated April 30, 1992, as amended (incorporated herein by reference to Exhibit 4.2 to TWC's current report on Form 8-K dated September 30, 2012 and filed with the SEC on October 1, 2012 (File No. 1-33335) (the "TWC September 30, 2012 Form 8-K")).
10.58	Thirteenth Supplemental Indenture, dated as of May 18, 2016, by and among Time Warner Cable Enterprises LLC, the guarantors party thereto and The Bank of New York Mellon (formerly known as The Bank of New York), as trustee (incorporated by reference to Exhibit 4.4 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.59	Indenture, dated as of April 9, 2007 (the "TWC Indenture"), among TWC, TW NY, TWE and The Bank of New York, as trustee (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated April 4, 2007 and filed with the SEC on April 9, 2007 (File No. 1-33335) (the "TWC April 4, 2007 Form 8-K")).
10.60	First Supplemental Indenture to the TWC Indenture, dated as of April 9, 2007, among TWC, TW NY, TWE and The Bank of New York, as trustee (incorporated herein by reference to Exhibit 4.2 to the TWC April 4, 2007 Form 8-K).
10.61	Second Supplemental Indenture to the TWC Indenture, dated as of September 30, 2012, among TWC, TW NY, TWCE, TWC Internet Holdings II and The Bank of New York Mellon, as trustee, supplementing the Indenture dated April 9, 2007, as amended (incorporated herein by reference to Exhibit 4.1 to the TWC September 30, 2012 Form 8-K).
10.62	Third Supplemental Indenture, dated as of May 18, 2016, by and among Time Warner Cable Inc., TWC NewCo LLC and The Bank of New York Mellon (formerly known as The Bank of New York), as trustee (incorporated by reference to Exhibit 4.5 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).

10.63	Fourth Supplemental Indenture, dated as of May 18, 2016, by and among TWC NewCo LLC, the guarantors party thereto and The Bank of New York Mellon (formerly known as The Bank of New York), as trustee (incorporated by reference to Exhibit 4.6 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.64	Form of TWC 5.85% Exchange Notes due 2017 (included as Exhibit B to the First Supplemental Indenture incorporated herein by reference to Exhibit 4.2 to the TWC April 4, 2007 Form 8-K).
10.65	Form of TWC 6.55% Exchange Debentures due 2037 (included as Exhibit C to the First Supplemental Indenture incorporated herein by reference to Exhibit 4.2 to the TWC April 4, 2007 Form 8-K).
10.66	Form of TWC 6.75% Notes due 2018 (incorporated herein by reference to Exhibit 4.2 to TWC's current report on Form 8-K dated June 16, 2008 and filed with the SEC on June 19, 2008 (File No. 1-33335) (the "TWC June 16, 2008 Form 8-K")).
10.67	Form of TWC 7.30% Debentures due 2038 (incorporated herein by reference to Exhibit 4.3 to the TWC June 16, 2008 Form 8-K).
10.68	Form of TWC 8.75% Notes due 2019 (incorporated herein by reference to Exhibit 4.2 to TWC's current report on Form 8-K dated November 13, 2008 and filed with the SEC on November 18, 2008) (File No. 1-33335).
10.69	Form of TWC 8.25% Notes due 2019 (incorporated herein by reference to Exhibit 4.2 to TWC's current report on Form 8-K dated March 23, 2009 and filed with the SEC on March 26, 2009 (File No. 1-33335)).
10.70	Form of TWC 6.75% Debentures due 2039 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated June 24, 2009 and filed with the SEC on June 29, 2009 (File No. 1-33335)).
10.71	Form of TWC 3.5% Notes due 2015 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated December 8, 2009 and filed with the SEC on December 11, 2009 (File No. 1-33335 (the "TWC December 8,2009 Form 8-K")).
10.72	Form of TWC 5.0% Notes due 2020 (incorporated herein by reference to Exhibit 4.2 to the TWC December 8, 2009 Form 8-K).
10.73	Form of TWC 4.125% Notes due 2021 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated November 9, 2010 and filed with the SEC on November 15, 2010 (File No. 1-33335) (the "TWC November 9, 2010 Form 8-K")).
10.74	Form of TWC 5.875% Debentures due 2040 (incorporated herein by reference to Exhibit 4.2 to the TWC November 9, 2010 Form 8-K).
10.75	Form of TWC 5.75% Note due 2031 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated and filed with the SEC on May 26, 2011 (File No. 1-33335)).
10.76	Form of TWC 4% Note due 2021 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated September 7, 2011 and filed with the SEC on September 12, 2011 (File No. 1-33335) (the "TWC September 7, 2011 Form 8-K")).
10.77	Form of TWC 5.5% Debenture due 2041 (incorporated herein by reference to Exhibit 4.2 to the TWC September 7, 2011 Form 8-K).
10.78	Form of TWC 4.5% Debenture due 2042 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated August 7, 2012 and filed with the SEC on August 10, 2012 (File No. 1-33335)).
10.79	Form of TWC 5.25% Note due 2042 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated and filed with the SEC on June 27, 2012 (File No. 1-33335)).
10.80	Form of 5.500% Senior Notes due 2026 (incorporated herein by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed April 27, 2016).
10.81	Amendment No. 5, dated as of August 24, 2015, to the Amended and Restated Credit Agreement dated as of April 11, 2012 between Charter Communications Operating, LLC, as borrower, CCO Holdings, LLC, as guarantor, and Bank of America, N.A., as administrative agent (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed on August 28, 2015 (File No. 001-33664)).
10.82	Incremental Activation Notice, dated as of August 24, 2015 delivered by Charter Communications Operating, LLC, CCO Holdings, LLC, the subsidiary guarantors party thereto, each Term H Lender party thereto to, each Term I Lender party thereto and Bank of America, N.A., as Administrative Agent under the Amended and Restated Credit Agreement, dated as of April 11, 2012 (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on August 28, 2015 (File No. 001-33664)).
10.83	Escrow Credit Agreement, dated as of August 24, 2015, between CCO Safari III, LLC, as borrower, and Bank of America, N.A., as administrative agent, and the lenders party thereto (incorporated by reference to Exhibit 10.3 to the current report on Form 8-K of Charter Communications, Inc. filed on August 28, 2015 (File No. 001-33664)).
10.84(a)	Restatement Agreement dated as of May 18, 2016, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, the subsidiary guarantors party thereto, Bank of America, N.A., as administrative agent and the lenders party thereto (incorporated by reference to Exhibit 10.5 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 (File No. 001-33664)).

10.84(b)	Amendment No. 1 dated as of December 23, 2016, to the Amended and Restated Credit Agreement dated as of March 18, 1999, as amended and restated on May 18, 2016, by and among Chart Communications Operating, LLC, CCO Holdings, LLC, the Lenders Party thereto and Bank of America, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on December 30, 2016 (File No. 001-33664)).
10.84(c)	Restatement Agreement dated as of December 21, 2017 to the Amended and Restated Credit Agreement dated as of March 18, 1999, as amended and restated on May 18, 2016, as amended by Amendment No. 1, dated as of December 23, 2016 and as further amended by that certain Incremental Activation Notice No. 1, dated as of January 19, 2017, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, the Lenders Party thereto and Bank of America, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on December 28, 2017 (File No. 001-33664)).
10.84(d)	Incremental Activation Notice, dated as of May 18, 2016, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, the subsidiary guarantors party thereto, Bank of America, N.A., as administrative agent and the lenders party thereto (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 (File No. 001-33664)).
10.85	Amended and Restated Guarantee and Collateral Agreement made by CCO Holdings, LLC, Charter Communications Operating, LLC and certain of its subsidiaries in favor of Bank of America, N.A., as administrative agent, as amended and restated as of March 31, 2010 (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed on April 6, 2010 (File No. 001-33664)).
10.86	Collateral Agreement, dated as of May 18, 2016, by Charter Communications Operating, LLC, Charter Communications Operating Capital Corp. and the other grantors party thereto in favor of The Bank of New York Mellon Trust Company, N.A., as collateral agent (incorporated by reference to Exhibit 10.6 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 (File No. 001-33664)).
10.87	First Lien Intercreditor Agreement, dated as of May 18, 2016, by and among Charter Communications Operating, LLC, the other grantors party thereto, Bank of America, N.A., as credit agreement collateral agent for the credit agreement secured parties, The Bank of New York Mellon Trust Company, N.A., as notes collateral agent for the indenture secured parties, and each additional agent from time to time party thereto (incorporated by reference to Exhibit 10.7 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 (File No. 001-33664)).
10.88	Joinder Agreement to Registration Rights Agreement, dated as of May 18, 2016, by and among CCO Safari II, LLC, CCH II, LLC, Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC and the other guarantors party thereto (incorporated herein by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed May 24, 2016).
10.89	Joinder Agreement to Registration Rights Agreement, dated as of May 18, 2016, by CCO Holdings, LLC and CCO Holdings Capital Corp (incorporated herein by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed May 24, 2016).
10.90	Escrow Assumption Agreement, dated as of May 18, 2016, by and among CCO Safari III, LLC, Charter Communications Operating, LLC, Bank of America, N.A., as escrow administrative agent and Bank of America, N.A., as administrative agent (incorporated herein by reference to Exhibit 10.3 to the current report on Form 8-K of Charter Communications, Inc. filed May 24, 2016).
10.91	Amended and Restated Limited Liability Company Agreement of Charter Communications Holdings, LLC, dated as of May 18, 2016, by and among Charter Holdings, Charter, CCH II, LLC, Advance/Newhouse Partnership and the other party or parties thereto (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.92	Exchange Agreement, dated as of May 18, 2016, by and among Charter Holdings, Charter, Advance/Newhouse Partnership and the other party or parties thereto (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.93	Registration Rights Agreement, dated as of May 18, 2016, by and among Charter, Advance/Newhouse Partnership and Liberty Broadband (incorporated by reference to Exhibit 10.3 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.94	Tax Receivables Agreement, dated as of May 18, 2016, by and among Charter, Advance/Newhouse Partnership and the other party or parties thereto (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.95	Wireless Operational Cooperation Agreement dated as of May 5, 2017 between Charter Communications, Inc. and Comcast Corporation (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 8, 2017 (File No. 001-33664)).
10.96+	Charter Communications, Inc. Executive Bonus Plan (incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q of Charter Communications, Inc. filed on May 8, 2012 (File No. 001-33664)).
10.97+	Charter Communications, Inc. 2016 Executive Incentive Performance Plan (incorporated by reference to Appendix A to the proxy statement for the Charter Communications, Inc. 2016 Annual Meeting of Stockholders filed March 17, 2016 (File No. 001-33664)).

10.98+	Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan (incorporated by reference to Exhibit 10.6 to the Current Report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.99+	Amendment to the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan, dated as of October 25, 2016 (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K of Charter Communications, Inc. filed on October 28, 2016 (File No. 001-33664)).
10.100+	Charter Communications, Inc.'s Amended and Restated Supplemental Deferred Compensation Plan, dated as of September 1, 2011(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on September 2, 2011 (File No. 001-33664)).
10.101+	Form of Non-Qualified Time Vesting Stock Option Agreement dated April 26, 2011(incorporated by reference to Exhibit 10.3 to the quarterly report on Form 10-Q filed by Charter Communications, Inc. on August 2, 2011 (File No. 001-33664)).
10.102+	Form of Non-Qualified Price Vesting Stock Option Agreement dated April 26, 2011(incorporated by reference to Exhibit 10.2 to the quarterly report on Form 10-Q filed by Charter Communications, Inc. on August 2, 2011 (File No. 001-33664)).
10.103+	Form of Notice of LTIP Award Agreement Changes (RSU Awards) (incorporated by reference to Exhibit 10.3 to the current report on Form 8-K filed by Charter Communications, inc. on January 22, 2014 (File No. 001-33664)).
10.104+	Form of Notice of LTIP Award Agreement Changes (Time-Vesting Option Awards) (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
10.105+	Form of Notice of LTIP Award Agreement Changes (Restricted Stock Awards) (incorporated by reference to Exhibit 10.5 to the current report on Form 8-K filed by Charter Communications, inc. on January 22, 2014 (File No. 001-33664)).
10.106+	Form of Notice of LTIP Award Agreement Changes (Performance-Vesting Option Awards) (incorporated by reference to Exhibit 10.6 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
10.107+	Form of Stock Option Agreement dated January 15, 2014 (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
10.108+	Form of Restricted Stock Unit Agreement dated January 15, 2014 (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
10.109(a)+	Employment Agreement between Thomas Rutledge and Charter Communications, Inc., dated as of May 17, 2016 (incorporated by reference to Exhibit 10.5 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.109(b)+	Time-Vesting Stock Option Agreement dated as of December 19, 2011 by and between Charter Communications, Inc. and Thomas M. Rutledge (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on December 19, 2011 (File No. 001-33664)).
10.109(c)+	Performance-Vesting Stock Option Agreement dated as of December 19, 2011 by and between Charter Communications, Inc. and Thomas M. Rutledge (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K filed by Charter Communications, Inc. on December 19, 2011 (File No. 001-33664)).
10.110(a)+	Employment Agreement dated effective as of November 2, 2016 by and between Charter Communications, Inc. and John Bickham (incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q of Charter Communications, Inc. filed on November 3, 2016 (File No. 001-33664)).
10.110(b)+	Time-Vesting Stock Option Agreement dated as of April 30, 2012 by and between Charter Communications, Inc. and John Bickham (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on May 1, 2012 (File No. 001-33664)).
10.110(c)+	Performance-Vesting Stock Option Agreement dated as of April 30, 2012 by and between Charter Communications, Inc. and John Bickham (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K filed by Charter Communications, Inc. on May 1, 2012 (File No. 001-33664)).
10.111+	Form of First Amended and Restated Indemnification Agreement (incorporated by reference to Exhibit 10.3 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed on August 6, 2013 (File No. 001-33664)).
10.112+	Amendment to the Employment Agreement, dated as of February 11, 2016, by and between Charter Communications, Inc. and Thomas Rutledge (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 12, 2016 (File No. 001-33664)).
10.113+	Time Warner Cable Inc. 2006 Stock Incentive Plan (incorporated herein by reference to Exhibit 10.45 to TWC's current report on Form 8-K dated February 13, 2007 and filed with the SEC on February 13, 2007).
10.114+	Time Warner Cable Inc. 2006 Stock Incentive Plan, as amended, effective March 12, 2009 (incorporated herein by reference to Exhibit 10.1 to TWC's Quarterly Report on Form 10-Q for the quarter ended March 31, 2009).

10.115+	Time Warner Cable Inc. 2011 Stock Incentive Plan (incorporated herein by reference to Annex A to TWC's definitive Proxy Statement dated April 6, 2011 and filed with the SEC on April 6, 2011).
10.116+	Form of Amendment to Nonqualified Stock Option Agreements Granted Under the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan, dated as of October 25, 2016 (incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K of Charter Communications, Inc. filed on October 28, 2016 (File No. 001-33664)).
10.117+	Employment Agreement dated effective as of November 2, 2016 by and between Charter Communications, Inc. and Christopher L. Winfrey (incorporated by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q of Charter Communications, Inc. filed on November 3, 2016 (File No. 001-33664)).
10.118+	Employment Agreement dated effective as of November 2, 2016 by and between Charter Communications, Inc. and Jonathan Hargis (incorporated by reference to Exhibit 10.3 to the Quarterly Report on Form 10-Q of Charter Communications, Inc. filed on November 3, 2016 (File No. 001-33664)).
10.119+	Employment Agreement dated as of November 10, 2016 by and between Charter Communications, Inc. and David Ellen (incorporated by reference to Exhibit 10.101 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on February 16, 2017 (File No. 001-33664)).
10.120+	Form of Performance-Vesting Stock Option Agreement granted to certain executive officers in 2016 under the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan (incorporated by reference to Exhibit 10.102 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on February 16, 2017 (File No. 001-33664)).
10.121+	Form of Performance-Vesting Restricted Stock Unit Agreement granted to certain executive officers in 2016 under the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan (incorporated by reference to Exhibit 10.103 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on February 16, 2017 (File No. 001-33664)).
10.122	Letter Agreement, dated as of December 23, 2016, between Charter Communications, Inc. and Advance/Newhouse Partnership (incorporated by reference to Exhibit 99.1 to the Current Report on Form 8-K of Charter Communications, Inc. filed on December 28, 2016 (File No. 001-33664)).
10.123	Amendment to Letter Agreement, dated as of December 21, 2017, between Charter Communications, Inc. and Advance/Newhouse Partnership (incorporated by reference to Exhibit 99.1 to the Current Report on Form 8-K of Charter Communications, Inc. filed on December 22, 2017 (File No. 001-33664)).
12.1*	Computation of Ratio of Earnings to Fixed Charges.
21.1*	Subsidiaries of Charter Communications, Inc.
23.1*	Consent of KPMG LLP.
31.1*	Certificate of Chief Executive Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) under the Securities Exchange Act of 1934.
31.2*	Certificate of Chief Financial Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) under the Securities Exchange Act of 1934.
32.1*	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (Chief Executive Officer).
32.2*	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (Chief Financial Officer).
101	The following financial information from the Annual Report of Charter Communications, Inc. on Form 10-K for the year ended December 31, 2017, filed with the SEC on February 2, 2018, formatted in eXtensible Business Reporting Language: (i) Consolidated Balance Sheets, (ii) Consolidated Statements of Operations, (iii) Consolidated Statements of Comprehensive Income (Loss), (iv) Consolidated Statements of Changes in Shareholders' Equity (Deficit), (v) Consolidated Statements of Cash Flows, and (vi) Notes to Consolidated Financial Statements.

* Filed herewith.

\+ Management compensatory plan or arrangement

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Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Charter Communications, Inc.:

Opinions on the Consolidated Financial Statements and Internal Control Over Financial Reporting

We have audited the accompanying consolidated balance sheets of Charter Communications, Inc. and subsidiaries (the “Company”) as of December 31, 2017 and 2016, the related consolidated statements of operations, comprehensive income (loss), changes in shareholders’ equity (deficit), and cash flows for each of the years in the three-year period ended December 31, 2017, and the related notes (collectively, the “consolidated financial statements”). We also have audited the Company’s internal control over financial reporting as of December 31, 2017, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2017 and 2016, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2017, in conformity with U.S. generally accepted accounting principles. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2017, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Basis for Opinion

The Company’s management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management’s Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company’s consolidated financial statements and an opinion on the Company’s internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (“PCAOB”) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control Over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable

assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

(signed) KPMG LLP

We have served as the Company's auditor since 2002.

St. Louis, Missouri
February 1, 2018

CHARTER COMMUNICATIONS, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(dollars in millions, except share data)

	December 31,	
	2017	**2016**
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$ 621	$ 1,535
Accounts receivable, less allowance for doubtful accounts of $113 and $124, respectively	1,635	1,432
Prepaid expenses and other current assets	299	333
Total current assets	2,555	3,300
INVESTMENT IN CABLE PROPERTIES:		
Property, plant and equipment, net of accumulated depreciation of $18,077 and $11,103, respectively	33,888	32,963
Customer relationships, net	11,951	14,608
Franchises	67,319	67,316
Goodwill	29,554	29,509
Total investment in cable properties, net	142,712	144,396
OTHER NONCURRENT ASSETS	1,356	1,371
Total assets	$ 146,623	$ 149,067
LIABILITIES AND SHAREHOLDERS' EQUITY		
CURRENT LIABILITIES:		
Accounts payable and accrued liabilities	$ 9,045	$ 7,544
Current portion of long-term debt	2,045	2,028
Total current liabilities	11,090	9,572
LONG-TERM DEBT	68,186	59,719
DEFERRED INCOME TAXES	17,314	26,665
OTHER LONG-TERM LIABILITIES	2,502	2,745
SHAREHOLDERS' EQUITY:		
Class A common stock; $.001 par value; 900 million shares authorized; 238,506,059 and 268,897,792 shares issued and outstanding, respectively	—	—
Class B common stock; $.001 par value; 1,000 shares authorized; 1 share issued and outstanding	—	—
Preferred stock; $.001 par value; 250 million shares authorized; no shares issued and outstanding	—	—
Additional paid-in capital	35,253	39,413
Retained earnings	3,832	733
Accumulated other comprehensive loss	(1)	(7)
Total Charter shareholders' equity	39,084	40,139
Noncontrolling interests	8,447	10,227
Total shareholders' equity	47,531	50,366
Total liabilities and shareholders' equity	$ 146,623	$ 149,067

The accompanying notes are an integral part of these consolidated financial statements.

CHARTER COMMUNICATIONS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(dollars in millions, except per share and share data)

	Year Ended December 31,		
	2017	**2016**	**2015**
REVENUES	$ 41,581	$ 29,003	$ 9,754
COSTS AND EXPENSES:			
Operating costs and expenses (exclusive of items shown separately below)	26,541	18,655	6,426
Depreciation and amortization	10,588	6,907	2,125
Other operating expenses, net	346	985	89
	37,475	26,547	8,640
Income from operations	4,106	2,456	1,114
OTHER EXPENSES:			
Interest expense, net	(3,090)	(2,499)	(1,306)
Loss on extinguishment of debt	(40)	(111)	(128)
Gain (loss) on financial instruments, net	69	89	(4)
Other pension benefits	1	899	—
Other expense, net	(18)	(14)	(7)
	(3,078)	(1,636)	(1,445)
Income (loss) before income taxes	1,028	820	(331)
Income tax benefit	9,087	2,925	60
Consolidated net income (loss)	10,115	3,745	(271)
Less: Net income attributable to noncontrolling interests	(220)	(223)	—
Net income (loss) attributable to Charter shareholders	$ 9,895	$ 3,522	$ (271)
EARNINGS (LOSS) PER COMMON SHARE ATTRIBUTABLE TO CHARTER SHAREHOLDERS:			
Basic	$ 38.55	$ 17.05	$ (2.68)
Diluted	$ 34.09	$ 15.94	$ (2.68)
WEIGHTED AVERAGE COMMON SHARES OUTSTANDING:			
Basic	256,720,715	206,539,100	101,152,647
Diluted	296,703,956	234,791,439	101,152,647

The accompanying notes are an integral part of these consolidated financial statements.

CHARTER COMMUNICATIONS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(dollars in millions)

	Year Ended December 31,		
	2017	**2016**	**2015**
Consolidated net income (loss)	$ 10,115	$ 3,745	$ (271)
Net impact of interest rate derivative instruments	5	8	9
Foreign currency translation adjustment	1	(2)	—
Consolidated comprehensive income (loss)	10,121	3,751	(262)
Less: Comprehensive income attributable to noncontrolling interests	(220)	(223)	—
Comprehensive income (loss) attributable to Charter shareholders	$ 9,901	$ 3,528	$ (262)

The accompanying notes are an integral part of these consolidated financial statements.

CHARTER COMMUNICATIONS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDERS' EQUITY (DEFICIT)
(dollars in millions)

	Class A Common Stock	Class B Common Stock	Additional Paid-in Capital	Retained Earnings (Accumulated Deficit)	Accumulated Other Comprehensive Loss	Total Charter Shareholders' Equity (Deficit)	Non-controlling Interests	Total Shareholders' Equity (Deficit)
BALANCE, December 31, 2014	$ —	$ —	$ 1,930	$ (1,762)	$ (22)	$ 146	$ —	$ 146
Consolidated net loss	—	—	—	(271)	—	(271)	—	(271)
Stock compensation expense	—	—	78	—	—	78	—	78
Exercise of stock options	—	—	30	—	—	30	—	30
Changes in accumulated other comprehensive loss, net	—	—	—	—	9	9	—	9
Purchases and retirement of treasury stock	—	—	(10)	(28)	—	(38)	—	(38)
BALANCE, December 31, 2015	—	—	2,028	(2,061)	(13)	(46)	—	(46)
Consolidated net income	—	—	—	3,522	—	3,522	223	3,745
Stock compensation expense	—	—	244	—	—	244	—	244
Accelerated vesting of equity awards	—	—	248	—	—	248	—	248
Settlement of restricted stock units	—	—	(59)	—	—	(59)	—	(59)
Exercise of stock options	—	—	86	—	—	86	—	86
Changes in accumulated other comprehensive loss, net	—	—	—	—	6	6	—	6
Purchases and retirement of treasury stock	—	—	(834)	(728)	—	(1,562)	—	(1,562)
Issuance of shares to Liberty Broadband for cash	—	—	5,000	—	—	5,000	—	5,000
Converted TWC awards in the TWC Transaction	—	—	514	—	—	514	—	514
Issuance of shares in TWC Transaction	—	—	32,164	—	—	32,164	—	32,164
Issuance of subsidiary equity in Bright House Transaction	—	—	—	—	—	—	10,134	10,134
Partnership formation and change in ownership, net of tax	—	—	(364)	—	—	(364)	589	225
Purchase of noncontrolling interest, net of tax	—	—	(19)	—	—	(19)	(187)	(206)
Exchange of Charter Holdings units held by A/N, net of tax and TRA effects	—	—	405	—	—	405	(460)	(55)
Distributions to noncontrolling interest	—	—	—	—	—	—	(96)	(96)
Noncontrolling interests assumed in acquisitions	—	—	—	—	—	—	24	24
BALANCE, December 31, 2016	—	—	39,413	733	(7)	40,139	10,227	50,366
Consolidated net income	—	—	—	9,895	—	9,895	220	10,115
Stock compensation expense	—	—	261	—	—	261	—	261
Accelerated vesting of equity awards	—	—	49	—	—	49	—	49
Exercise of stock options	—	—	116	—	—	116	—	116
Changes in accumulated other comprehensive loss, net	—	—	—	—	6	6	—	6
Cumulative effect of accounting change	—	—	9	131	—	140	—	140
Purchases and retirement of treasury stock	—	—	(4,788)	(6,927)	—	(11,715)	—	(11,715)
Purchase of noncontrolling interest, net of tax	—	—	(295)	—	—	(295)	(1,187)	(1,482)
Exchange of Charter Holdings units held by A/N, net of tax and TRA effects	—	—	265	—	—	265	(298)	(33)
Change in noncontrolling interest ownership, net of tax	—	—	223	—	—	223	(362)	(139)
Distributions to noncontrolling interest	—	—	—	—	—	—	(153)	(153)
BALANCE, December 31, 2017	$ —	$ —	$ 35,253	$ 3,832	$ (1)	$ 39,084	$ 8,447	$ 47,531

The accompanying notes are an integral part of these consolidated financial statements.

CHARTER COMMUNICATIONS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(dollars in millions)

	Year Ended December 31,		
	2017	**2016**	**2015**
CASH FLOWS FROM OPERATING ACTIVITIES:			
Consolidated net income (loss)	$ 10,115	$ 3,745	$ (271)
Adjustments to reconcile consolidated net income (loss) to net cash flows from operating activities:			
Depreciation and amortization	10,588	6,907	2,125
Stock compensation expense	261	244	78
Accelerated vesting of equity awards	49	248	—
Noncash interest (income) expense	(370)	(256)	28
Other pension benefits	(1)	(899)	—
Loss on extinguishment of debt	40	111	128
(Gain) loss on financial instruments, net	(69)	(89)	4
Deferred income taxes	(9,116)	(2,958)	(65)
Other, net	16	8	11
Changes in operating assets and liabilities, net of effects from acquisitions and dispositions:			
Accounts receivable	(84)	(160)	5
Prepaid expenses and other assets	76	111	(3)
Accounts payable, accrued liabilities and other	449	1,029	319
Net cash flows from operating activities	11,954	8,041	2,359
CASH FLOWS FROM INVESTING ACTIVITIES:			
Purchases of property, plant and equipment	(8,681)	(5,325)	(1,840)
Change in accrued expenses related to capital expenditures	820	603	28
Purchases of cable systems, net	(9)	(28,810)	—
Change in restricted cash and cash equivalents	—	22,264	(15,153)
Real estate investments through variable interest entities	(105)	—	—
Other, net	(123)	(22)	(67)
Net cash flows from investing activities	(8,098)	(11,290)	(17,032)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Borrowings of long-term debt	25,276	12,344	26,045
Repayments of long-term debt	(16,507)	(10,521)	(11,326)
Payments for debt issuance costs	(111)	(284)	(36)
Issuance of equity	—	5,000	—
Purchase of treasury stock	(11,715)	(1,562)	(38)
Proceeds from exercise of stock options and warrants	116	86	30
Settlement of restricted stock units	—	(59)	—
Purchase of noncontrolling interest	(1,665)	(218)	—
Distributions to noncontrolling interest	(153)	(96)	—
Proceeds from termination of interest rate derivatives	—	88	—
Other, net	(11)	1	—
Net cash flows from financing activities	(4,770)	4,779	14,675
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	(914)	1,530	2
CASH AND CASH EQUIVALENTS, beginning of period	1,535	5	3
CASH AND CASH EQUIVALENTS, end of period	$ 621	$ 1,535	$ 5
CASH PAID FOR INTEREST	$ 3,421	$ 2,685	$ 1,064
CASH PAID FOR TAXES	$ 41	$ 63	$ 3

The accompanying notes are an integral part of these consolidated financial statements.

1. Organization and Basis of Presentation

Organization

Charter Communications, Inc. (together with its controlled subsidiaries, "Charter," or the "Company") is the second largest cable operator in the United States and a leading broadband communications company providing video, Internet and voice services to residential and business customers. In addition, the Company sells video and online advertising inventory to local, regional and national advertising customers and fiber-delivered communications and managed information technology solutions to larger enterprise customers. The Company also owns and operates regional sports networks and local sports, news and lifestyle channels and sells security and home management services to the residential marketplace.

Charter is a holding company whose principal asset is a controlling equity interest in Charter Communications Holdings, LLC ("Charter Holdings"), an indirect owner of Charter Communications Operating, LLC ("Charter Operating") under which substantially all of the operations reside. All significant intercompany accounts and transactions among consolidated entities have been eliminated.

Basis of Presentation

The accompanying consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles ("GAAP") and the rules and regulations of the Securities and Exchange Commission (the "SEC").

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Areas involving significant judgments and estimates include capitalization of labor and overhead costs; depreciation and amortization costs; purchase accounting valuations of assets and liabilities including, but not limited to, property, plant and equipment, intangibles and goodwill; pension benefits; income taxes; contingencies and programming expense. Actual results could differ from those estimates.

Certain prior period amounts have been reclassified to conform with the 2017 presentation.

2. Summary of Significant Accounting Policies

Consolidation

The accompanying consolidated financial statements include the accounts of Charter and all entities in which Charter has a controlling interest, including variable interest entities where Charter is the primary beneficiary. The Company consolidates based upon evaluation of the Company's power, through voting rights or similar rights, to direct the activities of another entity that most significantly impact the entity's economic performance; its obligation to absorb the expected losses of the entity; and its right to receive the expected residual returns of the entity. Charter controls and consolidates Charter Holdings. The noncontrolling interest on the Company's balance sheet primarily represents Advance/Newhouse Partnership's ("A/N's") minority equity interests in Charter Holdings. See Note 11. All significant inter-company accounts and transactions among consolidated entities have been eliminated in consolidation.

Cash and Cash Equivalents

The Company considers all highly liquid investments with original maturities of three months or less to be cash equivalents. These investments are carried at cost, which approximates market value. Cash and cash equivalents consist primarily of money market funds.

Property, Plant and Equipment

Additions to property, plant and equipment are recorded at cost, including all material, labor and certain indirect costs associated with the construction of cable transmission and distribution facilities. While the Company's capitalization is based on specific activities, once capitalized, costs are tracked on a composite basis by fixed asset category at the cable system level and not on a

specific asset basis. For assets that are sold or retired, the estimated historical cost and related accumulated depreciation is removed. Costs associated with the initial placement of the customer drop to the dwelling and the initial placement of outlets within a dwelling along with the costs associated with the initial deployment of customer premise equipment necessary to provide video, Internet or voice services are capitalized. Costs capitalized include materials, direct labor and certain indirect costs. Indirect costs are associated with the activities of the Company's personnel who assist in installation activities and consist of compensation and other costs associated with these support functions. Indirect costs primarily include employee benefits and payroll taxes, vehicle and occupancy costs, and the costs of sales and dispatch personnel associated with capitalizable activities. The costs of disconnecting service and removing customer premise equipment from a dwelling and the costs to reconnect a customer drop or to redeploy previously installed customer premise equipment are charged to operating expense as incurred. Costs for repairs and maintenance are charged to operating expense as incurred, while plant and equipment replacement, including replacement of certain components, betterments, including replacement of cable drops and outlets, are capitalized.

Depreciation is recorded using the straight-line composite method over management's estimate of the useful lives of the related assets as follows:

Cable distribution systems	8-20 years
Customer premise equipment and installations	3-8 years
Vehicles and equipment	4-9 years
Buildings and improvements	15-40 years
Furniture, fixtures and equipment	7-10 years

Asset Retirement Obligations

Certain of the Company's franchise agreements and leases contain provisions requiring the Company to restore facilities or remove equipment in the event that the franchise or lease agreement is not renewed. The Company expects to continually renew its franchise agreements and therefore cannot reasonably estimate any liabilities associated with such agreements. A remote possibility exists that franchise agreements could be terminated unexpectedly, which could result in the Company incurring significant expense in complying with restoration or removal provisions. The Company does not have any significant liabilities related to asset retirements recorded in its consolidated financial statements.

Valuation of Long-Lived Assets

The Company evaluates the recoverability of long-lived assets (e.g., property, plant and equipment and finite-lived intangible assets) to be held and used when events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Such events or changes in circumstances could include such factors as impairment of the Company's indefinite life assets, changes in technological advances, fluctuations in the fair value of such assets, adverse changes in relationships with local franchise authorities, adverse changes in market conditions or a deterioration of current or expected future operating results. If a review indicates that the carrying value of such asset is not recoverable from estimated undiscounted cash flows, the carrying value of such asset is reduced to its estimated fair value. While the Company believes that its estimates of future cash flows are reasonable, different assumptions regarding such cash flows could materially affect its evaluations of asset recoverability. No impairments of long-lived assets to be held and used were recorded in 2017, 2016 and 2015.

Other Noncurrent Assets

Other noncurrent assets primarily include investments, trademarks, right-of-entry costs and other intangible assets. The Company accounts for its investments in less than majority owned investees under either the equity or cost method. The Company applies the equity method to investments when it has the ability to exercise significant influence over the operating and financial policies of the investee. The Company's share of the investee's earnings (losses) is included in other expense, net in the consolidated statements of operations. The Company monitors its investments for indicators that a decrease in investment value has occurred that is other than temporary. If it has been determined that an investment has sustained an other than temporary decline in value, the investment is written down to fair value with a charge to earnings. Investments acquired are measured at fair value utilizing the acquisition method of accounting. The difference between the fair value and the amount of underlying equity in net assets for most equity method investments is due to previously unrecognized intangible assets at the investee. These amounts are amortized as a component of equity earnings (losses), recorded within other expense, net over the estimated useful life of the asset. Trademarks

have been determined to have an indefinite life and are tested annually for impairment. Right-of-entry costs represent upfront costs incurred related to agreements entered into with multiple dwelling units ("MDUs") including landlords, real estate companies or owners to gain access to a building in order to market and service customers who reside in the building. Right-of-entry costs are deferred and amortized to amortization expense over the term of the agreement.

Revenue Recognition

Revenues from residential and commercial video, Internet and voice services are recognized when the related services are provided. Advertising sales are recognized at estimated realizable values in the period that the advertisements are broadcast. In some cases, the Company coordinates the advertising sales efforts of other cable operators in a certain market and remits amounts received from customers less an agreed-upon percentage to such cable operator. For those arrangements in which the Company acts as a principal, the Company records the revenues earned from the advertising customer on a gross basis and the amount remitted to the cable operator as an operating expense.

Fees imposed on the Company by various governmental authorities are passed through on a monthly basis to the Company's customers and are periodically remitted to authorities. Fees of $961 million, $711 million and $255 million for the years ended December 31, 2017, 2016 and 2015, respectively, are reported in video, voice and commercial revenues, on a gross basis with a corresponding operating expense because the Company is acting as a principal. Other taxes, such as sales taxes imposed on the Company's customers, collected and remitted to state and local authorities, are recorded on a net basis because the Company is acting as an agent in such situation.

The Company's revenues by product line are as follows:

	Year Ended December 31,		
	2017	2016	2015
Video	$ 16,641	$ 11,967	$ 4,587
Internet	14,105	9,272	3,003
Voice	2,542	2,005	539
Residential revenue	33,288	23,244	8,129
Small and medium business	3,686	2,480	764
Enterprise	2,210	1,429	363
Commercial revenue	5,896	3,909	1,127
Advertising sales	1,510	1,235	309
Other	887	615	189
	$ 41,581	$ 29,003	$ 9,754

Programming Costs

The Company has various contracts to obtain video programming from vendors whose compensation is typically based on a flat fee per customer. The cost of the right to exhibit network programming under such arrangements is recorded in operating expenses in the month the programming is available for exhibition. Programming costs are paid each month based on calculations performed by the Company and are subject to periodic audits performed by the programmers. Certain programming contracts contain cash and non-cash consideration from the programmers. If consideration received does not relate to a separate product or service, the Company recognizes the consideration on a straight-line basis over the life of the programming agreement as a reduction of programming expense. Programming costs included in the statements of operations were $10.6 billion, $7.0 billion and $2.7 billion for the years ended December 31, 2017, 2016 and 2015, respectively.

Advertising Costs

Advertising costs associated with marketing the Company's products and services are generally expensed as costs are incurred.

Multiple-Element Transactions

In the normal course of business, the Company enters into multiple-element transactions where it is simultaneously both a customer and a vendor with the same counterparty or in which it purchases multiple products and/or services, or settles outstanding items contemporaneous with the purchase of a product or service from a single counterparty. Transactions, although negotiated contemporaneously, may be documented in one or more contracts. The Company's policy for accounting for each transaction negotiated contemporaneously is to record each element of the transaction based on the respective estimated fair values of the products or services purchased and the products or services sold. In determining the fair value of the respective elements, the Company refers to quoted market prices (where available), historical transactions or comparable cash transactions. Cash consideration received from a vendor is recorded as a reduction in the price of the vendor's product unless (i) the consideration is for the reimbursement of a specific, incremental, identifiable cost incurred, in which case the cash consideration received would be recorded as a reduction in such cost (e.g., marketing costs), or (ii) an identifiable benefit in exchange for the consideration is provided, in which case revenue would be recognized for this element.

Stock-Based Compensation

Restricted stock, restricted stock units, stock options as well as equity awards with market conditions are measured at the grant date fair value and amortized to stock compensation expense over the requisite service period. The fair value of options is estimated on the date of grant using the Black-Scholes option-pricing model and the fair value of equity awards with market conditions is estimated on the date of grant using Monte Carlo simulations. The grant date weighted average assumptions used during the years ended December 31, 2017, 2016 and 2015, respectively, were: risk-free interest rate of 1.8%, 1.7% and 1.5%; expected volatility of 25.0%, 25.4% and 34.7%; and expected lives of 4.6 years, 1.3 years and 6.5 years. Weighted average assumptions for 2016 include the assumptions used for the converted TWC awards (see Note 16). The Company's volatility assumptions represent management's best estimate and were based on historical volatility of Legacy Charter and Legacy TWC. See Note 3. Expected lives were estimated using historical exercise data. The valuations assume no dividends are paid.

Pension Plans

The Company sponsors the TWC Pension Plan, TWC Union Pension Plan and TWC Excess Pension Plan (as defined in Note 21). Pension benefits are based on formulas that reflect the employees' years of service and compensation during their employment period. Actuarial gains or losses are changes in the amount of either the benefit obligation or the fair value of plan assets resulting from experience different from that assumed or from changes in assumptions. The Company has elected to follow a mark-to-market pension accounting policy for recording the actuarial gains or losses annually during the fourth quarter, or earlier if a remeasurement event occurs during an interim period.

Income Taxes

The Company recognizes deferred tax assets and liabilities for temporary differences between the financial reporting basis and the tax basis of the Company's assets and liabilities and expected benefits of utilizing loss carryforwards. Since substantially all the Company's operations are held through its partnership interest in Charter Holdings, the primary deferred tax component recorded in the consolidated balance sheet relates to the excess financial reporting outside basis, excluding amounts attributable to nondeductible goodwill, over Charter's tax basis in its investment in the partnership. Valuation allowances are established when management determines that it is more likely than not that some portion or the entire deferred tax asset will not be realized. The impact on deferred taxes of changes in tax rates and tax law, if any, applied to the years during which temporary differences are expected to be settled, are reflected in the consolidated financial statements in the period of enactment. In determining the Company's tax provision for financial reporting purposes, the Company establishes a reserve for uncertain tax positions unless such positions are determined to be "more likely than not" of being sustained upon examination, based on their technical merits. There is considerable judgment involved in making such a determination. Interest and penalties are recognized on uncertain income tax positions as part of the income tax provision. See Note 17.

Segments

The Company's operations are managed and reported to its Chief Executive Officer ("CEO"), the Company's chief operating decision maker, on a consolidated basis. The CEO assesses performance and allocates resources based on the consolidated results of operations. Under this organizational and reporting structure, the Company has one reportable segment, cable services.

3. Mergers and Acquisitions

The Transactions

On May 18, 2016, the transactions contemplated by the Agreement and Plan of Mergers dated as of May 23, 2015 (the "Merger Agreement"), by and among Time Warner Cable Inc. ("Legacy TWC"), Charter Communications, Inc. prior to the closing of the Merger Agreement ("Legacy Charter"), CCH I, LLC, previously a wholly owned subsidiary of Legacy Charter and certain other subsidiaries of CCH I, LLC were completed (the "TWC Transaction," and together with the Bright House Transaction described below, the "Transactions"). As a result of the TWC Transaction, CCH I, LLC became the new public parent company that holds the operations of the combined companies and was renamed Charter Communications, Inc. As of the date of completion of the Transactions, the total value of the TWC Transaction was approximately $85 billion, including cash, equity and Legacy TWC assumed debt.

Also, on May 18, 2016, Legacy Charter and A/N, the former parent of Bright House Networks, LLC ("Legacy Bright House"), completed their previously announced transaction, pursuant to a definitive Contribution Agreement (the "Contribution Agreement"), under which Charter acquired Legacy Bright House (the "Bright House Transaction") for approximately $12.2 billion consisting of cash and convertible preferred units of Charter Holdings and common units of Charter Holdings. Pursuant to the Bright House Transaction, Charter became the owner of the membership interests in Legacy Bright House and the other assets primarily related to Legacy Bright House (other than certain excluded assets and liabilities and non-operating cash).

In connection with the TWC Transaction, Liberty Broadband purchased shares of Charter Class A common stock to partially finance the cash portion of the TWC Transaction consideration, and in connection with the Bright House Transaction, Liberty Broadband purchased shares of Charter Class A common stock (the "Liberty Transaction").

Acquisition Accounting

Charter applied acquisition accounting to the Transactions. The total purchase price was allocated to the identifiable tangible and intangible assets acquired and the liabilities assumed based on their estimated fair values. The fair values were primarily based on third-party valuations using assumptions developed by management and other information compiled by management including, but not limited to, future expected cash flows. The excess of the purchase price over those fair values was recorded as goodwill.

The tables below present the final allocation of the purchase price to the assets acquired and liabilities assumed in the Transactions.

TWC Allocation of Purchase Price

Cash and cash equivalents	$	1,058
Current assets		1,417
Property, plant and equipment		21,413
Customer relationships		13,460
Franchises		54,085
Goodwill		28,337
Other noncurrent assets		1,040
Accounts payable and accrued liabilities		(4,107)
Debt		(24,900)
Deferred income taxes		(28,120)
Other long-term liabilities		(3,162)
Noncontrolling interests		(4)
	$	60,517

Subsequent to December 31, 2016 and through the end of the measurement period, the Company made adjustments to the fair value of certain assets acquired and liabilities assumed in the TWC Transaction, including a decrease to working capital of $73 million and a decrease of $28 million to deferred income tax liabilities, resulting in a net increase of $45 million to goodwill.

Bright House Allocation of Purchase Price

Current assets	$	131
Property, plant and equipment		2,884
Customer relationships		2,150
Franchises		7,225
Goodwill		44
Other noncurrent assets		86
Accounts payable and accrued liabilities		(330)
Other long-term liabilities		(12)
Noncontrolling interests		(22)
	$	12,156

Selected Pro Forma Financial Information

The following unaudited pro forma financial information of the Company is based on the historical consolidated financial statements of Legacy Charter, Legacy TWC and Legacy Bright House and is intended to provide information about how the Transactions and related financing may have affected the Company's historical consolidated financial statements if they had closed as of January 1, 2015. The pro forma financial information below is based on available information and assumptions that the Company believes are reasonable. The pro forma financial information is for illustrative and informational purposes only and is not intended to represent or be indicative of what the Company's financial condition or results of operations would have been had the transactions described above occurred on the date indicated. The pro forma financial information also should not be considered representative of the Company's future financial condition or results of operations.

	Year Ended December 31,	
	2016	2015
Revenues	$ 40,023	$ 37,394
Net income attributable to Charter shareholders	$ 1,070	$ 159
Earnings per common share attributable to Charter shareholders:		
Basic	$ 3.97	$ 0.59
Diluted	$ 3.91	$ 0.58

4. Allowance for Doubtful Accounts

Activity in the allowance for doubtful accounts is summarized as follows for the years presented:

	Year Ended December 31,		
	2017	2016	2015
Balance, beginning of period	$ 124	$ 21	$ 22
Charged to expense	469	328	135
Uncollected balances written off, net of recoveries	(480)	(225)	(136)
Balance, end of period	$ 113	$ 124	$ 21

5. Property, Plant and Equipment

Property, plant and equipment consists of the following as of December 31, 2017 and 2016:

	December 31,	
	2017	2016
Cable distribution systems	$ 26,104	$ 23,317
Customer premise equipment and installations	15,909	12,867
Vehicles and equipment	1,501	1,212
Buildings and improvements	3,901	3,426
Furniture, fixtures and equipment	4,550	3,244
	51,965	44,066
Less: accumulated depreciation	(18,077)	(11,103)
	$ 33,888	$ 32,963

The Company periodically evaluates the estimated useful lives used to depreciate its assets and the estimated amount of assets that will be abandoned or have minimal use in the future. A significant change in assumptions about the extent or timing of future asset retirements, or in the Company's use of new technology and upgrade programs, could materially affect future depreciation expense.

Depreciation expense for the years ended December 31, 2017, 2016 and 2015 was $7.8 billion, $5.0 billion, and $1.9 billion, respectively.

6. Franchises, Goodwill and Other Intangible Assets

Franchise rights represent the value attributed to agreements or authorizations with local and state authorities that allow access to homes in cable service areas. For valuation purposes, they are defined as the future economic benefits of the right to solicit and service potential customers (customer marketing rights), and the right to deploy and market new services to potential customers (service marketing rights).

Management estimates the fair value of franchise rights at the date of acquisition and determines if the franchise has a finite life or an indefinite life. The Company has concluded that all of its franchises qualify for indefinite life treatment given that there are no legal, regulatory, contractual, competitive, economic or other factors which limit the period over which these rights will contribute to the Company's cash flows. The Company reassesses this determination periodically or whenever events or substantive changes in circumstances occur.

All franchises are tested for impairment annually or more frequently as warranted by events or changes in circumstances. Franchise assets are aggregated into essentially inseparable units of accounting to conduct valuations. The units of accounting generally represent geographical clustering of the Company's cable systems into groups. The Company assesses qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not that an indefinite lived intangible asset has been impaired. If, after this optional qualitative assessment, the Company determines that it is not more likely than not that an indefinite lived intangible asset has been impaired, then no further quantitative testing is necessary. In completing the qualitative impairment testing, the Company evaluates a multitude of factors that affect the fair value of our franchise assets. Examples of such factors include environmental and competitive changes within our operating footprint, actual and projected operating performance, the consistency of our operating margins, equity and debt market trends, including changes in our market capitalization, and changes in our regulatory and political landscape, among other factors. The Company performed a qualitative assessment in 2017, which also included consideration of a fair value appraisal performed for tax purposes in the beginning of 2017 as of a December 31, 2016 valuation date (the "Appraisal"). After consideration of the qualitative factors in 2017, including the results of the Appraisal, the Company concluded that it is more likely than not that the fair value of the franchise assets in each unit of accounting exceeds the carrying value of such assets and therefore did not perform a quantitative analysis at the assessment date. Periodically, the Company will elect to perform a quantitative analysis for impairment testing. If the Company elects or is required to perform a quantitative analysis to test its franchise assets for impairment, the methodology described below is utilized.

If a quantitative analysis is performed, the estimated fair value of franchises is determined utilizing an income approach model based on the present value of the estimated discrete future cash flows attributable to each of the intangible assets identified assuming a discount rate. The fair value of franchises is determined based on estimated discrete discounted future cash flows using assumptions consistent with internal forecasts. The franchise after-tax cash flow is calculated as the after-tax cash flow generated by the potential customers obtained. The sum of the present value of the franchises' after-tax cash flow in years 1 through 10 and the continuing value of the after-tax cash flow beyond year 10 yields the fair value of the franchises.

This approach makes use of unobservable factors such as projected revenues, expenses, capital expenditures, customer trends, and a discount rate applied to the estimated cash flows. The determination of the franchise discount rate is derived from the Company's weighted average cost of capital, which uses a market participant's cost of equity and after-tax cost of debt and reflects the risks inherent in the cash flows. The Company estimates discounted future cash flows using reasonable and appropriate assumptions including among others, penetration rates for video, Internet, and voice; revenue growth rates; operating margins; and capital expenditures. The assumptions are based on the Company's and its peers' historical operating performance adjusted for current and expected competitive and economic factors surrounding the cable industry. The estimates and assumptions made in the Company's valuations are inherently subject to significant uncertainties, many of which are beyond its control, and there is no assurance that these results can be achieved. The primary assumptions for which there is a reasonable possibility of the occurrence of a variation that would significantly affect the measurement value include the assumptions regarding revenue growth, programming expense growth rates, the amount and timing of capital expenditures, actual customer trends and the discount rate utilized.

The fair value of goodwill is determined using both an income approach and market approach. The Company's income approach model used for its goodwill valuation is consistent with that used for its franchise valuation noted above except that cash flows from the entire business enterprise are used for the goodwill valuation. The Company's market approach model estimates the fair value of the reporting unit based on market prices in actual precedent transactions of similar businesses and market valuations of guideline public companies. Goodwill is tested for impairment as of November 30 of each year, or more frequently as warranted by events or changes in circumstances. Accounting guidance also permits an optional qualitative assessment for goodwill to determine whether it is more likely than not that the carrying value of a reporting unit exceeds its fair value. If, after this qualitative assessment, the Company determines that it is not more likely than not that the fair value of a reporting unit is less than its carrying amount then no further quantitative testing would be necessary. If the Company elects or is required to perform the two-step test under the accounting guidance, the first step involves a comparison of the estimated fair value of the reporting unit to its carrying amount. If the estimated fair value of the reporting unit exceeds its carrying amount, goodwill of the reporting unit is not considered impaired and the second step of the goodwill impairment is not necessary. If the carrying amount of a reporting unit exceeds its estimated fair value, then the second step of the goodwill impairment test must be performed, and a comparison of the implied fair value of the reporting unit's goodwill is compared to its carrying amount to determine the amount of impairment, if any. As with the Company's franchise impairment testing, in 2017 the Company elected to perform a qualitative goodwill impairment assessment, which incorporated the results of the Appraisal and consideration of the same qualitative factors relevant to the Company's franchise impairment testing. As a result of that assessment, the Company concluded that goodwill is not impaired.

Customer relationships are recorded at fair value as of the date acquired less accumulated amortization. Customer relationships, for valuation purposes, represent the value of the business relationship with existing customers, and are calculated by projecting the discrete future after-tax cash flows from these customers, including the right to deploy and market additional services to these customers. The present value of these after-tax cash flows yields the fair value of the customer relationships. The use of different valuation assumptions or definitions of franchises or customer relationships, such as our inclusion of the value of selling additional services to our current customers within customer relationships versus franchises, could significantly impact our valuations and any resulting impairment. Customer relationships are amortized on an accelerated sum of years' digits method over useful lives of 8-15 years based on the period over which current customers are expected to generate cash flows. The Company periodically evaluates the remaining useful lives of its customer relationships to determine whether events or circumstances warrant revision to the remaining periods of amortization. Customer relationships are evaluated for impairment upon the occurrence of events or changes in circumstances indicating that the carrying amount of an asset may not be recoverable. Customer relationships are deemed impaired when the carrying value exceeds the projected undiscounted future cash flows associated with the customer relationships. No impairment of customer relationships was recorded in the years ended December 31, 2017, 2016 or 2015.

The fair value of trademarks is determined using the relief-from-royalty method, a variation of the income approach, which applies a fair royalty rate to estimated revenue derived under the Company's trademarks. The fair value of the intangible is estimated to be the present value of the royalty saved because the Company owns the trademarks. Royalty rates are estimated based on a review of market royalty rates in the communications and entertainment industries. As the Company expects to continue to use each trademark indefinitely, trademarks have been assigned an indefinite life and are tested annually for impairment using either a qualitative analysis or quantitative analysis as elected by management. As with the Company's franchise impairment testing, in 2017 the Company elected to perform a qualitative trademark impairment assessment and concluded that trademarks are not impaired.

As of December 31, 2017 and 2016, indefinite-lived and finite-lived intangible assets are presented in the following table:

	December 31,					
	2017			2016		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Indefinite-lived intangible assets:						
Franchises	$ 67,319	$ —	$ 67,319	$ 67,316	$ —	$ 67,316
Goodwill	29,554	—	29,554	29,509	—	29,509
Trademarks	159	—	159	159	—	159
Other intangible assets	—	—	—	4	—	4
	$ 97,032	$ —	$ 97,032	$ 96,988	$ —	$ 96,988
Finite-lived intangible assets:						
Customer relationships	$ 18,229	$ (6,278)	$ 11,951	$ 18,226	$ (3,618)	$ 14,608
Other intangible assets	731	(201)	530	615	(128)	487
	$ 18,960	$ (6,479)	$ 12,481	$ 18,841	$ (3,746)	$ 15,095

Other intangible assets consist primarily of right-of-entry costs. Amortization expense related to customer relationships and other intangible assets for the years ended December 31, 2017, 2016 and 2015 was $2.7 billion, $1.9 billion and $271 million, respectively.

The Company expects amortization expense on its finite-lived intangible assets will be as follows.

2018	$ 2,478
2019	2,195
2020	1,903
2021	1,619
2022	1,342
Thereafter	2,944
	$ 12,481

Actual amortization expense in future periods could differ from these estimates as a result of new intangible asset acquisitions or divestitures, changes in useful lives, impairments, adoption of new accounting standards and other relevant factors.

7. Investments

Investments consisted of the following as of December 31, 2017 and 2016:

	December 31,	
	2017	2016
Equity-method investments	482	519
Other investments	15	11
Total investments	$ 497	$ 530

The Company's investments include Active Video Networks ("AVN" - 35.0% owned) Sterling Entertainment Enterprises, LLC (“Sterling” - d/b/a SportsNet New York - 26.8% owned), MLB Network, LLC (“MLB Network” -6.4% owned), iN Demand L.L.C. (“iN Demand” -39.5% owned) and National Cable Communications LLC (“NCC” - 20.0% owned), among other less significant equity-method and cost-method investments. Sterling and MLB Network are primarily engaged in the development

of sports programming services. iN Demand provides programming on a video on demand, pay-per-view and subscription basis. NCC represents multi-video program distributors to advertisers.

The Company's equity-method investments balances reflected in the table above includes differences between the acquisition date fair value of certain investments acquired and the underlying equity in the net assets of the investee, referred to as a basis difference. This basis difference is amortized as a component of equity earnings. The remaining unamortized basis difference was $407 million and $436 million as of December 31, 2017 and 2016, respectively.

The Company applies the equity method of accounting to these and other less significant equity-method investments, all of which are recorded in other noncurrent assets in the consolidated balance sheets as of December 31, 2017 and 2016. For the years ended December 31, 2017, 2016 and 2015, net losses from equity-method investments were $18 million, $14 million and $7 million, respectively, which were recorded in other expense, net in the consolidated statements of operations.

Real estate investments through variable interest entities ("VIEs") on the consolidated statement of cash flows for the year ended December 31, 2017 represents the acquisition of a defaulted mortgage loan issued to a single-asset, special purpose entity real estate lessor (the "SPE"). As the Company has determined the SPE is a VIE of which it is the primary beneficiary, the Company has consolidated the assets and liabilities of the SPE in its consolidated balance sheet as of December 31, 2017, which are primarily composed of the building securing the mortgage loan.

8. Accounts Payable and Accrued Liabilities

Accounts payable and accrued liabilities consist of the following as ofDecember 31, 2017 and 2016:

	December 31,	
	2017	2016
Accounts payable – trade	$ 740	$ 454
Deferred revenue	395	352
Accrued liabilities:		
Programming costs	1,907	1,783
Compensation	1,109	1,111
Capital expenditures	1,935	1,107
Interest	1,054	958
Taxes and regulatory fees	556	538
Property and casualty	408	394
Other	941	847
	$ 9,045	$ 7,544

9. Long-Term Debt

Long-term debt consists of the following as of December 31, 2017 and 2016:

	December 31,			
	2017		2016	
	Principal Amount	Accreted Value	Principal Amount	Accreted Value
CCO Holdings, LLC:				
5.250% senior notes due March 15, 2021	$ 500	$ 497	$ 500	$ 496
6.625% senior notes due January 31, 2022	—	—	750	741
5.250% senior notes due September 30, 2022	1,250	1,235	1,250	1,232
5.125% senior notes due February 15, 2023	1,000	993	1,000	992

4.000% senior notes due March 1, 2023	500	495	—	—
5.125% senior notes due May 1, 2023	1,150	1,143	1,150	1,141
5.750% senior notes due September 1, 2023	500	496	500	496
5.750% senior notes due January 15, 2024	1,000	992	1,000	991
5.875% senior notes due April 1, 2024	1,700	1,687	1,700	1,685
5.375% senior notes due May 1, 2025	750	745	750	744
5.750% senior notes due February 15, 2026	2,500	2,464	2,500	2,460
5.500% senior notes due May 1, 2026	1,500	1,489	1,500	1,487
5.875% senior notes due May 1, 2027	800	794	800	794
5.125% senior notes due May 1, 2027	3,250	3,216	—	—
5.000% senior notes due February 1, 2028	2,500	2,462	—	—
Charter Communications Operating, LLC:				
3.579% senior notes due July 23, 2020	2,000	1,988	2,000	1,983
4.464% senior notes due July 23, 2022	3,000	2,977	3,000	2,973
4.908% senior notes due July 23, 2025	4,500	4,462	4,500	4,458
3.750% senior notes due February 15, 2028	1,000	985	—	—
4.200% senior notes due March 15, 2028	1,250	1,238	—	—
6.384% senior notes due October 23, 2035	2,000	1,981	2,000	1,980
6.484% senior notes due October 23, 2045	3,500	3,466	3,500	3,466
5.375% senior notes due May 1, 2047	2,500	2,506	—	—
6.834% senior notes due October 23, 2055	500	495	500	495
Credit facilities	9,479	9,387	8,916	8,814
Time Warner Cable, LLC:				
5.850% senior notes due May 1, 2017	—	—	2,000	2,028
6.750% senior notes due July 1, 2018	2,000	2,045	2,000	2,135
8.750% senior notes due February 14, 2019	1,250	1,337	1,250	1,412
8.250% senior notes due April 1, 2019	2,000	2,148	2,000	2,264
5.000% senior notes due February 1, 2020	1,500	1,579	1,500	1,615
4.125% senior notes due February 15, 2021	700	730	700	739
4.000% senior notes due September 1, 2021	1,000	1,045	1,000	1,056
5.750% sterling senior notes due June 2, 2031 (a)	845	912	770	834
6.550% senior debentures due May 1, 2037	1,500	1,686	1,500	1,691
7.300% senior debentures due July 1, 2038	1,500	1,788	1,500	1,795
6.750% senior debentures due June 15, 2039	1,500	1,724	1,500	1,730
5.875% senior debentures due November 15, 2040	1,200	1,258	1,200	1,259
5.500% senior debentures due September 1, 2041	1,250	1,258	1,250	1,258
5.250% sterling senior notes due July 15, 2042 (b)	879	847	800	771
4.500% senior debentures due September 15, 2042	1,250	1,137	1,250	1,135
Time Warner Cable Enterprises LLC:				
8.375% senior debentures due March 15, 2023	1,000	1,232	1,000	1,273
8.375% senior debentures due July 15, 2033	1,000	1,312	1,000	1,324
Total debt	69,003	70,231	60,036	61,747
Less current portion:				
5.850% senior notes due May 1, 2017	—	—	(2,000)	(2,028)
6.750% senior notes due July 1, 2018	(2,000)	(2,045)	—	—
Long-term debt	$ 67,003	$ 68,186	$ 58,036	$ 59,719

(a) Principal amount includes £625 million valued at $845 million and $770 million as of December 31, 2017 and December 31, 2016, respectively, using the exchange rate at that date.

(b) Principal amount includes £650 million valued at $879 million and $800 million as of December 31, 2017 and December 31, 2016, respectively, using the exchange rate at that date.

The accreted values presented in the table above represent the principal amount of the debt less the original issue discount at the time of sale, deferred financing costs, and, in regards to the Legacy TWC debt assumed, fair value premium adjustments as a result of applying acquisition accounting plus the accretion of those amounts to the balance sheet date. However, the amount that is currently payable if the debt becomes immediately due is equal to the principal amount of the debt. In regards to the fixed-rate British pound sterling denominated notes (the “Sterling Notes”), the principal amount of the debt and any premium or discount is remeasured into US dollars as of each balance sheet date. See Note 12. The Company has availability under the Charter Operating credit facilities of approximately $3.6 billion as of December 31, 2017.

During 2015, CCO Holdings and CCO Holdings Capital closed on transactions in which they issued $2.7 billion aggregate principal amount of senior unsecured notes with varying maturities and interest rates. The net proceeds were used to repurchase $2.5 billion of various series of senior unsecured notes, as well as for general corporate purposes. These debt repurchases resulted in a loss on extinguishment of debt of $123 million for the year ended December 31, 2015. The Company also recorded a loss on extinguishment of debt of approximately $5 million for the year ended December 31, 2015 as a result of the repayment of debt upon termination of the proposed transactions with Comcast Corporation.

During 2016, CCO Holdings and CCO Holdings Capital closed on transactions in which they issued $3.2 billion aggregate principal amount of senior unsecured notes with varying maturities and interest rates. The net proceeds were used to repurchase $2.9 billion of various series of senior unsecured notes, as well as for general corporate purposes. These debt repurchases resulted in a loss on extinguishment of debt of $110 million for the year ended December 31, 2016.

During 2016, Charter Operating entered into an amendment to its Amended and Restated Credit Agreement dated May 18, 2016 (the “Credit Agreement”) decreasing the applicable LIBOR margin, eliminating the LIBOR floor and extending the maturities on certain term loans. The Company recorded a loss on extinguishment of debt of $1 million for the year ended December 31, 2016 related to these transactions.

During 2017, CCO Holdings and CCO Holdings Capital closed on transactions in which they issued $6.25 billion aggregate principal amount of senior unsecured notes with varying maturities and interest rates. The net proceeds were used to fund buybacks of Charter Class A common stock or Charter Holdings common units, repurchase $2.75 billion of various series of senior secured and unsecured notes, as well as for general corporate purposes. These debt repurchases resulted in a loss on extinguishment of debt of $34 million for the year ended December 31, 2017.

During 2017, Charter Operating and Charter Communications Operating Capital Corp. closed on transactions in which they issued $4.75 billion aggregate principal amount of senior secured notes with varying maturities and interest rates. The net proceeds were used to fund buybacks of Charter Class A common stock or Charter Holdings common units, as well as for general corporate purposes.

During 2017, Charter Operating also entered into amendments to its Credit Agreement decreasing the applicable LIBOR margins, eliminating the LIBOR floor, increasing the capacity of the revolving loan, extending the maturities and repaying the E, F, H and I term loans with the issuance of a new term B loan. The Company recorded a loss on extinguishment of debt of $6 million for the year ended December 31, 2017 related to these transactions. See "Charter Operating Credit Facilities" below for details on the Company's term loans as of December 31, 2017.

CCO Holdings Notes

The CCO Holdings notes are senior debt obligations of CCO Holdings and CCO Holdings Capital and rank equally with all other current and future unsecured, unsubordinated obligations of CCO Holdings and CCO Holdings Capital. They are structurally subordinated to all obligations of subsidiaries of CCO Holdings.

CCO Holdings may redeem some or all of the CCO Holdings notes at any time at a premium. The optional redemption price declines to 100% of the respective series' principal amount, plus accrued and unpaid interest, if any, on or after varying dates in 2019 through 2025.

In addition, at any time prior to varying dates in 2018 through 2020, CCO Holdings may redeem up to 40% of the aggregate principal amount of certain notes at a premium plus accrued and unpaid interest to the redemption date, with the net cash proceeds of one or more equity offerings (as defined in the indenture); provided that certain conditions are met. In the event of specified change of control events, CCO Holdings must offer to purchase the outstanding CCO Holdings notes from the holders at a purchase price equal to 101% of the total principal amount of the notes, plus any accrued and unpaid interest.

High-Yield Restrictive Covenants; Limitation on Indebtedness.

The indentures governing the CCO Holdings notes contain certain covenants that restrict the ability of CCO Holdings, CCO Holdings Capital and all of their restricted subsidiaries to:

- incur additional debt;
- pay dividends on equity or repurchase equity;
- make investments;
- sell all or substantially all of their assets or merge with or into other companies;
- sell assets;
- in the case of restricted subsidiaries, create or permit to exist dividend or payment restrictions with respect to CCO Holdings, guarantee their parent companies debt, or issue specified equity interests;
- engage in certain transactions with affiliates; and
- grant liens.

The above limitations in certain circumstances regarding incurrence of debt, payment of dividends and making investments contained in the indentures of CCO Holdings permit CCO Holdings and its restricted subsidiaries to perform the above, so long as, after giving pro forma effect to the above, the leverage ratio would be below a specified level for the issuer. The leverage ratio under the indentures is 6.0 to 1.0.

Charter Operating Notes

The Charter Operating notes are guaranteed by CCO Holdings and substantially all of the operating subsidiaries of Charter Operating. In addition, the Charter Operating notes are secured by a perfected first priority security interest in substantially all of the assets of Charter Operating to the extent such liens can be perfected under the Uniform Commercial Code by the filing of a financing statement and the liens rank equally with the liens on the collateral securing obligations under the Charter Operating credit facilities. Charter Operating may redeem some or all of the Charter Operating notes at any time at a premium.

The Charter Operating notes are subject to the terms and conditions of the indenture governing the Charter Operating notes. The Charter Operating notes contain customary representations and warranties and affirmative covenants with limited negative covenants. The Charter Operating indenture also contains customary events of default.

Charter Operating Credit Facilities

The Charter Operating credit facilities have an outstanding principal amount of $9.5 billion at December 31, 2017 as follows:

- term loan A-2 with a remaining principal amount of $2.9 billion, which is repayable in quarterly installments and aggregating $144 million in each loan year, with the remaining balance due at final maturity on March 31, 2023. Pricing on term loan A-2 is LIBOR plus 1.50%;
- term loan B with a remaining principal amount of approximately $6.4 billion, which is repayable in equal quarterly installments and aggregating $64 million in each loan year, with the remaining balance due at final maturity on April 30, 2025. Pricing on term loan B is LIBOR plus 2.00%; and
- revolving loan with an outstanding balance of $254 million at December 31, 2017 and allowing for borrowings of up to $4.0 billion, maturing on March 31, 2023. Pricing on the revolving loan is LIBOR plus 1.50% with a commitment fee of

0.30%. As of December 31, 2017, $137 million of the revolving loan was utilized to collateralize a like principal amount of letters of credit out of $291 million of letters of credit issued on the Company’s behalf.

Amounts outstanding under the Charter Operating credit facilities bear interest, at Charter Operating’s election, at a base rate or LIBOR (1.56% and 0.77% as of December 31, 2017 and December 31, 2016, respectively), as defined, plus an applicable margin.

The Charter Operating credit facilities also allow us to enter into incremental term loans in the future, with amortization as set forth in the notices establishing such term loans. Although the Charter Operating credit facilities allow for the incurrence of a certain amount of incremental term loans subject to pro forma compliance with its financial maintenance covenants, no assurance can be given that the Company could obtain additional incremental term loans in the future if Charter Operating sought to do so or what amount of incremental term loans would be allowable at any given time under the terms of the Charter Operating credit facilities.

The obligations of Charter Operating under the Charter Operating credit facilities are guaranteed by CCO Holdings and substantially all of the operating subsidiaries of Charter Operating. The obligations are also secured by (i) a lien on substantially all of the assets of Charter Operating and its subsidiaries, to the extent such lien can be perfected under the Uniform Commercial Code by the filing of a financing statement, and (ii) a pledge by CCO Holdings of the equity interests owned by it in any of Charter Operating’s subsidiaries, as well as intercompany obligations owing to it by any of such entities.

Restrictive Covenants

The Charter Operating credit facilities contain representations and warranties, and affirmative and negative covenants customary for financings of this type. The financial covenants measure performance against standards set for leverage to be tested as of the end of each quarter. The Charter Operating credit facilities contain provisions requiring mandatory loan prepayments under specific circumstances, including in connection with certain sales of assets, so long as the proceeds have not been reinvested in the business. Additionally, the Charter Operating credit facilities provisions contain an allowance for restricted payments with certain limitations. The Charter Operating credit facilities permit Charter Operating and its subsidiaries to make distributions to pay interest on the currently outstanding subordinated and parent company indebtedness, provided that, among other things, no default has occurred and is continuing under the Charter Operating credit facilities. The Charter Operating credit facilities also contain customary events of default.

TWC, LLC Senior Notes and Debentures

The TWC, LLC senior notes and debentures are guaranteed by CCO Holdings and substantially all of the operating subsidiaries of Charter Operating and rank equally with the liens on the collateral securing obligations under the Charter Operating notes and credit facilities. Interest on each series of TWC, LLC senior notes and debentures is payable semi-annually (with the exception of the Sterling Notes, which is payable annually) in arrears.

The TWC, LLC indenture contains customary covenants relating to restrictions on the ability of TWC, LLC or any material subsidiary to create liens and on the ability of TWC, LLC and Time Warner Cable Enterprises LLC ("TWCE") to consolidate, merge or convey or transfer substantially all of their assets. The TWC, LLC indenture also contains customary events of default.

The TWC, LLC senior notes and debentures may be redeemed in whole or in part at any time at TWC, LLC’s option at a redemption price equal to the greater of (i) all of the applicable principal amount being redeemed and (ii) the sum of the present values of the remaining scheduled payments on the applicable TWC, LLC senior notes and debentures discounted to the redemption date on a semi-annual basis (with the exception of the Sterling Notes, which are on an annual basis), at a comparable government bond rate plus a designated number of basis points as further described in the indenture and the applicable note or debenture, plus, in each case, accrued but unpaid interest to, but not including, the redemption date.

The Company may offer to redeem all, but not less than all, of the Sterling Notes in the event of certain changes in the tax laws of the U.S. (or any taxing authority in the U.S.). This redemption would be at a redemption price equal to 100% of the principal amount, together with accrued and unpaid interest on the Sterling Notes to, but not including, the redemption date.

TWCE Senior Debentures

The TWCE senior debentures are guaranteed by CCO Holdings, substantially all of the operating subsidiaries of Charter Operating and TWC, LLC and rank equally with the liens on the collateral securing obligations under the Charter Operating notes and credit facilities. Interest on each series of TWCE senior debentures is payable semi-annually in arrears. The TWCE senior debentures are not redeemable before maturity.

The TWCE indenture contains customary covenants relating to restrictions on the ability of TWCE or any material subsidiary to create liens and on the ability of TWC, LLC and TWCE to consolidate, merge or convey or transfer substantially all of their assets. The TWCE indenture also contains customary events of default.

Limitations on Distributions

Distributions by the Company's subsidiaries to a parent company for payment of principal on parent company notes are restricted under the indentures and credit facilities discussed above, unless there is no default under the applicable indenture and credit facilities, and unless each applicable subsidiary's leverage ratio test is met at the time of such distribution. As of December 31, 2017, there was no default under any of these indentures or credit facilities and each subsidiary met its applicable leverage ratio tests based on December 31, 2017 financial results. There can be no assurance that they will satisfy these tests at the time of the contemplated distribution. Distributions by Charter Operating for payment of principal on parent company notes are further restricted by the covenants in its credit facilities.

However, without regard to leverage, during any calendar year or any portion thereof during which the borrower is a flow-through entity for tax purposes, and so long as no event of default exists, the borrower may make distributions to the equity interests of the borrower in an amount sufficient to make permitted tax payments.

In addition to the limitation on distributions under the various indentures, distributions by the Company's subsidiaries may be limited by applicable law, including the Delaware Limited Liability Company Act, under which the Company's subsidiaries may make distributions if they have "surplus" as defined in the act.

Liquidity and Future Principal Payments

The Company continues to have significant amounts of debt, and its business requires significant cash to fund principal and interest payments on its debt, capital expenditures and ongoing operations. As set forth below, the Company has significant future principal payments. The Company continues to monitor the capital markets, and it expects to undertake refinancing transactions and utilize free cash flow and cash on hand to further extend or reduce the maturities of its principal obligations. The timing and terms of any refinancing transactions will be subject to market conditions.

Based upon outstanding indebtedness as of December 31, 2017, the amortization of term loans, and the maturity dates for all senior and subordinated notes, total future principal payments on the total borrowings under all debt agreements are as follows:

Year	Amount
2018	$ 2,207
2019	3,457
2020	3,707
2021	2,407
2022	4,457
Thereafter	52,768
	$ 69,003

10. Common Stock

Charter's Class A common stock and Class B common stock are identical except with respect to certain voting, transfer and conversion rights. Holders of Class A common stock are entitled to one vote per share. Charter's Class B common stock represents the share issued to A/N in connection with the Bright House Transaction. One share of Charter's Class B common stock has a number of votes reflecting the voting power of the Charter Holdings common units and Charter Holdings convertible preferred units held by A/N as of the applicable record date on an if-converted, if-exchanged basis, and is generally intended to reflect A/N's economic interests in Charter Holdings.

The following table summarizes our shares outstanding for the three years endedDecember 31, 2017:

	Class A Common Stock	Class B Common Stock
BALANCE, December 31, 2014	111,999,687	—
Exercise of stock options	579,173	—
Restricted stock issuances, net of cancellations	6,920	—
Restricted stock unit vesting	98,831	—
Purchase of treasury stock	(245,783)	—
BALANCE, December 31, 2015	112,438,828	—
Reorganization of common stock	(10,771,404)	—
Issuance of shares in TWC Transaction	143,012,155	—
Issuance of shares to Liberty Broadband for cash	25,631,339	—
Issuance of share to A/N in Bright House Transaction	—	1
Exchange of Charter Holdings units held by A/N (see Note 11)	1,852,832	—
Exercise of stock options	1,014,664	—
Restricted stock issuances, net of cancellations	9,811	—
Restricted stock unit vesting	1,738,792	—
Purchase of treasury stock	(6,029,225)	—
BALANCE, December 31, 2016	268,897,792	1
Exchange of Charter Holdings units held by A/N (see Note 11)	1,263,497	—
Exercise of stock options	1,044,526	—
Restricted stock issuances, net of cancellations	9,517	—
Restricted stock unit vesting	1,159,083	—
Purchase of treasury stock	(33,868,356)	—
BALANCE, December 31, 2017	238,506,059	1

The shares outstanding balances shown above as of and prior to December 31, 2015 represent historical shares outstanding of Legacy Charter before applying the Parent Merger Exchange Ratio (as defined in the Merger Agreement). The 10.8 million shares associated with the reorganization of Charter Class A common stock represents the reduction to Legacy Charter Class A common shares outstanding as of the acquisition date as a result of applying the Parent Merger Exchange Ratio.

Share Repurchases

The following represents the Company's purchase of Charter Class A common stock and the effect on the consolidated statements of cash flows during the years ended December 31, 2017, 2016 and 2015.

	Year Ended December 31,					
	2017		2016		2015	
	Shares	$	Shares	$	Shares	$
Share buybacks	33,375,878	$ 11,570	5,070,656	$ 1,346	—	$ —
Income tax withholding	447,455	145	908,066	216	177,696	38
Exercise cost	45,023		50,503		44,541	
	33,868,356	$ 11,715	6,029,225	$ 1,562	222,237	$ 38

As of December 31, 2017, Charter had remaining board authority to purchase an additional $1.1 billion of Charter's Class A common stock and/or Charter Holdings common units. See Note 19. The Company also withholds shares of its Class A common stock in payment of income tax withholding owed by employees upon vesting of equity awards as well as exercise costs owed by employees upon exercise of stock options.

At the end of each fiscal year, Charter's board of directors approved the retirement of the then currently outstanding treasury stock and those shares were retired as of December 31, 2017 and 2016. The Company accounts for treasury stock using the cost method and includes treasury stock as a component of total shareholders' equity. Upon retirement, these treasury shares are allocated between additional paid-in capital and accumulated deficit based on the cost of original issue included in additional paid-in capital.

11. Noncontrolling Interests

Noncontrolling interests represents consolidated subsidiaries of which the Company owns less than 100%. The Company is a holding company whose principal asset is a controlling equity interest in Charter Holdings, the indirect owner of the Company's cable systems. Noncontrolling interests on the Company's balance sheet primarily includes A/N's equity interests in Charter Holdings, which is comprised of a common ownership interest and a convertible preferred ownership interest.

As of December 31, 2017, A/N held 22.3 million Charter Holdings common units which are exchangeable at any time into either Charter Class A common stock on a one-for-one basis, or, at Charter's option, cash, based on the then current market price of Charter Class A common stock. Net income (loss) of Charter Holdings attributable to A/N's common noncontrolling interest for financial reporting purposes is based on the weighted average effective common ownership interest of approximately 9% and 10% and was $69 million and $129 million for the years ended December 31, 2017 and 2016, respectively. Charter Holdings distributed $3 million to A/N as a pro rata tax distribution on its common units during the years ended December 31, 2017 and 2016.

Pursuant to the letter agreement discussed in Note 19, Charter Holdings purchased 4.8 million Charter Holdings common units from A/N, at a price per unit of $347.03, or $1.7 billion during the year ended December 31, 2017, and 0.8 million Charter Holdings common units, at a price per unit of $289.83, or $218 million during the year ended December 31, 2016. The common units purchased during the year ended December 31, 2017 are reflected as a reduction in noncontrolling interest based on net carrying value of approximately $1.2 billion with the remaining $478 million recorded as reduction of additional paid-in-capital, net of $183 million of deferred income taxes. The common units purchased during the year ended December 31, 2016 are reflected as a reduction in noncontrolling interest based on net carrying value of approximately $187 million with the remaining $31 million recorded as reduction of additional paid-in-capital, net of $12 million of deferred income taxes.

In December 2017 and 2016, A/N exchanged 1.3 million and 1.9 million Charter Holdings common units, respectively, held by A/N for shares of Charter Class A common stock for an aggregate purchase price of $400 million and $537 million, respectively, pursuant to the letter agreement discussed in Note 19. The common units exchanged had a net carrying value in noncontrolling interest of approximately $298 million and $460 million as of December 31, 2017 and 2016, respectively. The exchange of A/N common units resulted in a step-up in the tax-basis of the assets of Charter Holdings which is further discussed in Note 17.

As of December 31, 2017, A/N also held 25 million Charter Holdings convertible preferred units with a face amount of $2.5 billion that pays a 6% annual preferred dividend. The 6% annual preferred dividend is paid quarterly in cash, if and when declared, provided that, if dividends are suspended at any time, the dividends will accrue until they are paid. Net income (loss) of Charter Holdings attributable to the preferred noncontrolling interest for financial reporting purposes is based on the preferred dividend which was $150 million and $93 million for the years ended December 31, 2017 and 2016, respectively. Each convertible preferred unit is convertible into either 0.37334 of a Charter Holdings common unit (if then held by A/N) or 0.37334 of a share of Charter Class A common stock (if then held by a third party), representing a conversion price of $267.85 per unit, based on a conversion feature as defined in the Limited Liability Company Agreement of Charter Holdings. After May 18, 2021, Charter may redeem the convertible preferred units if the price of Charter Class A common stock exceeds 130% of the conversion price. These Charter Holdings common and convertible preferred units held by A/N are recorded in noncontrolling interests as permanent equity in the consolidated balance sheet.

The common units and convertible preferred units issued to A/N as consideration for the Bright House Transaction were initially measured at their fair value of $7.0 billion and $3.2 billion, respectively, in accordance with acquisition accounting. However, upon formation of Charter Holdings and subsequent to the acquisition, the carrying amounts of the controlling and noncontrolling interests were adjusted to reflect the relative effective common ownership interest in Charter Holdings. In addition to the common units purchased and exchanged with A/N as noted above, other changes in Charter Holdings' ownership resulted in an increase to noncontrolling interest of approximately $589 million and a corresponding decrease to additional paid-in capital of $589 million, net of $225 million of deferred income taxes, for the year ended December 31, 2016. Noncontrolling interest and additional paid-in-capital were also adjusted during the year ended December 31, 2017 due to the changes in Charter Holdings' ownership. These adjustments resulted in a decrease to noncontrolling interest of approximately $362 million and a corresponding increase to additional paid-in-capital of $362 million, net of $139 million of deferred income taxes, for the year ended December 31, 2017.

12. Accounting for Derivative Instruments and Hedging Activities

The Company uses derivative instruments to manage interest rate risk on variable debt and foreign exchange risk on the Sterling Notes, and does not hold or issue derivative instruments for speculative trading purposes.

Cross-currency derivative instruments are used to effectively convert £1.275 billion aggregate principal amount of fixed-rate British pound sterling denominated debt, including annual interest payments and the payment of principal at maturity, to fixed-rate U.S. dollar denominated debt. The cross-currency swaps have maturities of June 2031 and July 2042. The Company is required to post collateral on the cross-currency derivative instruments when the derivative contracts are in a liability position. In May 2016, the Company entered into a collateral holiday agreement for 80% of both the 2031 and 2042 cross-currency swaps, which eliminates the requirement to post collateral for three years. The fair value of the Company's cross-currency derivatives included in other long-term liabilities on the Company's consolidated balance sheets was $25 million and $251 million as of December 31, 2017 and 2016, respectively.

The Company’s derivative instruments are not designated as hedges and are marked to fair value each period, with the impact recorded as a gain or loss on financial instruments, net in the consolidated statements of operations. While these derivative instruments are not designated as cash flow hedges for accounting purposes, management continues to believe such instruments are correlated with the respective debt, thus managing associated risk.

The effect of financial instruments on the consolidated statements of operations is presented in the table below.

	Year Ended December 31,		
	2017	2016	2015
Gain (Loss) on Financial Instruments, Net:			
Change in fair value of interest rate derivative instruments	$ 5	$ 8	$ 5
Change in fair value of cross-currency derivative instruments	226	(179)	—
Foreign currency remeasurement of Sterling Notes to U.S. dollars	(157)	279	—
Loss on termination of interest rate derivative instruments	—	(11)	—
Loss reclassified from accumulated other comprehensive loss due to discontinuance of hedge accounting	(5)	(8)	(9)
	$ 69	$ 89	$ (4)

Upon closing of the TWC Transaction, the Company acquired interest rate derivative instrument assets which were terminated and settled with their respective counterparties in the second quarter of 2016 with an $88 million cash payment to the Company. The termination resulted in an $11 million loss for the year ended December 31, 2016 which was recorded in gain (loss) on financial instruments, net in the consolidated statements of operations. All of the Company's interest rate derivatives were expired as of December 31, 2017.

13. Fair Value Measurements

The accounting guidance establishes a three-level hierarchy for disclosure of fair value measurements, based upon the transparency of inputs to the valuation of an asset or liability as of the measurement date, as follows:

- Level 1 – inputs to the valuation methodology are quoted prices (unadjusted) for identical assets or liabilities in active markets.
- Level 2 – inputs to the valuation methodology include quoted prices for similar assets and liabilities in active markets, and inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the financial instrument.
- Level 3 – inputs to the valuation methodology are unobservable and significant to the fair value measurement.

Financial Assets and Liabilities

The Company has estimated the fair value of its financial instruments as ofDecember 31, 2017 and 2016 using available market information or other appropriate valuation methodologies. Considerable judgment, however, is required in interpreting market data to develop the estimates of fair value. Accordingly, the estimates presented in the accompanying consolidated financial statements are not necessarily indicative of the amounts the Company would realize in a current market exchange.

The carrying amounts of cash and cash equivalents, receivables, payables and other current assets and liabilities approximate fair value because of the short maturity of those instruments.

A portion of the Company's cash and cash equivalents as of December 31, 2017 and 2016 were invested in money market funds. The money market funds are valued at the closing price reported by the fund sponsor from an actively traded exchange which approximates fair value. The money market funds potentially subject the Company to concentration of credit risk. The amount invested within any one financial instrument did not exceed $300 million and $250 million as of December 31, 2017 and 2016, respectively. As of December 31, 2017 and 2016, there were no significant concentrations of financial instruments in a single investee, industry or geographic location.

The Company's financial instruments that are accounted for at fair value on a recurring basis as ofDecember 31, 2017 and 2016 are presented in the table below.

	December 31,			
	2017		2016	
	Level 1	Level 2	Level 1	Level 2
Assets				
Money market funds	$ 291	$ —	$ 1,205	$ —
Liabilities				
Cross-currency derivative instruments	$ —	$ 25	$ —	$ 251

A summary of the carrying value and fair value of the Company's debt atDecember 31, 2017 and 2016 is as follows:

	December 31,			
	2017		2016	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Debt				
Senior notes and debentures	$ 60,844	$ 63,443	$ 52,933	$ 55,203
Credit facilities	$ 9,387	$ 9,440	$ 8,814	$ 8,943

The estimated fair value of the Company's senior notes and debentures as ofDecember 31, 2017 and 2016 is based on quoted market prices in active markets and is classified within Level 1 of the valuation hierarchy, while the estimated fair value of the Company's credit facilities is based on quoted market prices in inactive markets and is classified within Level 2.

Non-financial Assets and Liabilities

The Company's nonfinancial assets such as equity-method investments, franchises, property, plant, and equipment, and other intangible assets are not measured at fair value on a recurring basis; however, they are subject to fair value adjustments in certain circumstances, such as upon a business combination and when there is evidence that an impairment may exist. No impairments were recorded in2017, 2016 and 2015.

14. Operating Costs and Expenses

Operating costs and expenses, exclusive of items shown separately in the consolidated statements of operations, consist of the following for the periods presented:

	Year Ended December 31,		
	2017	2016	2015
Programming	$ 10,596	$ 7,034	$ 2,678
Regulatory, connectivity and produced content	2,064	1,467	435
Costs to service customers	7,780	5,654	1,880
Marketing	2,420	1,707	629
Transition costs	124	156	72
Other	3,557	2,637	732
	$ 26,541	$ 18,655	$ 6,426

Programming costs consist primarily of costs paid to programmers for basic, premium, digital, video on demand, and pay-per-view programming. Regulatory, connectivity and produced content costs represent payments to franchise and regulatory authorities,

costs directly related to providing video, Internet and voice services as well as payments for sports, local and news content produced by the Company. Included in regulatory, connectivity and produced content costs is content acquisition costs for the Los Angeles Lakers' basketball games and Los Angeles Dodgers' baseball games which are recorded as games are exhibited over the applicable season. Costs to service customers include costs related to field operations, network operations and customer care for the Company's residential and small and medium business customers, including internal and third-party labor for installations, service and repairs, maintenance, bad debt expense, billing and collection, occupancy and vehicle costs. Marketing costs represent the costs of marketing to current and potential commercial and residential customers including labor costs. Transition costs represent incremental costs incurred to integrate the TWC and Bright House operations and to increase the scale of the Company's business as a result of the Transactions. See Note 3. Other includes corporate overhead, advertising sales expenses, indirect costs associated with the Company's enterprise business customers and regional sports and news networks, property tax and insurance expense and stock compensation expense, among others.

15. Other Operating Expenses, Net

Other operating expenses, net consist of the following for the years presented:

	Year Ended December 31,		
	2017	2016	2015
Merger and restructuring costs	$ 351	$ 970	$ 70
Special charges, net	(21)	17	15
(Gain) loss on sale of assets, net	16	(2)	4
	$ 346	$ 985	$ 89

Merger and restructuring costs

Merger and restructuring costs represent costs incurred in connection with merger and acquisition transactions and related restructuring, such as advisory, legal and accounting fees, employee retention costs, employee termination costs related to the Transactions and other exit costs. The Company expects to incur additional merger and restructuring costs in connection with the Transactions. Changes in accruals for merger and restructuring costs from January 1, 2016 through December 31, 2017 are presented below:

	Employee Retention Costs	Employee Termination Costs	Transaction and Advisory Costs	Other Costs	Total
Liability, December 31, 2015	$ —	$ —	$ 33	$ —	$ 33
Liability assumed in the Transactions	80	9	3	—	92
Costs incurred	26	337	318	41	722
Cash paid	(99)	(102)	(329)	(41)	(571)
Remaining liability, December 31, 2016	7	244	25	—	276
Costs incurred	4	226	4	68	302
Cash paid	(10)	(298)	(12)	(60)	(380)
Remaining liability, December 31, 2017	$ 1	$ 172	$ 17	$ 8	$ 198

In addition to the costs indicated above, the Company recorded $49 million and $248 million of expense related to accelerated vesting of equity awards of terminated employees for the years ended December 31, 2017 and 2016, respectively.

Special charges, net

Special charges, net primarily includes employee termination costs not related to the Transactions and net amounts of litigation settlements. In 2017, special charges, net also includes a $101 million benefit related to the remeasurement of the TRA liability

as a result of the enactment of the Tax Cuts & Jobs Act ("Tax Reform") in December 2017 (see Note 17) offset by an $83 million charge related to the Company's withdrawal liability from a multiemployer pension plan.

(Gain) loss on sale of assets, net

(Gain) loss on sale of assets, net represents the net (gain) loss recognized on the sales and disposals of fixed assets and cable systems.

16. Stock Compensation Plans

Charter's 2009 Stock Incentive Plan provides for grants of nonqualified stock options, incentive stock options, stock appreciation rights, dividend equivalent rights, performance units and performance shares, share awards, phantom stock, restricted stock units and restricted stock. Directors, officers and other employees of the Company and its subsidiaries, as well as others performing consulting services for the Company, are eligible for grants under the 2009 Stock Incentive Plan. The 2009 Stock Incentive Plan allows for the issuance of up to 21 million shares of Charter Class A common stock (or units convertible into Charter Class A common stock).

At the closing of the TWC Transaction, Legacy TWC employee equity awards were converted into Charter Class A common stock equity awards on the same terms and conditions as were applicable under the Legacy TWC equity awards, except that the number of shares covered by each award and the option exercise prices were adjusted for the Stock Award Exchange Ratio (as defined in the Merger Agreement) such that the intrinsic value of the converted TWC awards was approximately equal to that of the original awards at the closing of the Transactions. The converted TWC awards continue to be subject to the terms of the Legacy TWC equity plans. The Parent Merger Exchange Ratio was also applied to outstanding Legacy Charter equity awards and option exercise prices; however, the terms of the equity awards did not change as a result of the Transactions.

Charter Stock options and restricted stock units cliff vest upon the three year anniversary of each grant. Certain stock options and restricted stock units vest based on achievement of stock price hurdles. Stock options generally expire ten years from the grant date and restricted stock units have no voting rights. Restricted stock generally vests one year from the date of grant. Legacy TWC restricted stock units that were converted into Charter restricted stock units generally vest 50% on each of the third and fourth anniversary of the grant date.

As of December 31, 2017, total unrecognized compensation remaining to be recognized in future periods totaled $211 million for stock options, $1 million for restricted stock and $173 million for restricted stock units and the weighted average period over which they are expected to be recognized is 3 years for stock options, 4 months for restricted stock and 2 years for restricted stock units. The Company recorded $261 million, $244 million and $78 million of stock compensation expense for the years ended December 31, 2017, 2016 and 2015, respectively, which is included in operating costs and expenses. The Company also recorded $49 million and $248 million of expense for the years ended December 31, 2017 and 2016, respectively, related to accelerated vesting of equity awards of terminated employees which is recorded in merger and restructuring costs.

A summary of the activity for the Company's stock options (after applying the Parent Merger Exchange Ratio) for the years ended December 31, 2017, 2016 and 2015, is as follows (shares in thousands, except per share data):

	Year Ended December 31,								
	2017			2016			2015		
	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value
Outstanding, beginning of period	9,592	$ 181.39		3,923	$ 122.03		3,336	$ 95.42	
Granted	1,175	$ 302.87		5,999	$ 218.91		1,176	$ 177.14	
Converted TWC awards	—	$ —		839	$ 86.46		—	$ —	
Exercised	(1,044)	$ 124.32	$ 219	(1,015)	$ 96.33	$ 146	(524)	$ 72.27	$ 68
Canceled	(74)	$ 251.63		(154)	$ 173.98		(65)	$ 155.23	
Outstanding, end of period	9,649	$ 201.83	$ 1,295	9,592	$ 181.39		3,923	$ 122.03	
Weighted average remaining contractual life	8 years			8 years			7 years		
Options exercisable, end of period	1,734	$ 90.56	$ 425	1,665	$ 71.71		1,224	$ 61.88	
Options expected to vest, end of period	7,915	$ 226.20	$ 869						
Weighted average fair value of options granted	$ 73.67			$ 47.42			$ 66.20		

A summary of the activity for the Company's restricted stock (after applying the Parent Merger Exchange Ratio) for the years ended December 31, 2017, 2016 and 2015, is as follows (shares in thousands, except per share data):

	Year Ended December 31,					
	2017		2016		2015	
	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price
Outstanding, beginning of period	10	$ 231.81	197	$ 65.79	390	$ 63.30
Granted	10	$ 343.10	10	$ 231.83	6	$ 201.34
Vested	(10)	$ 231.81	(197)	$ 65.79	(199)	$ 65.16
Canceled	—	$ —	—	$ —	—	$ —
Outstanding, end of period	10	$ 343.10	10	$ 231.81	197	$ 65.79

A summary of the activity for the Company's restricted stock units (after applying the Parent Merger Exchange Ratio) for the years ended December 31, 2017, 2016 and 2015, is as follows (shares in thousands, except per share data):

	Year Ended December 31,											
	2017				2016				2015			
	Shares		Weighted Average Grant Price		Shares		Weighted Average Grant Price		Shares		Weighted Average Grant Price	
Outstanding, beginning of period	3,313		$	192.41	337		$	150.96	294		$	115.01
Granted	285		$	302.76	895		$	213.09	148		$	179.17
Converted TWC awards	—		$	—	4,162		$	224.90	—		$	—
Vested	(1,159)		$	216.21	(1,739)		$	219.60	(90)		$	78.65
Canceled	(48)		$	234.99	(342)		$	219.91	(15)		$	155.43
Outstanding, end of period	2,391		$	192.96	3,313		$	192.41	337		$	150.96

17. Income Taxes

Substantially all of the Company's operations are held through Charter Holdings and its direct and indirect subsidiaries. Charter Holdings and the majority of its subsidiaries are generally limited liability companies that are not subject to income tax. However, certain of these limited liability companies are subject to state income tax. In addition, the subsidiaries that are corporations are subject to income tax. Generally, the taxable income, gains, losses, deductions and credits of Charter Holdings are passed through to its members, Charter and A/N. Charter is responsible for its share of taxable income or loss of Charter Holdings allocated to it in accordance with the Charter Holdings Limited Liability Company Agreement ("LLC Agreement") and partnership tax rules and regulations. As a result, Charter's primary deferred tax component recorded in the consolidated balance sheets relates to its excess financial reporting outside basis, excluding amounts attributable to nondeductible goodwill, over Charter's tax basis in the investment in Charter Holdings.

Charter Holdings, the indirect owner of the Company's cable systems, generally allocates its taxable income, gains, losses, deductions and credits proportionately according to the members' respective ownership interests, except for special allocations required under Section 704(c) of the Internal Revenue Code and the Treasury Regulations ("Section 704(c)"). Pursuant to Section 704(c) and the LLC Agreement, each item of income, gain, loss and deduction with respect to any property contributed to the capital of the partnership shall, solely for tax purposes, be allocated among the members so as to take into account any variation between the adjusted basis of such property to the partnership for U.S. federal income tax purposes and its initial gross asset value using the "traditional method" as described in the Treasury Regulations.

Income Tax Benefit

For the years ended December 31, 2017, 2016, and 2015, the Company recorded deferred income tax benefit as shown below. The tax provision in future periods will vary based on current and future temporary differences, as well as future operating results.

	Year Ended December 31,		
	2017	2016	2015
Current expense:			
Federal income taxes	$ (4)	$ (4)	$ (1)
State income taxes	(25)	(29)	(4)
Current income tax expense	(29)	(33)	(5)
Deferred benefit:			
Federal income taxes	9,082	2,549	53
State income taxes	34	409	12
Deferred income tax benefit	9,116	2,958	65
Income tax benefit	$ 9,087	$ 2,925	$ 60

Income tax benefit for the year ended December 31, 2017 was recognized primarily as a result of the enactment of Tax Reform in December 2017. Among other things, the primary provisions of Tax Reform impacting us are the reductions to the U.S. corporate income tax rate from 35% to 21% and temporary 100% bonus depreciation for certain assets. The change in tax law required the Company to remeasure existing net deferred tax liabilities using the lower rate in the period of enactment resulting in an income tax benefit of approximately $9.3 billion to reflect these changes in the year ended December 31, 2017. The Company has reported provisional amounts for the income tax effects of Tax Reform for which the accounting is incomplete but a reasonable estimate could be determined. There were no specific impacts of Tax Reform that could not be reasonably estimated which the Company accounted for under prior tax law. Based on a continued analysis of the estimates and further guidance on the application of the law, it is anticipated that additional revisions may occur throughout the allowable measurement period. Overall, the changes due to Tax Reform will favorably affect income tax expense on future U.S. earnings. Income tax benefit for the year ended December 31, 2017 was also increased by approximately $88 million due to the recognition of excess tax benefits resulting from share based compensation as a component of the provision for income taxes following the prospective application of Accounting Standards Update ("ASU") No. 2016-09, *Improvements to Employee Share-Based Payment Accounting* ("ASU 2016-09") on January 1, 2017. See Note 22.

Income tax benefit for the year ended December 31, 2016 was recognized primarily through the reversal of approximately $3.3 billion of valuation allowance (see further discussion below), net of tax effect of permanent differences, a decrease to the anticipated blended state rate applied to Legacy Charter deferred tax balances as a result of the Transactions, a change in a state tax law, and prior to the closing of the Transactions, increases (decreases) in deferred tax liabilities related to Charter's franchises which are characterized as indefinite-lived for book financial reporting purposes.

Prior to July 2, 2015, Charter Communications Holding Company, LLC ("Charter Holdco") was treated as a partnership for tax purposes. Effective on July 2, 2015, Charter elected to treat two of its wholly owned subsidiaries as disregarded entities for federal and state income tax purposes (the "Election"). The subsidiaries that made the Election were two of the three partners in Charter Holdco. This Election resulted in a deemed liquidation of Charter Holdco into Charter solely for federal and state income tax purposes, and resulted in a net increase of $638 million to the tax basis of Charter Holdco's amortizable and depreciable assets. After the Election, all taxable income, gains, losses, deductions and credits of Charter Holdco and its indirect limited liability company subsidiaries were treated as income of Charter. In addition, the indirect subsidiaries of Charter Holdco that are corporations joined the Charter consolidated group. The impact of the Election to the Charter income tax provision, net of valuation allowance, was $187 million of income tax benefit recorded as a discrete tax event during the year ended December 31, 2015.

The Company's effective tax rate differs from that derived by applying the applicable federal income tax rate of 35% for the years ended December 31, 2017, 2016, and 2015, respectively, as follows:

	Year Ended December 31,		
	2017	2016	2015
Statutory federal income taxes	$ (360)	$ (288)	$ 116
Statutory state income taxes, net	(34)	(36)	(4)
Nondeductible expenses	(21)	(62)	(12)
Net income attributable to noncontrolling interest	84	78	—
Change in valuation allowance	14	3,171	(250)
Excess stock compensation	88	—	—
Organizational restructuring	—	—	187
Federal tax credits	21	16	18
Tax rate changes	9,293	65	4
Other	2	(19)	1
Income tax benefit	$ 9,087	$ 2,925	$ 60

The change in the valuation allowance above differs from the change between the beginning and ending valuation allowance below due to a change in certain deferred tax assets and the corresponding establishment of a valuation allowance which results in no impact to the consolidated statements of operations.

Deferred Tax Assets (Liabilities)

The tax effects of these temporary differences that give rise to significant portions of the deferred tax assets and deferred tax liabilities at December 31, 2017 and 2016 are presented below.

	December 31,	
	2017	2016
Deferred tax assets:		
Loss carryforwards	$ 2,657	$ 4,127
Accrued and other	287	243
Total gross deferred tax assets	2,944	4,370
Less: valuation allowance	(137)	(200)
Deferred tax assets	$ 2,807	$ 4,170
Deferred tax liabilities:		
Investment in partnership	$ (20,107)	$ (30,832)
Accrued and other	(14)	(3)
Deferred tax liabilities	(20,121)	(30,835)
Net deferred tax liabilities	$ (17,314)	$ (26,665)

The deferred tax liabilities on the investment in partnership above includes approximately $32 million and $25 million net deferred tax liabilities relating to certain indirect subsidiaries that file separate state income tax returns at December 31, 2017 and 2016, respectively.

Valuation Allowance

In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will be realized. In evaluating the need for a valuation allowance, management takes into account various factors, including the expected level of future taxable income, available tax planning strategies and reversals of existing

taxable temporary differences. Due to Legacy Charter's history of losses, Legacy Charter was historically unable to assume future taxable income in its analysis and accordingly valuation allowances were established against the deferred tax assets, net of deferred tax liabilities, from definite-lived assets for book accounting purposes. However, as a result of the TWC Transaction, deferred tax liabilities resulting from the book fair value adjustment increased significantly and future taxable income that will result from the reversal of existing temporary differences for which deferred tax liabilities are recognized, is sufficient to conclude it is more likely than not that the Company will realize substantially all of its deferred tax assets. As a result, Charter reversed approximately $3.3 billion of its valuation allowance and recognized a corresponding income tax benefit in the consolidated statements of operations for the year ended December 31, 2016. As of December 31, 2017 and 2016, approximately $87 million and $145 million, respectively, of the valuation allowance is associated with federal tax net operating loss carryforwards acquired in the TWC Transaction and approximately $50 million and $55 million, respectively, of the valuation allowance is associated with state tax loss carryforwards and tax credits.

Net Operating Loss Carryforwards

As of December 31, 2017, Charter had approximately $10.9 billion of federal tax net operating loss carryforwards resulting in a gross deferred tax asset of approximately $2.3 billion. Federal tax net operating loss carryforwards expire in the years 2018 through 2035. These losses resulted from the operations of Charter Holdco and its subsidiaries. In addition, as of December 31, 2017, Charter had state tax net operating loss carryforwards, resulting in a gross deferred tax asset (net of federal tax benefit) of approximately $359 million. State tax net operating loss carryforwards generally expire in the years 2018 through 2037.

Upon closing of the TWC Transaction, Charter experienced a third "ownership change" as defined in Section 382 of the Internal Revenue Code; resulting in a third set of limitations on Charter's use of its existing federal and state net operating losses, capital losses, and tax credit carryforwards. Both the first ownership change limitations that applied as a result of Legacy Charter's emergence from bankruptcy in 2009 and second ownership change limitations that applied as a result of Liberty Media Corporation's purchase in 2013 of a 27% beneficial interest in Legacy Charter will also continue to apply. As of December 31, 2017, all of Charter's federal tax loss carryforwards are subject to Section 382 and other restrictions. Pursuant to these restrictions, Charter estimates that approximately $8.7 billion in 2018, $654 million in 2019 and an additional $226 million annually over each of the next five years of federal tax loss carryforwards should become unrestricted and available for Charter's use. An additional $415 million is currently subject to a valuation allowance. Since the limitation amounts accumulate for future use to the extent they are not utilized in any given year, Charter believes its loss carryforwards should become fully available to offset future taxable income. Charter's state loss carryforwards are subject to similar, but varying, limitations on their future use. If Charter was to experience another "ownership change" in the future, its ability to use its loss carryforwards could be subject to further limitations.

Tax Receivable Agreement

Under the LLC Agreement, A/N has rights to: (1) convert at any time some or all of its preferred units in Charter Holdings for common units in Charter Holdings, and (2) exchange at any time some or all of its common units in Charter Holdings for Charter's Class A common stock or cash, at Charter's option. Pursuant to a Tax Receivable Agreement ("TRA") between Charter and A/N, Charter must pay to A/N 50% of the tax benefit when realized by Charter from the step-up in tax basis resulting from any future exchange or sale of the preferred and common units. Charter did not record a liability for this obligation as of the acquisition date since the tax benefit is dependent on uncertain future events that are outside of Charter's control, such as the timing of a conversion or exchange. A future exchange or sale is not based on a fixed and determinable date and the exchange or sale is not certain to occur. If all of A/N's partnership units were to be exchanged or sold in the future, the undiscounted value of the obligation is currently estimated to be in the range of zero to $3 billion depending on measurement of the tax step-up in the future and Charter's ability to realize the tax benefit in the periods following the exchange or sale. Factors impacting these calculations include, but are not limited to, the fair value of the equity at the time of the exchange and the effective tax rates when the benefits are realized.

In connection with the Letter Agreement between Charter and A/N (see Note 19) whereby 1.3 million and 1.9 million Charter Holdings common units held by A/N during the year ended December 31, 2017 and 2016, respectively, were exchanged for shares of Charter Class A common stock for an aggregate purchase price of $400 million and $537 million, respectively, an immediate step-up of $487 million and $580 million, respectively, in the tax basis of the assets of Charter Holdings occurred. As it relates to the exchange and tax step-up, a net deferred tax asset of approximately $85 million and $82 million, respectively, was recorded and a resulting TRA liability owed to A/N of $118 million and $137 million, respectively, which, as a transaction with a shareholder, was recorded directly to additional paid in capital, net of tax during the year ended December 31, 2017 and 2016. The TRA liability is recorded on an iterative, undiscounted basis. The TRA liability was remeasured as a result of the enactment of Tax Reform

resulting in a $101 million benefit recorded to other operating expenses, net. See Note 15. Following such remeasurement, the TRA liability of $154 million is reflected in other long-term liabilities on the consolidated balance sheets as of December 31, 2017 and 2016.

Uncertain Tax Positions

In connection with the TWC Transaction, the Company assumed $181 million of gross unrecognized tax benefits, exclusive of interest and penalties, which are recorded within other long-term liabilities. The net amount of the unrecognized tax benefits recorded as of December 31, 2017 that could impact the effective tax rate is $171 million. The Company has determined that it is reasonably possible that its existing reserve for uncertain tax positions as of December 31, 2017 could decrease by approximately $58 million during the year ended December 31, 2018 related to various ongoing audits, settlement discussions and expiration of statute of limitations with various state and local agencies; however, various events could cause the Company's current expectations to change in the future. These uncertain tax positions, if ever recognized in the financial statements, would be recorded in the consolidated statements of operations as part of the income tax provision. A reconciliation of the beginning and ending amount of unrecognized tax benefits, exclusive of interest and penalties, included in other long-term liabilities on the accompanying consolidated balance sheets of the Company is as follows:

BALANCE, December 31, 2015	$	5
Additions on prior year tax positions		1
Additions on current year tax positions		7
Additions on tax positions assumed in the TWC Transaction		181
Reductions on settlements and expirations with taxing authorities		(22)
BALANCE, December 31, 2016	$	172
Additions on prior year tax positions		1
Additions on current year tax positions		12
Reductions on settlements and expirations with taxing authorities		(21)
BALANCE, December 31, 2017	$	164

The Company recognizes interest and penalties accrued on uncertain income tax positions as part of the income tax provision. Interest and penalties included in other long-term liabilities on the accompanying consolidated balance sheets of the Company were $39 million and $34 million as of December 31, 2017 and 2016, respectively.

No tax years for Charter, Charter Holdings, or Charter Communications Holding Company, LLC for income tax purposes, are currently under examination by the Internal Revenue Service ("IRS"). Charter and Charter Holdings' 2016 and 2017 tax years remain open for examination and assessment. Legacy Charter's tax years ending 2014 through the short period return dated May 17, 2016 remain subject to examination and assessment. Years prior to 2014 remain open solely for purposes of examination of Legacy Charter's loss and credit carryforwards. The IRS is currently examining Legacy TWC's income tax returns for 2011 through 2014. Legacy TWC's tax year 2015 remains subject to examination and assessment. Prior to Legacy TWC's separation from Time Warner Inc. ("Time Warner") in March 2009 (the "Separation"), Legacy TWC was included in the consolidated U.S. federal and certain state income tax returns of Time Warner. The IRS is currently examining Time Warner's 2008 through 2010 income tax returns. Time Warner's income tax returns for 2005 to 2007, which are periods prior to the Separation, were settled with the exception of an immaterial item that has been referred to the IRS Appeals Division. The Company does not anticipate that these examinations will have a material impact on the Company's consolidated financial position or results of operations. In addition, the Company is also subject to ongoing examinations of the Company's tax returns by state and local tax authorities for various periods. Activity related to these state and local examinations did not have a material impact on the Company's consolidated financial position or results of operations during the year ended December 31, 2017, nor does the Company anticipate a material impact in the future.

18. Earnings (Loss) Per Share

Basic earnings (loss) per common share is computed by dividing net income (loss) attributable to Charter shareholders by the

weighted average number of shares of common stock outstanding during the period. Diluted earnings per common share considers the impact of potentially dilutive securities using the treasury stock and if-converted methods and is based on the weighted average number of shares used for the basic earnings per share calculation, adjusted for the dilutive effect of stock options, restricted stock, restricted stock units, equity awards with market conditions and Charter Holdings convertible preferred units and common units. Basic loss per common share equaled diluted loss per common share for the year ended December 31, 2015 because the Company incurred a net loss during those periods. The following is the computation of diluted earnings per common share for the years presented.

	Year Ended December 31,	
	2017	2016
Numerator:		
Net income attributable to Charter shareholders	$ 9,895	$ 3,522
Effect of dilutive securities:		
Charter Holdings common units	69	129
Charter Holdings convertible preferred units	150	93
Net income attributable to Charter shareholders after assumed conversions	$ 10,114	$ 3,744
Denominator:		
Weighted average common shares outstanding, basic	256,720,715	206,539,100
Effect of dilutive securities:		
Assumed exercise or issuance of shares relating to stock plans	4,012,145	3,088,871
Weighted average Charter Holdings common units	26,637,596	19,333,227
Weighted average Charter Holdings convertible preferred units	9,333,500	5,830,241
Weighted average common shares outstanding, diluted	296,703,956	234,791,439
Basic earnings per common share attributable to Charter shareholders	$ 38.55	$ 17.05
Diluted earnings per common share attributable to Charter shareholders	$ 34.09	$ 15.94

19. Related Party Transactions

The following sets forth certain transactions in which the Company and the directors, executive officers, and affiliates of the Company are involved or, in the case of the management arrangements, subsidiaries that are debt issuers that pay certain of their parent companies for services.

Charter is a party to management arrangements with Spectrum Management Holding Company, LLC ("Spectrum Management") and certain of their subsidiaries. Under these agreements, Charter, Spectrum Management and Charter Holdco provide management services for the cable systems owned or operated by their subsidiaries. Costs associated with providing these services are charged directly to the Company's operating subsidiaries. All other costs incurred on behalf of Charter's operating subsidiaries are considered a part of the management fee. These costs are recorded as a component of operating costs and expenses, in the accompanying consolidated financial statements. The management fee charged to the Company's operating subsidiaries approximated the expenses incurred by Spectrum Management, Charter Holdco and Charter on behalf of the Company's operating subsidiaries in 2017, 2016 and 2015.

Liberty Broadband and A/N

On May 23, 2015, in connection with the execution of the Merger Agreement and the amendment of the Contribution Agreement, Charter entered into the Amended and Restated Stockholders Agreement with Liberty Broadband, A/N and Legacy Charter (the "Stockholders Agreement") and the LLC Agreement with Liberty Broadband and A/N. As of the closing of the Merger Agreement and the Contribution Agreement on May 18, 2016, the Stockholders Agreement replaced Legacy Charter's existing stockholders agreement with Liberty Broadband, dated September 29, 2014, and superseded the amended and restated stockholders agreement among Legacy Charter, Charter, Liberty Broadband and A/N, dated March 31, 2015.

Under the terms of the Stockholders Agreement, the number of Charter's directors is fixed at 13, and includes its CEO. Upon the closing of the Bright House Transaction, two designees selected by A/N became members of the board of directors of Charter and three designees selected by Liberty Broadband continued as members of the board of directors of Charter. The remaining eight directors are not affiliated with either A/N or Liberty Broadband. Each of A/N and Liberty Broadband is entitled to nominate at least one director to each of the committees of Charter's board of directors, subject to applicable stock exchange listing rules and certain specified voting or equity ownership thresholds for each of A/N and Liberty Broadband, and provided that the Nominating and Corporate Governance Committee and the Compensation and Benefit Committee each have at least a majority of directors independent from A/N, Liberty Broadband and the Company (referred to as the "unaffiliated directors"). Each of the Nominating and Corporate Governance Committee and the Compensation and Benefits Committee is currently comprised of three unaffiliated directors and one designee of each of A/N and Liberty Broadband. A/N and Liberty Broadband also have certain other committee designation and other governance rights. Upon the closing of the Bright House Transaction, Mr. Thomas Rutledge, the Company's CEO, became the chairman of the board of Charter.

In December 2016, Charter and A/N entered into a letter agreement (the "Letter Agreement") that requires A/N to sell to Charter or to Charter Holdings, on a monthly basis, a number of shares of Charter Class A common stock or Charter Holdings common units that represents a pro rata participation by A/N and its affiliates in any repurchases of shares of Charter Class A common stock from persons other than A/N effected by Charter during the immediately preceding calendar month, at a purchase price equal to the average price paid by Charter for the shares repurchased from persons other than A/N during such immediately preceding calendar month. A/N and Charter both have the right to terminate or suspend the pro rata repurchase arrangement on a prospective basis once Charter or Charter Holdings have repurchased shares of Class A common stock or Charter Holdings common units from A/N and its affiliates for an aggregate purchase price of $537 million, which threshold has been met. On December 21, 2017, Charter and A/N entered into an amendment to the Letter Agreement resetting the aggregate purchase price to $400 million. See Note 11. Pursuant to the TRA between Charter and A/N, Charter must pay to A/N 50% of the tax benefit when realized by Charter from the step-up in tax basis resulting from any future exchange or sale of the preferred and common units. See Note 17 for more information.

The Company is aware that Dr. John Malone may be deemed to have a 39.2% voting interest in Liberty Interactive and is Chairman of the board of directors, an executive officer position, of Liberty Interactive. Liberty Interactive wholly owns HSN, Inc. ("HSN") and QVC, Inc. ("QVC"). The Company has programming relationships with HSN and QVC which pre-date the transaction with Liberty Media Corporation. For the years ended December 31, 2017, 2016 and 2015, the Company recorded revenue in aggregate of approximately $77 million, $53 million and $17 million, respectively, from HSN and QVC as part of channel carriage fees and revenue sharing arrangements for home shopping sales made to customers in the Company's footprint.

Dr. Malone and Mr. Steven Miron, each a member of Charter's board of directors, also serve on the board of directors of Discovery Communications, Inc., ("Discovery"). The Company is aware that Dr. Malone owns 93.6% of the series B common stock of Discovery, 6% of the series C common stock of Discovery and has a 28.1% voting interest in Discovery for the election of directors. The Company is aware that Advance/Newhouse Programming Partnership ("A/N PP"), an affiliate of A/N and in which Mr. Miron is the CEO, owns 100% of the Series A preferred stock of Discovery and 100% of the Series C preferred stock of Discovery and has a 31.1% voting interest for the election of directors. A/N PP has the right to appoint three directors out of a total of eleven directors to Discovery's board to be elected by the holders of Discovery's Series A preferred stock. In addition, Dr. Malone is a member of the board of directors of Lions Gate Entertainment Corp. ("Lions Gate," parent company of Starz, Inc.) and owns approximately 5.5% in the aggregate of the common stock of Lions Gate and has 7.9% of the voting power, pursuant to his ownership of Lions Gate Class A voting shares. The Company purchases programming from both Discovery and Lions Gate pursuant to agreements entered into prior to Dr. Malone and Mr. Miron joining Charter's board of directors. Based on publicly available information, the Company does not believe that either Discovery or Lions Gate would currently be considered related parties. The amounts paid in the aggregate to Discovery and Lions Gate represent less than 3% of total operating costs and expenses for the years ended December 31, 2017, 2016 and 2015.

Equity Investments

The Company has agreements with certain equity-method investees (see Note 7) pursuant to which the Company has made or received related party transaction payments. The Company recorded payments to equity-method investees totaling $317 million, $171 million and $28 million during the years ended December 31, 2017, 2016 and 2015, respectively. The Company recorded advertising revenues from transactions with equity-method investees totaling $9 million and $7 million during the years ended

December 31, 2017 and 2016, respectively. There were no advertising revenues received in 2015.

20. Commitments and Contingencies

Commitments

The following table summarizes the Company's payment obligations as of December 31, 2017 for its contractual obligations.

	Total	2018	2019	2020	2021	2022	Thereafter
Capital and Operating Lease Obligations [(a)]	$ 1,512	$ 286	$ 235	$ 199	$ 165	$ 132	$ 495
Programming Minimum Commitments [(b)]	164	103	39	22	—	—	—
Other [(c)]	13,626	1,917	1,031	839	653	499	8,687
	$ 15,302	$ 2,306	$ 1,305	$ 1,060	$ 818	$ 631	$ 9,182

(a) The Company leases certain facilities and equipment under non-cancelable capital and operating leases. Capital lease obligations represented $123 million of total capital and operating lease obligations as of December 31, 2017. Leases and rental costs charged to expense for the years ended December 31, 2017, 2016 and 2015 were $321 million, $215 million, $49 million, respectively.

(b) The Company pays programming fees under multi-year contracts ranging from three to ten years, typically based on a flat fee per customer, which may be fixed for the term, or may in some cases escalate over the term. Programming costs included in the statement of operations were $10.6 billion, $7.0 billion and $2.7 billion for the years ended December 31, 2017, 2016 and 2015 respectively. Certain of the Company's programming agreements are based on a flat fee per month or have guaranteed minimum payments. The table sets forth the aggregate guaranteed minimum commitments under the Company's programming contracts.

(c) "Other" represents other guaranteed minimum commitments, including rights negotiated directly with content owners for distribution on company-owned channels or networks, commitments related to our role as an advertising and distribution sales agent for third party-owned channels or networks, commitments to our customer premise equipment vendors and contractual obligations related to third-party network augmentation.

The following items are not included in the contractual obligation table due to various factors discussed below. However, the Company incurs these costs as part of its operations:

- The Company rents utility poles used in its operations. Generally, pole rentals are cancelable on short notice, but the Company anticipates that such rentals will recur. Rent expense incurred for pole rental attachments for the years ended December 31, 2017, 2016 and 2015 was $167 million, $115 million and $53 million, respectively.
- The Company pays franchise fees under multi-year franchise agreements based on a percentage of revenues generated from video service per year. The Company also pays other franchise related costs, such as public education grants, under multi-year agreements. Franchise fees and other franchise-related costs included in the accompanying statement of operations were $705 million, $534 million and $212 million for the years ended December 31, 2017, 2016 and 2015 respectively.
- The Company has $291 million in letters of credit, of which $137 million is secured under the Charter Operating credit facility, primarily to its various casualty carriers as collateral for reimbursement of workers' compensation, auto liability and general liability claims.
- Minimum pension funding requirements have not been presented in the table above as such amounts have not been determined beyond2017. The Company made no cash contributions to the qualified pension plans in 2017; however, the Company is permitted to make discretionary cash contributions to the qualified pension plans in 2018. For the nonqualified pension plan, the Company contributed $18 million during 2017 and will continue to make contributions in 2018 to the extent benefits are paid.

Legal Proceedings

In August 2015, a purported stockholder of Charter, Matthew Sciabacucchi, filed a lawsuit in the Delaware Court of Chancery, on behalf of a putative class of Charter stockholders, challenging the transactions between Charter, TWC, A/N, and Liberty Broadband announced by Charter on May 26, 2015. The lawsuit names as defendants Liberty Broadband, Legacy Charter, the board of directors of Charter, and Charter. Plaintiff alleges that the Liberty Transactions improperly benefit Liberty Broadband at

the expense of other Charter shareholders. Charter filed a motion to dismiss this litigation. The Court of Chancery has not yet made a final ruling on the motion to dismiss. Charter denies any liability, believes that it has substantial defenses, and intends to vigorously defend this suit. Although Charter is unable to predict the outcome of this lawsuit, it does not expect the outcome will have a material effect on its operations, financial condition or cash flows.

The California Attorney General and the Alameda County, California District Attorney are investigating whether certain of Legacy Charter's waste disposal policies, procedures and practices are in violation of the California Business and Professions Code and the California Health and Safety Code. That investigation was commenced in January 2014. A similar investigation involving Legacy TWC was initiated in February 2012. Charter is cooperating with these investigations. While the Company is unable to predict the outcome of these investigations, it does not expect that the outcome will have a material effect on its operations, financial condition, or cash flows.

On December 19, 2011, Sprint Communications Company L.P. ("Sprint") filed a complaint in the U.S. District Court for the District of Kansas alleging that Legacy TWC infringed certain U.S. patents purportedly relating to Voice over Internet Protocol ("VoIP") services. A trial began on February 13, 2017. On March 3, 2017 the jury returned a verdict of $140 million against Legacy TWC and further concluded that Legacy TWC had willfully infringed Sprint's patents. The court subsequently declined to enhance the damage award as a result of the purported willful infringement and awarded Sprint an additional $6 million, representing pre-judgment interest on the damages award. The Company has appealed the case to the United States Court of Appeals for the Federal Circuit. In addition to its appeal, the Company continues to pursue indemnity from one of its vendors. The impact of the verdict was reflected in the measurement period adjustments to net current liabilities as described in Note 3. The Company does not expect that the outcome of this litigation will have a material adverse effect on its operations or financial condition. The ultimate outcome of this litigation or the pursuit of indemnity against the Company's vendor cannot be predicted.

Subsequently, on December 2, 2017, Sprint filed suit against Charter in the United States District Court for the District of Delaware. The new suit alleges infringement of 15 patents related to the Company's provision of voice services (ten of which were already asserted against Legacy TWC in the matter described above). Charter is investigating the allegations and will vigorously defend this case. While the Company is unable to predict the outcome of its investigations, it does not expect that this litigation will have a material effect on its operations, financial condition, or cash flows.

On October 23, 2015, the New York Office of the Attorney General (the "NY AG") began an investigation of Legacy TWC's advertised Internet speeds and other Internet product advertising. On February 1, 2017, the NY AG filed suit in the Supreme Court for the State of New York alleging that Legacy TWC's advertising of Internet speeds was false and misleading. The suit seeks restitution and injunctive relief. The Company has moved to dismiss the NY AG's complaint and the Company intends to defend itself vigorously. Although no assurances can be made that such defenses would ultimately be successful, the Company does not expect that the outcome of this litigation will have a material adverse effect on its operations, financial condition or cash flows.

The Company is a defendant or co-defendant in several additional lawsuits involving alleged infringement of various patents relating to various aspects of its businesses. Other industry participants are also defendants in certain of these cases. In the event that a court ultimately determines that the Company infringes on any intellectual property rights, the Company may be subject to substantial damages and/or an injunction that could require the Company or its vendors to modify certain products and services the Company offers to its subscribers, as well as negotiate royalty or license agreements with respect to the patents at issue. While the Company believes the lawsuits are without merit and intends to defend the actions vigorously, no assurance can be given that any adverse outcome would not be material to the Company's consolidated financial condition, results of operations, or liquidity. The Company cannot predict the outcome of any such claims nor can it reasonably estimate a range of possible loss.

The Company is party to lawsuits, claims and regulatory inquiries that arise in the ordinary course of conducting its business. The ultimate outcome of these other legal matters pending against the Company cannot be predicted, and although such lawsuits and claims are not expected individually to have a material adverse effect on the Company's consolidated financial condition, results of operations or liquidity, such lawsuits could have, in the aggregate, a material adverse effect on the Company's consolidated financial condition, results of operations or liquidity. Whether or not the Company ultimately prevails in any particular lawsuit or claim, litigation can be time consuming and costly and injure the Company's reputation.

21. Employee Benefit Plans

Pension Plans

The Company sponsors two qualified defined benefit pension plans, the TWC Pension Plan and the TWC Union Pension Plan, that provide pension benefits to a majority of Legacy TWC employees. The Company also provides a nonqualified defined benefit pension plan for certain employees under the TWC Excess Pension Plan.

Changes in the projected benefit obligation, fair value of plan assets and funded status of the pension plans from January 1 through December 31 are presented below:

	2017	2016
Projected benefit obligation at beginning of year	$ 3,260	$ —
Benefit obligation assumed in the TWC Transaction	—	4,009
Service cost	—	86
Interest cost	133	87
Curtailment amendment	—	(675)
Actuarial (gain) loss	406	(149)
Settlement	(185)	—
Benefits paid	(45)	(98)
Projected benefit obligation at end of year	$ 3,569	$ 3,260
Accumulated benefit obligation at end of year	$ 3,569	$ 3,260
Fair value of plan assets at beginning of year	$ 2,946	$ —
Fair value of plan assets acquired in the TWC Transaction	—	2,877
Actual return on plan assets	539	162
Employer contributions	18	5
Settlement	(185)	—
Benefits paid	(45)	(98)
Fair value of plan assets at end of year	$ 3,273	$ 2,946
Funded status	$ (296)	$ (314)

The projected benefit obligation, accumulated benefit obligation and fair value of plan assets for the qualified pension plans and the nonqualified pension plan as of December 31, 2017 and 2016 consisted of the following:

	Qualified Pension Plans		Nonqualified Pension Plan	
	December 31,		December 31,	
	2017	2016	2017	2016
Projected benefit obligation	$ 3,528	$ 3,204	$ 41	$ 56
Accumulated benefit obligation	$ 3,528	$ 3,204	$ 41	$ 56
Fair value of plan assets	$ 3,273	$ 2,946	$ —	$ —

Pretax amounts recognized in the consolidated balance sheet as of December 31, 2017 and 2016 consisted of the following:

	December 31,	
	2017	2016
Noncurrent asset	$ 1	$ 1
Current liability	(5)	(6)
Long-term liability	(292)	(309)
Net amounts recognized in consolidated balance sheet	$ (296)	$ (314)

The components of net periodic benefit costs for the years ended December 31, 2017 and 2016 consisted of the following:

	Year Ended December 31,	
	2017	2016
Service cost	$ —	$ 86
Interest cost	133	87
Expected return on plan assets	(189)	(116)
Pension curtailment gain	—	(675)
Remeasurement (gain) loss	55	(195)
Net periodic pension (benefit) cost	$ (1)	$ (813)

During the year ended December 31, 2017, lump-sum distributions to qualified and nonqualified pension plan participants exceeded the estimated annual interest cost of the plans resulting in a settlement for accounting purposes. As a result, the pension liability and pension asset values were reassessed as of September 30, 2017 utilizing remeasurement date assumptions in accordance with the Company's mark-to-market pension accounting policy to record gains and losses in the period in which a remeasurement event occurs. The $55 million remeasurement loss recorded during the year ended December 31, 2017 was primarily driven by the adoption of the revised lump sum conversion mortality tables published by the IRS effective January 1, 2018 and the effects of a decrease of the discount rate from 4.20% at December 31, 2016 to 3.68% at December 31, 2017, partially offset by an actuarial gain on pension asset actual returns. Approximately $30 million of the remeasurement loss was recorded for the interim remeasurement event as of September 30, 2017 and $25 million was recorded for the annual remeasurement as of December 31, 2017.

The $195 million remeasurement gain recorded during the year ended December 31, 2016 was primarily driven by the effects of an increase of the discount rate from 3.99% at the closing date of the TWC Transaction to 4.20% at December 31, 2016 and a gain to record pension assets at December 31, 2016 fair values.

The discount rates used to determine benefit obligations as of December 31, 2017 and 2016 were 3.68% and 4.20%, respectively. The Company utilized the RP 2015/MP2015 mortality tables published by the Society of Actuaries to measure the benefit obligations as of December 31, 2017 and 2016.

Weighted average assumptions used to determine net periodic benefit costs for the years ended December 31, 2017 and 2016 consisted of the following:

	Year ended December 31,	
	2017	2016
Expected long-term rate of return on plan assets	6.50%	6.50%
Discount rate (a)	3.88%	3.72%
Rate of compensation increase (b)	—%	—%

(a) The discount rate used to determine net periodic pension benefit was4.20% from January 1, 2017 through remeasurement date (September 30, 2017), and was 3.88% from remeasurement date through December 31, 2017. The discount rate used to determine net periodic pension benefit was 3.99% from the closing date of the TWC Transaction through remeasurement date (June 30, 2016), and was 3.72% from remeasurement date through December 31, 2016.

(b) The rate of compensation increase used to determine net periodic pension benefit was4.25% from the closing date of the TWC Transaction through remeasurement date (June 30, 2016), and 0% thereafter. See "Pension Plan Curtailment Amendment" below for further discussion.

In developing the expected long-term rate of return on plan assets, the Company considered the pension portfolio's composition, past average rate of earnings and the Company's future asset allocation targets. The weighted average expected long-term rate of return on plan assets and discount rate used to determine net periodic pension benefit for the year ended December 31, 2018 are expected to be 6.50% and 3.68%, respectively. The Company determined the discount rates used to determine benefit obligations and net periodic pension benefit based on the yield of a large population of high quality corporate bonds with cash flows sufficient in timing and amount to settle projected future defined benefit payments.

Pension Plan Curtailment Amendment

Following the closing of the TWC Transaction, Charter amended the pension plans to freeze future benefit accruals to current active plan participants as of August 31, 2016. Effective September 1, 2016, no future compensation increases or future service will be credited to participants of the pension plans and new hires are not eligible to participate in the plans. Upon announcement and approval of the plan amendment, the assumptions underlying the pension liability and pension asset values were reassessed utilizing remeasurement date assumptions in accordance with Charter's mark-to-market pension accounting policy to record gains and losses in the period in which a remeasurement event occurs. The $675 million curtailment gain recorded during the year ended December 31, 2016 was primarily driven by the reduction of the compensation rate assumption to 0% in accordance with the terms of the plan amendment, reflecting the pension liability at its accumulated benefit obligation instead of its projected benefit obligation at the remeasurement date.

Pension Plan Assets

The assets of the qualified pension plans are held in a master trust in which the qualified pension plans are the only participating plans (the "Master Trust"). The investment policy for the qualified pension plans is to manage the assets of the Master Trust with the objective to provide for pension liabilities to be met, maintaining retirement income security for the participants of the plans and their beneficiaries. The investment portfolio is a mix of pooled funds invested in fixed income and equity securities with the objective of matching plan liability performance, diversifying risk and achieving a target investment return. The pension plan's Investment Committee establishes risk mitigation policies and regularly monitors investment performance, investment allocation policies, and the execution of these strategies. The Investment Committee engages a third-party investment firm with responsibility of executing the directives of the Investment Committee, monitoring the performance of individual investment managers of the Master Trust, and making adjustments and changes within defined parameters when necessary. On a periodic basis, the Investment Committee conducts a broad strategic review of its portfolio construction and investment allocation policies. Neither the Company, the Investment Committee, nor the third-party investment firm manages any assets internally or directly utilizes derivative instruments or hedging; however, the investment mandate of some investment managers allows the use of derivatives as components of their standard portfolio management strategies. Pension assets are managed in a balanced portfolio comprised of two major components: a return-seeking portion and a liability-matching portion. The expected role of return-seeking investments is to achieve a reasonable long-term growth of pension assets with a prudent level of risk using asset diversity in order to balance return and volatility, while the role of liability-matching investments is to provide a partial economic hedge against liability performance associated with changes in interest rates.

The Company adopted an investment strategy referred to as a de-risking glide path to increase the fixed income allocation as the funded status of the qualified pension plans improves. As the qualified pension plans reach set funded status milestones, the assets will be rebalanced to shift more assets from equity to fixed income. Based on the progress with this strategy, the target investment allocation for pension fund assets is permitted to vary within specified ranges subject to Investment Committee approval for return-seeking securities and liability-matching securities. The target and actual investment allocation of the qualified pension plans by asset category as of December 31, 2017 and 2016 consisted of the following:

		Actual Allocation	
	Target	December 31,	
	Allocation	2017	2016
Return-seeking securities	75.0%	73.1%	64.4%
Liability-matching securities	25.0%	26.7%	35.4%
Other investments	—%	0.2%	0.2%

The following table sets forth the investment assets of the qualified pension plans, which exclude accrued investment income and investments with a fair value measured at net asset value per share as a practical expedient, by level within the fair value hierarchy as of December 31, 2017:

	December 31, 2017			
	Fair Value	Level 1	Level 2	Level 3
Cash	$ 3	$ 3	$ —	$ —
Commingled equity funds[a]	2,368	—	2,368	—
Corporate debt securities[b]	1	—	1	—
Commingled bond funds[a]	795	—	795	—
Collective trust funds[c]	68	—	68	—
Total investment assets	3,235	$ 3	$ 3,232	$ —
Accrued investment income and other receivables[d]	34			
Investments measured at net asset value[e]	4			
Fair value of plan assets	$ 3,273			

(a) Commingled funds primarily include global equity index, corporate bond, and U.S. treasury securities. The funds are valued using the net asset value provided by the administrator of the fund. The fair value of each fund is based on the fair value of securities in the portfolio, which represents the amount that the fund might reasonably expect to receive for the securities upon a sale, less liabilities, and then divided by the number of units outstanding. These funds are valued using observable inputs on either a daily or weekly basis and the resulting value serves as a basis for current transactions.

(b) Corporate debt securities are valued based on observable prices from the new issue market, benchmark quotes, secondary trading and dealer quotes. An option adjusted spread model is incorporated to adjust spreads of issues that have early redemption features and final spreads are added to the U.S. Treasury curve.

(c) Collective trust funds primarily consist of short-term investment strategies comprised of instruments issued or fully guaranteed by the U.S. government and/or its agencies and are valued using the net asset value provided by the administrator of the fund. The net asset value is based on the readily determinable value of the underlying assets owned by the fund, less liabilities, and then divided by the number of units outstanding.

(d) Accrued investment income includes dividends and interest receivable.

(e) Certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy. These investments primarily consist of hedge funds, which includes hard to value or illiquid securities. The fair value of each fund is based on the fair value of assets in the portfolio, which represents the amount that the fund might reasonably expect to receive for the assets upon a sale, less liabilities, and then divided by the number of units outstanding. Certain hedge funds report net asset value per share on a quarter lag. Shares of the funds are not redeemable and the underlying assets are anticipated to be liquidated and distributed to investors in the near term. There are

no material unfunded commitments with respect to these investments. The fair value amounts presented in this table are intended to permit the reconciliation of the fair value hierarchy to the total fair value of plan assets discussed throughout this footnote.

The following table sets forth the investment assets of the qualified pension plans, which exclude accrued investment income and other receivables, accrued liabilities, and investments with a fair value measured at net asset value per share as a practical expedient, by level within the fair value hierarchy as of December 31, 2016:

	December 31, 2016			
	Fair Value	**Level 1**	**Level 2**	**Level 3**
Cash	$ 2	$ 2	$ —	$ —
Common stocks:				—
Domestic[a]	1,065	1,065	—	—
International[a]	391	391	—	—
Commingled equity funds[b]	348	—	348	—
Other equity securities[c]	3	3	—	—
Corporate debt securities[d]	394	—	394	—
Commingled bond funds[b]	273	—	273	—
U.S. Treasury debt securities[a]	260	260	—	—
Collective trust funds[e]	75	—	75	—
U.S. government agency asset-backed debt securities[f]	53	—	53	—
Corporate asset-backed debt securities[g]	2	—	2	—
Other fixed-income securities[h]	89	—	89	—
Total investment assets	2,955	$ 1,721	$ 1,234	$ —
Accrued investment income and other receivables[i]	107			
Accrued liabilities[i]	(120)			
Investments measured at net asset value[j]	4			
Fair value of plan assets	$ 2,946			

(a) Common stocks, mutual funds and U.S. Treasury debt securities are valued at the closing price reported on the active market on which the individual securities are traded. No single industry comprised a significant portion of common stock held by the qualified pension plan as of December 31, 2016.

(b) Commingled equity funds and commingled bond funds are valued using the net asset value provided by the administrator of the fund. The fair value of each fund is based on the fair value of securities in the portfolio, which represents the amount that the fund might reasonably expect to receive for the securities upon a sale, less liabilities, and then divided by the number of units outstanding. These funds are valued using observable inputs on either a daily or weekly basis and the resulting value serves as a basis for current transactions.

(c) Other equity securities consist of preferred stocks, which are valued at the closing price reported on the active market on which the individual securities are traded.

(d) Corporate debt securities are valued based on observable prices from the new issue market, benchmark quotes, secondary trading and dealer quotes. An option adjusted spread model is incorporated to adjust spreads of issues that have early redemption features and final spreads are added to the U.S. Treasury curve.

(e) Collective trust funds primarily consist of short-term investment strategies comprised of instruments issued or fully guaranteed by the U.S. government and/or its agencies and are valued using the net asset value provided by the administrator of the fund. The net asset value is based on the readily determinable value of the underlying assets owned by the fund, less liabilities, and then divided by the number of units outstanding.

(f) U.S. government agency asset-backed debt securities consist of pass-through mortgage-backed securities issued by the Federal Home Loan Mortgage Corporation and the Federal National Mortgage Association valued using available trade information, dealer quotes, market indices and research reports, spreads, bids and offers.

(g) Corporate asset-backed debt securities primarily consist of pass-through mortgage-backed securities issued by U.S. and foreign corporations valued using available trade information, dealer quotes, market indices and research reports, spreads, bids and offers.

(h) Other fixed-income securities consist of foreign government debt securities, municipal bonds and U.S. government agency debt securities, which are valued based on observable prices from the new issue market, benchmark quotes, secondary trading and dealer quotes. An option adjusted spread model is incorporated to adjust spreads of issues that have early redemption features and final spreads are added to the U.S. Treasury curve.

(i) Accrued investment income and other receivables includes amounts receivable under foreign exchange contracts of $70 million as of December 31, 2016. Accrued liabilities includes amounts accrued under foreign exchange contracts of $71 million as of December 31, 2016. The fair value of the assets and liabilities associated with these foreign exchange contracts are presented on a gross basis and are valued using the exchange rates in effect for the applicable currencies as of the valuation date (a Level 1 fair value measurement).

(j) Certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy. These investments primarily consist of hedge funds valued utilizing net asset value provided by the administrator of the fund, which is based on the value of the underlying assets owned by the fund, less liabilities, and then divided by the number of units outstanding. Shares of the fund are not redeemable and the underlying assets are anticipated to be liquidated and distributed to investors in the near term. There are no material unfunded commitments with respect to these investments. The fair value amounts presented in this table are intended to permit the reconciliation of the fair value hierarchy to the total fair value of plan assets discussed throughout this footnote.

Pension Plan Contributions

The Company made no cash contributions to the qualified pension plans during the years ended December 31, 2017 and 2016; however, the Company may make discretionary cash contributions to the qualified pension plans in the future. Such contributions will be dependent on a variety of factors, including current and expected interest rates, asset performance, the funded status of the qualified pension plans and management's judgment. For the nonqualified unfunded pension plan, the Company will continue to make contributions during 2018 to the extent benefits are paid.

Benefit payments for the pension plans are expected to be $186 million in 2018, $188 million in 2019, $191 million in 2020, $192 million in 2021, $193 million in 2022 and $944 million in 2023 to 2027.

Multiemployer Plans

The Company contributes to a number of multiemployer plans under the terms of collective-bargaining agreements that cover its union-represented employees. Such multiemployer plans provide medical, pension and retirement savings benefits to active employees and retirees. The Company made contributions to multiemployer plans of $18 million and $31 million for the years ended December 31, 2017 and 2016, respectively.

The risks of participating in multiemployer pension plans are different from single-employer pension plans in the following aspects: (a) assets contributed to a multiemployer pension plan by one employer may be used to provide benefits to employees of other participating employers, (b) if a participating employer stops contributing to the multiemployer pension plan, the unfunded obligations of the plan may be borne by the remaining participating employers and (c) if the Company chooses to stop participating in any of the multiemployer pension plans, it may be required to pay those plans an amount based on the underfunded status of the plan, referred to as a withdrawal liability. The Company records withdrawal liabilities as other long-term liabilities in the consolidated balance sheets. As of December 31, 2017, other long-term liabilities includes approximately $83 million related to the Company's withdrawal from a multiemployer pension plan.

The multiemployer pension plans to which the Company has contributed each received a Pension Protection Act "green" zone status in 2016. The zone status is based on the most recent information the Company received from the plan and is certified by the plan's actuary. Among other factors, plans in the green zone are at least 80% funded.

Defined Contribution Benefit Plans

The Company's employees may participate in the Charter Communications, Inc. 401(k) Plan (the "401(k) Plan"). Employees that qualify for participation can contribute up to 50% of their salary, on a pre-tax basis, subject to a maximum contribution limit as

determined by the Internal Revenue Service. The Company's matching contribution is discretionary and is equal to 100% of the amount of the salary reduction the participant elects to defer (up to 6% of the participant's eligible compensation), excluding any catch-up contributions and is paid by the Company on a per pay period basis. The Company made contributions to the 401(k) plan totaling $274 million, $147 million and $23 million for the years ended December 31, 2017, 2016 and 2015, respectively.

For employees who are not eligible to participate in the Company's long-term incentive plan and who are not covered by a collective bargaining agreement, the Company offers a contribution to the new Retirement Accumulation Plan ("RAP"), equal to 3% of eligible pay. The Company made contributions to the RAP totaling $139 million and $48 million for the years ended December 31, 2017 and 2016, respectively.

22. Recently Issued Accounting Standards

Accounting Standards Adopted January 1, 2017

In March 2016, the Financial Accounting Standards Board ("FASB") issued ASU No. 2016-09, *Improvements to Employee Share-Based Payment Accounting*, which includes multiple provisions intended to simplify various aspects of the accounting for share-based payments. The new standard (1) requires all excess tax benefits and deficiencies to be recognized as income tax expense or benefit in the income statement in the period in which they occur regardless of whether the benefit reduces taxes payable in the current period, (2) requires classification of excess tax benefits as an operating activity on the statements of cash flows, (3) allows an entity to make an entity-wide accounting policy election to either estimate the number of awards that are expected to vest or account for forfeitures when they occur and (4) causes the threshold under which employee share-based awards partially settled in cash can qualify for equity classification to increase to the maximum statutory tax rates in the applicable jurisdiction. The new standard generally requires a modified retrospective transition through a cumulative-effect adjustment as of the beginning of the period of adoption, with certain provisions requiring either a prospective or retrospective transition. The Company adopted ASU 2016-09 on January 1, 2017. Upon adoption of ASU 2016-09, the Company recognized excess tax benefits in deferred tax assets that were previously not recognized in a cumulative-effect adjustment to retained earnings. The Company will prospectively record a deferred tax benefit or expense associated with the difference between book and tax for stock compensation expense. On January 1, 2017, the Company also established an accounting policy election to assume zero forfeitures for stock award grants and account for forfeitures when they occur which prospectively impacts stock compensation expense. The total impact to shareholders' equity was a $131 million increase to retained earnings, a $9 million increase to additional paid-in capital and a $140 million decrease to net deferred tax liabilities.

In March 2017, the FASB issued ASU No. 2017-07, *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost* ("ASU 2017-07"), which requires employers to report the service cost component of net periodic pension cost in the same line item as other compensation costs arising from services rendered during the period. The standard also requires the other components of net periodic cost be presented in the income statement separately from the service cost component and outside of a subtotal of income from operations. ASU 2017-07 will be effective for annual periods beginning after December 15, 2017, and early adoption is permitted. The new standard requires retrospective application and allows a practical expedient that permits an employer to use the amounts disclosed in its pension plan footnote for the prior comparative periods as the estimation basis for applying the retrospective presentation. The Company early adopted ASU 2017-07 on January 1, 2017 and utilized the practical expedient to estimate the impact on the prior comparative period information presented in interim and annual financial statements. The Company previously recorded service cost with other compensation costs in operating costs and expenses in the consolidated statements of operations, and recorded other pension costs (benefits), in other operating expenses, net. Adoption of the standard results in the reclassification of other pension costs (benefits) to other expenses, net (non-operating). Adopting the standard reduced 2016 income from operations presented for comparative purposes in the 2017 annual financial statements by $899 million with a corresponding decrease to other expenses of $899 million, with no impact to net income. ASU 2017-07 does not impact the consolidated balance sheets or statements of cash flows.

Accounting Standards Adopted January 1, 2018

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers* ("ASU 2014-09"), which is a comprehensive revenue recognition standard that will supersede nearly all existing revenue recognition guidance under U.S. GAAP. The new standard provides a single principles-based, five-step model to be applied to all contracts with customers, which steps are to (1) identify the contract(s) with the customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price to the performance obligations in the contract and (5) recognize revenue when

each performance obligation is satisfied. Charter adopted ASU 2014-09 as of the January 1, 2018 using the modified retrospective transition method with a cumulative-effect adjustment to equity as will be fully presented in the Company's Quarterly Report on Form 10-Q for the three months ended March 31, 2018. The adoption of the new standard did not have a material impact on the Company's financial position or results of operation. Previously reported results will not be restated under this transition method. The Company has implemented new processes and internal controls to enable the preparation of financial information on adoption. The adoption results in the deferral of residential installation revenues and enterprise commission expenses over a period of time instead of recognized immediately and the reclassification to operating costs and expenses the amortization of up-front fees paid to market and serve customers who reside in residential MDUs instead of amortized as an intangible to depreciation and amortization expense. The adoption of ASU 2014-09 will also result in additional disclosures around nature and timing of the Company's performance obligations, deferred revenue contract liabilities, deferred contract cost assets, as well as significant judgments and practical expedients used by the Company in applying the five-step revenue model.

In August 2016, the FASB issued ASU No. 2016-15, *Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments* ("ASU 2016-15"), which clarifies how entities should classify cash receipts and cash payments related to eight specific cash flow matters on the statement of cash flows, with the objective of reducing existing diversity in practice. The Company adopted ASU 2016-15 on January 1, 2018. The adoption of ASU 2016-15 did not have a material impact to the Company's consolidated financial statements.

In November 2016, the FASB issued ASU No. 2016-18, *Statement of Cash Flows (Topic 230): Restricted Cash* ("ASU 2016-18") which requires that amounts generally described as restricted cash to be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. ASU 2016-18 does not provide a definition of restricted cash or restricted cash equivalents. The Company adopted ASU 2016-18 on January 1, 2018. The new guidance will only be applicable to amounts described by the Company as restricted cash. The Company currently does not have amounts described as restricted cash; however, the Company's consolidated statement of cash flows for the year ended December 31, 2016 will be recast to present $22.3 billion of restricted cash as beginning of period cash and cash equivalents.

In May 2017, the FASB issued ASU No. 2017-09, *Scope of Modification Accounting* ("ASU 2017-09"), which amends the scope of modification accounting for share-based payment arrangements. The ASU provides guidance on the types of changes to the terms or conditions of share-based payment awards to which an entity would be required to apply modification accounting. ASU 2017-09 is applied prospectively to awards modified on or after the effective date. The Company adopted ASU 2017-09 on January 1, 2018. The adoption of ASU 2017-09 did not have a material impact to the Company's consolidated financial statements.

Accounting Standards Not Yet Adopted

In February 2016, the FASB issued ASU No. 2016-02, *Leases* ("ASU 2016-02"), which requires lessees to recognize almost all leases on their balance sheet as a right-of-use asset and a lease liability. Lessees are allowed to account for short-term leases (i.e., leases with a term of 12 months or less) off-balance sheet, consistent with current operating lease accounting. For income statement purposes, the FASB retained a dual model, requiring leases to be classified as either operating or finance. Classification will be based on criteria that are largely similar to those applied in current lease accounting, but without explicit bright lines. ASU 2016-02 will be effective for interim and annual periods beginning after December 15, 2018 (January 1, 2019 for the Company). The new standard currently requires a modified retrospective transition through a cumulative-effect adjustment as of the beginning of the earliest period presented in the financial statements, although an option for transition relief to not restate or make required disclosures under the new standard in comparative periods in the period of adoption was recently exposed by the FASB for public comment. The Company is currently in the process of evaluating the impact that the adoption of ASU 2016-02 will have on its consolidated financial statements including identifying the population of leases, evaluating technology solutions and collecting lease data. The Company expects its leases designated as operating leases in Note 20 will be reported on the consolidated balance sheets upon adoption. The Company is currently evaluating the impact to its consolidated financial statements as it relates to other embedded lease arrangements of the business.

In January 2017, the FASB issued ASU No. 2017-04, *Simplifying the Test for Goodwill Impairment* ("ASU 2017-04"), which eliminates step two from the goodwill impairment test. Under the new standard, to the extent the carrying amount of a reporting unit exceeds the fair value, the Company will record an impairment charge equal to the difference. The impairment charge recognized should not exceed the total amount of goodwill allocated to the reporting unit. ASU 2017-04 will be effective for interim and annual periods beginning after December 15, 2019 (January 1, 2020 for the Company). Early adoption is permitted for interim or

annual goodwill impairment tests performed after January 1, 2017. The Company is currently in the process of evaluating the impact that the adoption of ASU 2017-04 will have on its consolidated financial statements.

23. Unaudited Quarterly Financial Data

The following table presents quarterly data for the periods presented in the consolidated statement of operations:

	Year Ended December 31, 2017			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenues	$ 10,164	$ 10,357	$ 10,458	$ 10,602
Income from operations	$ 941	$ 1,052	$ 909	$ 1,204
Net income attributable to Charter shareholders	$ 155	$ 139	$ 48	$ 9,553
Earnings per common share attributable to Charter shareholders:				
Basic	$ 0.58	$ 0.53	$ 0.19	$ 39.66
Diluted	$ 0.57	$ 0.52	$ 0.19	$ 34.56
Weighted average common share outstanding:				
Basic	269,004,817	263,460,911	253,923,805	240,833,636
Diluted	273,199,509	267,309,261	258,341,851	278,257,245

	Year Ended December 31, 2016			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenues	$ 2,530	$ 6,161	$ 10,037	$ 10,275
Income from operations	$ 302	$ 170	$ 911	$ 1,073
Net income (loss) attributable to Charter shareholders	$ (188)	$ 3,067	$ 189	$ 454
Earnings (loss) per common share attributable to Charter shareholders:				
Basic	$ (1.86)	$ 16.73	$ 0.70	$ 1.69
Diluted	$ (1.86)	$ 15.17	$ 0.69	$ 1.67
Weighted average common share outstanding:				
Basic	101,552,093	183,362,776	271,263,259	268,584,368
Diluted	101,552,093	205,214,266	275,373,202	272,624,270

24. Consolidating Schedules

Each of Charter Operating, TWC, LLC, TWCE, CCO Holdings and certain subsidiaries jointly, severally, fully and unconditionally guarantee the outstanding debt securities of the others (other than the CCO Holdings notes) on an unsecured senior basis and the condensed consolidating financial information has been prepared and presented pursuant to SEC Regulation S-X Rule 3-10, *Financial Statements of Guarantors and Issuers of Guaranteed Securities Registered or Being Registered.* Certain Charter Operating subsidiaries that are regulated telephone entities only become guarantor subsidiaries upon approval by regulators. This information is not intended to present the financial position, results of operations and cash flows of the individual companies or groups of companies in accordance with generally accepted accounting principles.

The "Intermediate Holding Companies" column includes the assets and liabilities of the captive insurance company, a company wholly-owned by Charter outside of Charter Holdings and not one of the holding companies that directly or indirectly own Charter

Holdings. The "Charter Operating and Restricted Subsidiaries" column is presented to comply with the terms of the Credit Agreement.

The "Safari Escrow Entities" column included in the condensed consolidating financial statements for the year ended December 31, 2015 consists of CCOH Safari, CCO Safari II and CCO Safari III. CCOH Safari, CCO Safari II and CCO Safari III issued the CCOH Safari notes, CCO Safari II notes and the CCO Safari III credit facilities, respectively. Upon closing of the TWC Transaction, the CCOH Safari notes became obligations of CCO Holdings and CCO Holdings Capital and the CCO Safari II notes and CCO Safari III credit facilities became obligations of Charter Operating and Charter Communications Operating Capital Corp. CCOH Safari merged into CCO Holdings and CCO Safari II and CCO Safari III merged into Charter Operating.

The "Unrestricted Subsidiary" column included in the condensed consolidating financial statements for the year ended December 31, 2015 consists of CCO Safari which was a non-recourse subsidiary under the Credit Agreement and held the CCO Safari Term G Loans that were repaid in April 2015.

Condensed consolidating financial statements as of December 31, 2017 and 2016 and for the years ended December 31, 2017, 2016 and 2015 follow.

Charter Communications, Inc.
Condensed Consolidating Balance Sheet
As of December 31, 2017

	Non-Guarantor Subsidiaries		Guarantor Subsidiaries			
	Charter	Intermediate Holding Companies	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	Charter Consolidated
ASSETS						
CURRENT ASSETS:						
Cash and cash equivalents	$ —	$ 291	$ —	$ 330	$ —	$ 621
Accounts receivable, net	—	24	—	1,611	—	1,635
Receivables from related party	22	613	55	—	(690)	—
Prepaid expenses and other current assets	22	34	—	243	—	299
Total current assets	44	962	55	2,184	(690)	2,555
INVESTMENT IN CABLE PROPERTIES:						
Property, plant and equipment, net	—	336	—	33,552	—	33,888
Customer relationships, net	—	—	—	11,951	—	11,951
Franchises	—	—	—	67,319	—	67,319
Goodwill	—	—	—	29,554	—	29,554
Total investment in cable properties, net	—	336	—	142,376	—	142,712
INVESTMENT IN SUBSIDIARIES	56,263	63,558	81,980	—	(201,801)	—
LOANS RECEIVABLE – RELATED PARTY	233	655	511	—	(1,399)	—
OTHER NONCURRENT ASSETS	—	223	—	1,133	—	1,356
Total assets	$ 56,540	$ 65,734	$ 82,546	$ 145,693	$ (203,890)	$ 146,623
LIABILITIES AND SHAREHOLDERS'/MEMBER'S EQUITY						
CURRENT LIABILITIES:						
Accounts payable and accrued liabilities	$ 4	$ 900	$ 280	$ 7,861	$ —	$ 9,045
Payables to related party	—	—	—	690	(690)	—
Current portion of long-term debt	—	—	—	2,045	—	2,045
Total current liabilities	4	900	280	10,596	(690)	11,090
LONG-TERM DEBT	—	—	18,708	49,478	—	68,186
LOANS PAYABLE – RELATED PARTY	—	—	—	1,399	(1,399)	—
DEFERRED INCOME TAXES	17,268	14	—	32	—	17,314
OTHER LONG-TERM LIABILITIES	184	134	—	2,184	—	2,502
SHAREHOLDERS'/MEMBER'S EQUITY						
Controlling interest	39,084	56,263	63,558	81,980	(201,801)	39,084
Noncontrolling interests	—	8,423	—	24	—	8,447
Total shareholders'/member's equity	39,084	64,686	63,558	82,004	(201,801)	47,531
Total liabilities and shareholders'/member's equity	$ 56,540	$ 65,734	$ 82,546	$ 145,693	$ (203,890)	$ 146,623

Charter Communications, Inc.

Condensed Consolidating Balance Sheet

As of December 31, 2016

	Non-Guarantor Subsidiaries		Guarantor Subsidiaries			
	Charter	Intermediate Holding Companies	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	Charter Consolidated
ASSETS						
CURRENT ASSETS:						
Cash and cash equivalents	$ 57	$ 154	$ —	$ 1,324	$ —	$ 1,535
Accounts receivable, net	34	11	—	1,387	—	1,432
Receivables from related party	170	451	62	—	(683)	—
Prepaid expenses and other current assets	—	33	—	300	—	333
Total current assets	261	649	62	3,011	(683)	3,300
INVESTMENT IN CABLE PROPERTIES:						
Property, plant and equipment, net	—	245	—	32,718	—	32,963
Customer relationships, net	—	—	—	14,608	—	14,608
Franchises	—	—	—	67,316	—	67,316
Goodwill	—	—	—	29,509	—	29,509
Total investment in cable properties, net	—	245	—	144,151	—	144,396
INVESTMENT IN SUBSIDIARIES	66,692	75,838	88,760	—	(231,290)	—
LOANS RECEIVABLE – RELATED PARTY	—	640	494	—	(1,134)	—
OTHER NONCURRENT ASSETS	—	214	—	1,157	—	1,371
Total assets	$ 66,953	$ 77,586	$ 89,316	$ 148,319	$ (233,107)	$ 149,067
LIABILITIES AND SHAREHOLDERS'/MEMBER'S EQUITY						
CURRENT LIABILITIES:						
Accounts payable and accrued liabilities	$ 22	$ 625	$ 219	$ 6,678	$ —	$ 7,544
Payables to related party	—	—	—	683	(683)	—
Current portion of long-term debt	—	—	—	2,028	—	2,028
Total current liabilities	22	625	219	9,389	(683)	9,572
LONG-TERM DEBT	—	—	13,259	46,460	—	59,719
LOANS PAYABLE – RELATED PARTY	—	—	—	1,134	(1,134)	—
DEFERRED INCOME TAXES	26,637	3	—	25	—	26,665
OTHER LONG-TERM LIABILITIES	155	64	—	2,526	—	2,745
SHAREHOLDERS'/MEMBER'S EQUITY						
Controlling interest	40,139	66,692	75,838	88,760	(231,290)	40,139
Noncontrolling interests	—	10,202	—	25	—	10,227
Total shareholders'/member's equity	40,139	76,894	75,838	88,785	(231,290)	50,366
Total liabilities and shareholders'/member's equity	$ 66,953	$ 77,586	$ 89,316	$ 148,319	$ (233,107)	$ 149,067

Charter Communications, Inc.
Condensed Consolidating Statement of Operations
For the year ended December 31, 2017

	Non-Guarantor Subsidiaries		Guarantor Subsidiaries			
	Charter	Intermediate Holding Companies	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	Charter Consolidated
REVENUES	$ 90	$ 1,186	$ —	$ 41,578	$ (1,273)	$ 41,581
COSTS AND EXPENSES:						
Operating costs and expenses (exclusive of items shown separately below)	90	1,164	—	26,560	(1,273)	26,541
Depreciation and amortization	—	9	—	10,579	—	10,588
Other operating (income) expenses, net	(101)	3	—	444	—	346
	(11)	1,176	—	37,583	(1,273)	37,475
Income from operations	101	10	—	3,995	—	4,106
OTHER INCOME (EXPENSES):						
Interest income (expense), net	5	20	(883)	(2,232)	—	(3,090)
Loss on extinguishment of debt	—	—	(34)	(6)	—	(40)
Gain on financial instruments, net	—	—	—	69	—	69
Other pension benefits	—	—	—	1	—	1
Other expense, net	—	(14)	—	(4)	—	(18)
Equity in income of subsidiaries	680	882	1,799	—	(3,361)	—
	685	888	882	(2,172)	(3,361)	(3,078)
Income before income taxes	786	898	882	1,823	(3,361)	1,028
INCOME TAX BENEFIT (EXPENSE)	9,109	1	—	(23)	—	9,087
Consolidated net income	9,895	899	882	1,800	(3,361)	10,115
Less: Net income – noncontrolling interests	—	(219)	—	(1)	—	(220)
Net income	$ 9,895	$ 680	$ 882	$ 1,799	$ (3,361)	$ 9,895

Charter Communications, Inc.
Condensed Consolidating Statement of Operations
For the year ended December 31, 2016

	Non-Guarantor Subsidiaries			Guarantor Subsidiaries			
	Charter	Intermediate Holding Companies	Safari Escrow Entities	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	Charter Consolidated
REVENUES	$ 251	$ 1,004	$ —	$ —	$ 29,003	$ (1,255)	$ 29,003
COSTS AND EXPENSES:							
Operating costs and expenses (exclusive of items shown separately below)	251	989	—	—	18,670	(1,255)	18,655
Depreciation and amortization	—	5	—	—	6,902	—	6,907
Other operating expenses, net	262	1	—	—	722	—	985
	513	995	—	—	26,294	(1,255)	26,547
Income (loss) from operations	(262)	9	—	—	2,709	—	2,456
OTHER INCOME (EXPENSES):							
Interest income (expense), net	—	14	(390)	(727)	(1,396)	—	(2,499)
Loss on extinguishment of debt	—	—	—	(110)	(1)	—	(111)
Gain on financial instruments, net	—	—	—	—	89	—	89
Other pension benefits	—	—	—	—	899	—	899
Other expense, net	—	(11)	—	—	(3)	—	(14)
Equity in income of subsidiaries	851	1,066	—	2,293	—	(4,210)	—
	851	1,069	(390)	1,456	(412)	(4,210)	(1,636)
Income (loss) before income taxes	589	1,078	(390)	1,456	2,297	(4,210)	820
INCOME TAX BENEFIT (EXPENSE)	2,933	(5)	—	—	(3)	—	2,925
Consolidated net income (loss)	3,522	1,073	(390)	1,456	2,294	(4,210)	3,745
Less: Net income – noncontrolling interest	—	(222)	—	—	(1)	—	(223)
Net income (loss)	$ 3,522	$ 851	$ (390)	$ 1,456	$ 2,293	$ (4,210)	$ 3,522

CHARTER COMMUNICATIONS, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2017, 2016 AND 2015
(dollars in millions, except share or per share data or where indicated)

Charter Communications, Inc.

Condensed Consolidating Statement of Operations

For the year ended December 31, 2015

	Non-Guarantor Subsidiaries			Guarantor Subsidiaries				
	Charter	Intermediate Holding Companies	Safari Escrow Entities	CCO Holdings	Charter Operating and Restricted Subsidiaries	Unrestricted Subsidiary	Eliminations	Charter Consolidated
REVENUES	$ 25	$ 299	$ —	$ —	$ 9,754	$ —	$ (324)	$ 9,754
COSTS AND EXPENSES:								
Operating costs and expenses (exclusive of items shown separately below)	25	299	—	—	6,426	—	(324)	6,426
Depreciation and amortization	—	—	—	—	2,125	—	—	2,125
Other operating expenses, net	—	—	—	—	89	—	—	89
	25	299	—	—	8,640	—	(324)	8,640
Income from operations	—	—	—	—	1,114	—	—	1,114
OTHER INCOME (EXPENSES):								
Interest income (expense), net	—	8	(474)	(642)	(151)	(47)	—	(1,306)
Loss on extinguishment of debt	—	—	(2)	(123)	—	(3)	—	(128)
Loss on financial instruments, net	—	—	—	—	(4)	—	—	(4)
Other expense, net	—	(7)	—	—	—	—	—	(7)
Equity in income (loss) of subsidiaries	(121)	(168)	—	1,073	(50)	—	(734)	—
	(121)	(167)	(476)	308	(205)	(50)	(734)	(1,445)
Income (loss) before income taxes	(121)	(167)	(476)	308	909	(50)	(734)	(331)
INCOME TAX BENEFIT (EXPENSE)	(150)	—	—	—	210	—	—	60
Consolidated net income (loss)	(271)	(167)	(476)	308	1,119	(50)	(734)	(271)
Less: Net (income) loss – noncontrolling interest	—	46	—	—	(46)	—	—	—
Net income (loss)	$ (271)	$ (121)	$ (476)	$ 308	$ 1,073	$ (50)	$ (734)	$ (271)

Charter Communications, Inc.

Condensed Consolidating Statement of Comprehensive Income

For the year ended December 31, 2017

	Non-Guarantor Subsidiaries		Guarantor Subsidiaries			
	Charter	Intermediate Holding Companies	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	Charter Consolidated
Consolidated net income	$ 9,895	$ 899	$ 882	$ 1,800	$ (3,361)	$ 10,115
Net impact of interest rate derivative instruments	5	5	5	5	(15)	5
Foreign currency translation adjustment	1	1	1	1	(3)	1
Consolidated comprehensive income	9,901	905	888	1,806	(3,379)	10,121
Less: Comprehensive income attributable to noncontrolling interests	—	(219)	—	(1)	—	(220)
Comprehensive income	$ 9,901	$ 686	$ 888	$ 1,805	$ (3,379)	$ 9,901

Charter Communications, Inc.

Condensed Consolidating Statement of Comprehensive Income (Loss)

For the year ended December 31, 2016

	Non-Guarantor Subsidiaries			Guarantor Subsidiaries			
	Charter	Intermediate Holding Companies	Safari Escrow Entities	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	Charter Consolidated
Consolidated net income (loss)	$ 3,522	$ 1,073	$ (390)	$ 1,456	$ 2,294	$ (4,210)	$ 3,745
Net impact of interest rate derivative instruments	8	8	—	8	8	(24)	8
Foreign currency translation adjustment	(2)	(2)	—	(2)	(2)	6	(2)
Consolidated comprehensive income (loss)	3,528	1,079	(390)	1,462	2,300	(4,228)	3,751
Less: Comprehensive income attributable to noncontrolling interests	—	(222)	—	—	(1)	—	(223)
Comprehensive income (loss)	$ 3,528	$ 857	$ (390)	$ 1,462	$ 2,299	$ (4,228)	$ 3,528

Charter Communications, Inc.

Condensed Consolidating Statement of Comprehensive Income (Loss)

For the year ended December 31, 2015

	Non-Guarantor Subsidiaries			Guarantor Subsidiaries				
	Charter	Intermediate Holding Companies	Safari Escrow Entities	CCO Holdings	Charter Operating and Restricted Subsidiaries	Unrestricted Subsidiary	Eliminations	Charter Consolidated
Consolidated net income (loss)	$ (271)	$ (167)	$ (476)	$ 308	$ 1,119	$ (50)	$ (734)	$ (271)
Net impact of interest rate derivative instruments	9	9	—	9	9	—	(27)	9
Consolidated comprehensive income (loss)	(262)	(158)	(476)	317	1,128	(50)	(761)	(262)
Less: Comprehensive (income) loss attributable to noncontrolling interests	—	46	—	—	(46)	—	—	—
Comprehensive income (loss)	$ (262)	$ (112)	$ (476)	$ 317	$ 1,082	$ (50)	$ (761)	$ (262)

Charter Communications, Inc.

Condensed Consolidating Statement of Cash Flows

For the year ended December 31, 2017

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	Non-Guarantor Subsidiaries		Guarantor Subsidiaries			
	Charter	Intermediate Holding Companies	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	Charter Consolidated
NET CASH FLOWS FROM OPERATING ACTIVITIES	$ 159	$ 187	$ (814)	$ 12,422	$ —	$ 11,954
CASH FLOWS FROM INVESTING ACTIVITIES:						
Purchases of property, plant and equipment	—	—	—	(8,681)	—	(8,681)
Change in accrued expenses related to capital expenditures	—	—	—	820	—	820
Purchases of cable systems, net	—	—	—	(9)	—	(9)
Real estate investments through variable interest entities	—	(105)	—	—	—	(105)
Contribution to subsidiaries	(115)	—	(693)	—	808	—
Distributions from subsidiaries	11,732	13,488	9,598	—	(34,818)	—
Other, net	—	—	—	(123)	—	(123)
Net cash flows from investing activities	11,617	13,383	8,905	(7,993)	(34,010)	(8,098)
CASH FLOWS FROM FINANCING ACTIVITIES:						
Borrowings of long-term debt	—	—	6,231	19,045	—	25,276
Repayments of long-term debt	—	—	(775)	(15,732)	—	(16,507)
Borrowings (repayments) loans payable - related parties	(234)	—	—	234	—	—
Payment for debt issuance costs	—	—	(59)	(52)	—	(111)
Purchase of treasury stock	(11,715)	—	—	—	—	(11,715)
Proceeds from exercise of stock options	116	—	—	—	—	116
Purchase of noncontrolling interest	—	(1,665)	—	—	—	(1,665)
Distributions to noncontrolling interest	—	(151)	—	(2)	—	(153)
Contributions from parent	—	115	—	693	(808)	—
Distributions to parent	—	(11,732)	(13,488)	(9,598)	34,818	—
Other, net	—	—	—	(11)	—	(11)
Net cash flows from financing activities	(11,833)	(13,433)	(8,091)	(5,423)	34,010	(4,770)
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	(57)	137	—	(994)	—	(914)
CASH AND CASH EQUIVALENTS, beginning of period	57	154	—	1,324	—	1,535
CASH AND CASH EQUIVALENTS, end of period	$ —	$ 291	$ —	$ 330	$ —	$ 621

Charter Communications, Inc.

Condensed Consolidating Statement of Cash Flows

For the year ended December 31, 2016

	Non-Guarantor Subsidiaries			Guarantor Subsidiaries			
	Charter	Intermediate Holding Companies	Safari Escrow Entities	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	Charter Consolidated
NET CASH FLOWS FROM OPERATING ACTIVITIES	$ (225)	$ (36)	$ (463)	$ (711)	$ 9,476	$ —	$ 8,041
CASH FLOWS FROM INVESTING ACTIVITIES:							
Purchases of property, plant and equipment	—	—	—	—	(5,325)	—	(5,325)
Change in accrued expenses related to capital expenditures	—	—	—	—	603	—	603
Purchases of cable systems, net	(26,781)	(2,022)	—	—	(7)	—	(28,810)
Contribution to subsidiaries	(1,013)	(478)	—	(437)	—	1,928	—
Distributions from subsidiaries	24,552	26,899	—	5,096	—	(56,547)	—
Change in restricted cash and cash equivalents	—	—	22,264	—	—	—	22,264
Other, net	—	—	—	—	(22)	—	(22)
Net cash flows from investing activities	(3,242)	24,399	22,264	4,659	(4,751)	(54,619)	(11,290)
CASH FLOWS FROM FINANCING ACTIVITIES:							
Borrowings of long-term debt	—	—	—	3,201	9,143	—	12,344
Repayments of long-term debt	—	—	—	(2,937)	(7,584)	—	(10,521)
Borrowings (repayments) loans payable - related parties	—	(300)	553	(71)	(182)	—	—
Payment for debt issuance costs	—	—	—	(73)	(211)	—	(284)
Issuance of equity	5,000	—	—	—	—	—	5,000
Purchase of treasury stock	(1,562)	—	—	—	—	—	(1,562)
Proceeds from exercise of stock options	86	—	—	—	—	—	86
Settlement of restricted stock units	—	(59)	—	—	—	—	(59)
Purchase of noncontrolling interest	—	(218)	—	—	—	—	(218)
Distributions to noncontrolling interest	—	(96)	—	—	—	—	(96)
Proceeds from termination of interest rate derivatives	—	—	—	—	88	—	88
Contributions from parent	—	1,013	—	478	437	(1,928)	—
Distributions to parent	—	(24,552)	(22,353)	(4,546)	(5,096)	56,547	—
Other, net	—	3	(1)	—	(1)	—	1
Net cash flows from financing activities	3,524	(24,209)	(21,801)	(3,948)	(3,406)	54,619	4,779
NET INCREASE IN CASH AND CASH EQUIVALENTS	57	154	—	—	1,319	—	1,530
CASH AND CASH EQUIVALENTS, beginning of period	—	—	—	—	5	—	5
CASH AND CASH EQUIVALENTS, end of period	$ 57	$ 154	$ —	$ —	$ 1,324	$ —	$ 1,535

CHARTER COMMUNICATIONS, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2017, 2016 AND 2015
(dollars in millions, except share or per share data or where indicated)

Charter Communications, Inc.

Condensed Consolidating Statement of Cash Flows

For the year ended December 31, 2015

	Non-Guarantor Subsidiaries			Guarantor Subsidiaries				
	Charter	Intermediate Holding Companies	Safari Escrow Entities	CCO Holdings	Charter Operating and Restricted Subsidiaries	Unrestricted Subsidiary	Eliminations	Charter Consolidated
NET CASH FLOWS FROM OPERATING ACTIVITIES:	$ (1)	$ (5)	$ (192)	$ (663)	$ 3,275	$ (55)	$ —	$ 2,359
CASH FLOWS FROM INVESTING ACTIVITIES:								
Purchases of property, plant and equipment	—	—	—	—	(1,840)	—	—	(1,840)
Change in accrued expenses related to capital expenditures	—	—	—	—	28	—	—	28
Contribution to subsidiaries	(20)	(90)	—	(46)	(24)	—	180	—
Distributions from subsidiaries	26	376	—	715	—	—	(1,117)	—
Change in restricted cash and cash equivalents	—	—	(18,667)	—	—	3,514	—	(15,153)
Other, net	—	(55)	—	—	(12)	—	—	(67)
Net cash flows from investing activities	6	231	(18,667)	669	(1,848)	3,514	(937)	(17,032)
CASH FLOWS FROM FINANCING ACTIVITIES:								
Borrowings of long-term debt	—	—	21,790	2,700	1,555	—	—	26,045
Repayments of long-term debt	—	—	(3,500)	(2,598)	(1,745)	(3,483)	—	(11,326)
Borrowings (repayments) loans payable - related parties	—	—	581	(18)	(563)	—	—	—
Payment for debt issuance costs	—	—	(12)	(24)	—	—	—	(36)
Purchase of treasury stock	(38)	—	—	—	—	—	—	(38)
Proceeds from exercise of options and warrants	30	—	—	—	—	—	—	30
Contributions from parent	—	95	—	15	46	24	(180)	—
Distributions to parent	—	(321)	—	(81)	(715)	—	1,117	—
Net cash flows from financing activities	(8)	(226)	18,859	(6)	(1,422)	(3,459)	937	14,675
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	(3)	—	—	—	5	—	—	2
CASH AND CASH EQUIVALENTS, beginning of period	3	—	—	—	—	—	—	3
CASH AND CASH EQUIVALENTS, end of period	$ —	$ —	$ —	$ —	$ 5	$ —	$ —	$ 5

Exhibit 12.1

CHARTER COMMUNICATIONS, INC AND SUBSIDIARIES
RATIO OF EARNINGS TO FIXED CHARGES CALCULATION
(In millions)

	Year Ended December 31,				
	2017	**2016**	**2015**	**2014**	**2013**
Earnings					
Income (loss) before Noncontrolling Interest and Income Taxes	$ 1,028	$ 820	$ (331)	$ 53	$ (49)
Fixed Charges	3,122	2,520	1,316	920	854
Total Earnings	$ 4,150	$ 3,340	$ 985	$ 973	$ 805
Fixed Charges					
Interest Expense	$ 3,046	$ 2,468	$ 1,285	$ 890	$ 824
Amortization of Debt Costs	44	31	21	21	22
Interest Element of Rentals	32	21	10	9	8
Total Fixed Charges	$ 3,122	$ 2,520	$ 1,316	$ 920	$ 854
Ratio of Earnings to Fixed Charges (1)	1.33	1.33	—	1.06	—

(1) Earnings for the years ended December 31, 2015 and 2013 were insufficient to cover fixed charges by $331 million and $49 million, respectively. As a result of such deficiencies, the ratios are not presented above.

Exhibit 21.1

Entity Name	Jurisdiction and Type
Charter Communications, Inc.	Delaware corporation (Parent Company)
Adcast North Carolina Cable Advertising, LLC	Delaware limited liability company
Alabanza LLC	Delaware limited liability company
America's Job Exchange LLC	Delaware limited liability company
Athens Cablevision, LLC	Delaware limited liability company
BHN Spectrum Investments, LLC	Delaware limited liability company
Bresnan Broadband Holdings, LLC	Delaware limited liability company
Bresnan Broadband of Colorado, LLC	Colorado limited liability company
Bresnan Broadband of Montana, LLC	Montana limited liability company
Bresnan Broadband of Utah, LLC	Utah limited liability company
Bresnan Broadband of Wyoming, LLC	Wyoming limited liability company
Bresnan Communications, LLC	Delaware limited liability company
Bresnan Digital Services, LLC	Delaware limited liability company
Bresnan Microwave of Montana, LLC	Delaware limited liability company
Bright House Networks Information Services (Alabama), LLC	Delaware limited liability company
Bright House Networks Information Services (California), LLC	Delaware limited liability company
Bright House Networks Information Services (Florida), LLC	Delaware limited liability company
Bright House Networks Information Services (Indiana), LLC	Delaware limited liability company
Bright House Networks Information Services (Michigan), LLC	Delaware limited liability company
Bright House Networks, LLC	Delaware limited liability company
Cable Equities Colorado, LLC	Delaware limited liability company
Cable Equities of Colorado Management LLC	Delaware limited liability company
CC 10, LLC	Delaware limited liability company
CC Fiberlink, LLC	Delaware limited liability company
CC Michigan, LLC	Delaware limited liability company
CC Systems, LLC	Delaware limited liability company
CC V Holdings, LLC	Delaware limited liability company
CC VI Fiberlink, LLC	Delaware limited liability company
CC VI Operating Company, LLC	Delaware limited liability company
CC VII Fiberlink, LLC	Delaware limited liability company
CC VIII Fiberlink, LLC	Delaware limited liability company
CC VIII Holdings, LLC	Delaware limited liability company
CC VIII, LLC	Delaware limited liability company
CC VIII Operating, LLC	Delaware limited liability company
CCH Holding Company, LLC	Delaware limited liability company
CCH I Holdings, LLC	Delaware limited liability company
CCH II, LLC	Delaware limited liability company
CCHC, LLC	Delaware limited liability company
CCO Fiberlink, LLC	Delaware limited liability company
CCO Holdco Transfers VII, LLC	Delaware limited liability company
CCO Holdings Capital Corp.	Delaware corporation
CCO Holdings, LLC	Delaware limited liability company
CCO NR Holdings, LLC	Delaware limited liability company
CCO Purchasing, LLC	Delaware limited liability company
CCO SoCal I, LLC	Delaware limited liability company
CCO SoCal II, LLC	Delaware limited liability company
CCO SoCal Vehicles, LLC	Delaware limited liability company

CCO Transfers, LLC	Delaware limited liability company
Charter Advanced Services (AL), LLC	Delaware limited liability company
Charter Advanced Services (CA), LLC	Delaware limited liability company
Charter Advanced Services (CO), LLC	Delaware limited liability company
Charter Advanced Services (CT), LLC	Delaware limited liability company
Charter Advanced Services (GA), LLC	Delaware limited liability company
Charter Advanced Services (IL), LLC	Delaware limited liability company
Charter Advanced Services (IN), LLC	Delaware limited liability company
Charter Advanced Services (KY), LLC	Delaware limited liability company
Charter Advanced Services (LA), LLC	Delaware limited liability company
Charter Advanced Services (MA), LLC	Delaware limited liability company
Charter Advanced Services (MD), LLC	Delaware limited liability company
Charter Advanced Services (MI), LLC	Delaware limited liability company
Charter Advanced Services (MN), LLC	Delaware limited liability company
Charter Advanced Services (MO), LLC	Delaware limited liability company
Charter Advanced Services (MS), LLC	Delaware limited liability company
Charter Advanced Services (MT), LLC	Delaware limited liability company
Charter Advanced Services (NC), LLC	Delaware limited liability company
Charter Advanced Services (NE), LLC	Delaware limited liability company
Charter Advanced Services (NH), LLC	Delaware limited liability company
Charter Advanced Services (NV), LLC	Delaware limited liability company
Charter Advanced Services (NY), LLC	Delaware limited liability company
Charter Advanced Services (OH), LLC	Delaware limited liability company
Charter Advanced Services (OR), LLC	Delaware limited liability company
Charter Advanced Services (PA), LLC	Delaware limited liability company
Charter Advanced Services (SC), LLC	Delaware limited liability company
Charter Advanced Services (TN), LLC	Delaware limited liability company
Charter Advanced Services (TX), LLC	Delaware limited liability company
Charter Advanced Services (UT), LLC	Delaware limited liability company
Charter Advanced Services (VA), LLC	Delaware limited liability company
Charter Advanced Services (VT), LLC	Delaware limited liability company
Charter Advanced Services (WA), LLC	Delaware limited liability company
Charter Advanced Services (WI), LLC	Delaware limited liability company
Charter Advanced Services (WV), LLC	Delaware limited liability company
Charter Advanced Services (WY), LLC	Delaware limited liability company
Charter Advanced Services VIII (MI), LLC	Delaware limited liability company
Charter Advanced Services VIII (MN), LLC	Delaware limited liability company
Charter Advanced Services VIII (WI), LLC	Delaware limited liability company
Charter Advertising of Saint Louis, LLC	Delaware limited liability company
Charter Cable Operating Company, LLC	Delaware limited liability company
Charter Cable Partners, LLC	Delaware limited liability company
Charter Communications Entertainment I, LLC	Delaware limited liability company
Charter Communications Entertainment, LLC	Delaware limited liability company
Charter Communications Holding Company, LLC	Delaware limited liability company
Charter Communications Holdings, LLC	Delaware limited liability company
Charter Communications, LLC	Delaware limited liability company
Charter Communications Operating Capital Corp.	Delaware corporation
Charter Communications Operating, LLC	Delaware limited liability company
Charter Communications Properties LLC	Delaware limited liability company
Charter Communications Ventures, LLC	Delaware limited liability company

Charter Communications VI, L.L.C.	Delaware limited liability company
Charter Communications VII, LLC	Delaware limited liability company
Charter Distribution, LLC	Delaware limited liability company
Charter Fiberlink – Alabama, LLC	Delaware limited liability company
Charter Fiberlink – Georgia, LLC	Delaware limited liability company
Charter Fiberlink – Illinois, LLC	Delaware limited liability company
Charter Fiberlink – Maryland II, LLC	Delaware limited liability company
Charter Fiberlink – Michigan, LLC	Delaware limited liability company
Charter Fiberlink – Missouri, LLC	Delaware limited liability company
Charter Fiberlink – Nebraska, LLC	Delaware limited liability company
Charter Fiberlink – Pennsylvania, LLC	Delaware limited liability company
Charter Fiberlink – Tennessee, LLC	Delaware limited liability company
Charter Fiberlink AR-CCVII, LLC	Delaware limited liability company
Charter Fiberlink CA-CCO, LLC	Delaware limited liability company
Charter Fiberlink CC VIII, LLC	Delaware limited liability company
Charter Fiberlink CCO, LLC	Delaware limited liability company
Charter Fiberlink CT-CCO, LLC	Delaware limited liability company
Charter Fiberlink LA-CCO, LLC	Delaware limited liability company
Charter Fiberlink MA-CCO, LLC	Delaware limited liability company
Charter Fiberlink MS-CCVI, LLC	Delaware limited liability company
Charter Fiberlink NC-CCO, LLC	Delaware limited liability company
Charter Fiberlink NH-CCO, LLC	Delaware limited liability company
Charter Fiberlink NV-CCVII, LLC	Delaware limited liability company
Charter Fiberlink NY-CCO, LLC	Delaware limited liability company
Charter Fiberlink OH-CCO, LLC	Delaware limited liability company
Charter Fiberlink OR-CCVII, LLC	Delaware limited liability company
Charter Fiberlink SC-CCO, LLC	Delaware limited liability company
Charter Fiberlink TX-CCO, LLC	Delaware limited liability company
Charter Fiberlink VA-CCO, LLC	Delaware limited liability company
Charter Fiberlink VT-CCO, LLC	Delaware limited liability company
Charter Fiberlink WA-CCVII, LLC	Delaware limited liability company
Charter Gateway, LLC	Delaware limited liability company
Charter Helicon, LLC	Delaware limited liability company
Charter Leasing Holding Company, LLC	Delaware limited liability company
Charter Leasing of Wisconsin, LLC	Delaware limited liability company
Charter Stores FCN, LLC	Delaware limited liability company
Charter Video Electronics, LLC	Delaware limited liability company
Coaxial Communications of Central Ohio LLC	Delaware limited liability company
DukeNet Communications Holdings, LLC	Delaware limited liability company
DukeNet Communications, LLC	Delaware limited liability company
Falcon Cable Communications, LLC	Delaware limited liability company
Falcon Cable Media, a California Limited Partnership	California limited partnership
Falcon Cable Systems Company II, L.P.	California limited partnership
Falcon Cablevision, a California Limited Partnership	California limited partnership
Falcon Community Cable, L.P.	Delaware limited partnership
Falcon Community Ventures I Limited Partnership	California limited partnership
Falcon First Cable of the Southeast, LLC	Delaware limited liability company
Falcon First, LLC	Delaware limited liability company
Falcon Telecable, a California Limited Partnership	California limited partnership
Falcon Video Communications, L.P.	Delaware limited partnership

Helicon Partners I, L.P.	Delaware limited partnership
Hometown T.V., LLC	Delaware limited liability company
HPI Acquisition Co. LLC	Delaware limited liability company
ICI Holdings, LLC	Delaware limited liability company
Insight Blocker LLC	Delaware limited liability company
Insight Capital LLC	Delaware limited liability company
Insight Communications Company LLC	Delaware limited liability company
Insight Communications Company, L.P.	Delaware limited partnership
Insight Communications Midwest, LLC	Delaware limited liability company
Insight Communications of Central Ohio, LLC	Delaware limited liability company
Insight Communications of Kentucky, L.P.	Delaware limited partnership
Insight Interactive, LLC	Delaware limited liability company
Insight Kentucky Capital, LLC	Delaware limited liability company
Insight Kentucky Partners I, L.P.	Delaware limited partnership
Insight Kentucky Partners II, L.P.	Delaware limited partnership
Insight Midwest Holdings, LLC	Delaware limited liability company
Insight Midwest, L.P.	Delaware limited partnership
Insight Phone of Indiana, LLC	Delaware limited liability company
Insight Phone of Kentucky, LLC	Delaware limited liability company
Insight Phone of Ohio, LLC	Delaware limited liability company
Interactive Cable Services, LLC	Delaware limited liability company
Interliant UK Holdings Limited	A United Kingdom entity
Interlink Communications Partners, LLC	Delaware limited liability company
Intrepid Acquisition LLC	Delaware limited liability company
Marcus Cable Associates, L.L.C.	Delaware limited liability company
Marcus Cable of Alabama, L.L.C.	Delaware limited liability company
Marcus Cable, LLC	Delaware limited liability company
Midwest Cable Communications, LLC	Delaware limited liability company
NaviSite Europe Limited	United Kingdom limited company
NaviSite India Private Limited	India private limited company
NaviSite LLC	Delaware limited liability company
NaviSite Newco LLC	Delaware limited liability company
New Wisconsin Procurement LLC	Delaware limited liability company
Oceanic Time Warner Cable LLC	Delaware limited liability company
Peachtree Cable TV, LLC	Delaware limited liability company
Peachtree Cable TV, L.P.	Delaware limited partnership
Renaissance Media LLC	Delaware limited liability company
Rifkin Acquisition Partners, LLC	Delaware limited liability company
Robin Media Group, LLC	Delaware limited liability company
Scottsboro TV Cable, LLC	Delaware limited liability company
Spectrum Communications Indemnity Inc.	Connecticut captive insurance company
Spectrum Management Holding Company, LLC	Delaware limited liability company
Spectrum Mobile Equipment, LLC	Delaware limited liability company
Spectrum Mobile, LLC	Delaware limited liability company
Spectrum Originals, LLC	Delaware limited liability company
Spectrum Powerscourt, LLC	Delaware limited liability company
Spectrum Security, LLC	Delaware limited liability company
Spectrum Stamford, LLC	Delaware limited liability company
The Helicon Group, L.P.	Delaware limited partnership
Time Warner Cable Business LLC	Delaware limited liability company

Time Warner Cable Enterprises LLC	Delaware limited liability company
Time Warner Cable Information Services (Alabama), LLC	Delaware limited liability company
Time Warner Cable Information Services (Arizona), LLC	Delaware limited liability company
Time Warner Cable Information Services (California), LLC	Delaware limited liability company
Time Warner Cable Information Services (Colorado), LLC	Delaware limited liability company
Time Warner Cable Information Services (Hawaii), LLC	Delaware limited liability company
Time Warner Cable Information Services (Idaho), LLC	Delaware limited liability company
Time Warner Cable Information Services (Illinois), LLC	Delaware limited liability company
Time Warner Cable Information Services (Indiana), LLC	Delaware limited liability company
Time Warner Cable Information Services (Kansas), LLC	Delaware limited liability company
Time Warner Cable Information Services (Kentucky), LLC	Delaware limited liability company
Time Warner Cable Information Services (Maine), LLC	Delaware limited liability company
Time Warner Cable Information Services (Massachusetts), LLC	Delaware limited liability company
Time Warner Cable Information Services (Michigan), LLC	Delaware limited liability company
Time Warner Cable Information Services (Missouri), LLC	Delaware limited liability company
Time Warner Cable Information Services (Nebraska), LLC	Delaware limited liability company
Time Warner Cable Information Services (New Hampshire), LLC	Delaware limited liability company
Time Warner Cable Information Services (New Jersey), LLC	Delaware limited liability company
Time Warner Cable Information Services (New Mexico), LLC	Delaware limited liability company
Time Warner Cable Information Services (New York), LLC	Delaware limited liability company
Time Warner Cable Information Services (North Carolina), LLC	Delaware limited liability company
Time Warner Cable Information Services (Ohio), LLC	Delaware limited liability company
Time Warner Cable Information Services (Pennsylvania), LLC	Delaware limited liability company
Time Warner Cable Information Services (South Carolina), LLC	Delaware limited liability company
Time Warner Cable Information Services (Tennessee), LLC	Delaware limited liability company
Time Warner Cable Information Services (Texas), LLC	Delaware limited liability company
Time Warner Cable Information Services (Virginia), LLC	Delaware limited liability company
Time Warner Cable Information Services (Washington), LLC	Delaware limited liability company
Time Warner Cable Information Services (West Virginia), LLC	Delaware limited liability company
Time Warner Cable Information Services (Wisconsin), LLC	Delaware limited liability company
Time Warner Cable International LLC	Delaware limited liability company
Time Warner Cable Internet Holdings III LLC	Delaware limited liability company
Time Warner Cable Internet Holdings LLC	Delaware limited liability company
Time Warner Cable Internet LLC	Delaware limited liability company
Time Warner Cable, LLC	Delaware limited liability company
Time Warner Cable Media LLC	Delaware limited liability company
Time Warner Cable Midwest LLC	Delaware limited liability company
Time Warner Cable New York City LLC	Delaware limited liability company
Time Warner Cable Northeast LLC	Delaware limited liability company
Time Warner Cable Pacific West LLC	Delaware limited liability company
Time Warner Cable Southeast LLC	Delaware limited liability company
Time Warner Cable Sports LLC	Delaware limited liability company
Time Warner Cable Texas LLC	Delaware limited liability company
TWC Administration LLC	Delaware limited liability company
TWC Business Services Canada ULC	British Columbia unlimited liability company
TWC Communications, LLC	Delaware limited liability company
TWC Digital Phone LLC	Delaware limited liability company
TWC Media Blocker LLC	Delaware limited liability company
TWC News and Local Programming Holdco LLC	Delaware limited liability company
TWC News and Local Programming LLC	Delaware limited liability company

TWC Regional Sports Network I LLC	Delaware limited liability company
TWC Regional Sports Network II LLC	Delaware limited liability company
TWC SEE Holdco LLC	Delaware limited liability company
TWC Sports Newco LLC	Delaware limited liability company
TWC Wireless LLC	Delaware limited liability company
TWC/Charter Dallas Cable Advertising, LLC	Delaware limited liability company
TWC/Charter Green Bay Cable Advertising, LLC	Delaware limited liability company
TWC/Charter Los Angeles Cable Advertising, LLC	Delaware limited liability company
TWCIS Holdco LLC	Delaware limited liability company
Vista Broadband Communications, LLC	Delaware limited liability company
Wisconsin Procurement Holdco LLC	Delaware limited liability company

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Charter Communications, Inc.:

We consent to the incorporation by reference in the registration statement Nos. 333-190516, 333-163357, 333-170745, 333-211517, and 333-214399 on Form S-8 and No. 333-222241 on Form S-3 of Charter Communications, Inc. and subsidiaries (the “Company”) of our report dated February 1, 2018, with respect to the consolidated balance sheets of the Company as of December 31, 2017 and 2016, and the related consolidated statements of operations, comprehensive income (loss), change in shareholders’ equity (deficit), and cash flows for each of the years in the three-year period ended December 31, 2017, and the related notes (collectively, the “consolidated financial statements”) which report appears in the December 31, 2017 annual report on Form 10-K of the Company.

(signed) KPMG LLP

St. Louis, Missouri
February 1, 2018

Exhibit 31.1

I, Thomas M. Rutledge, certify that:

1. I have reviewed this Annual Report on Form 10-K of Charter Communications, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 2, 2018

/s/ Thomas M. Rutledge

Thomas M. Rutledge
Chairman and Chief Executive Officer

Exhibit 31.2

I, Christopher L. Winfrey, certify that:

1. I have reviewed this Annual Report on Form 10-K of Charter Communications, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 2, 2018

/s/ Christopher L. Winfrey

Christopher L. Winfrey
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

**CERTIFICATION OF CHIEF EXECUTIVE
OFFICER REGARDING PERIODIC REPORT CONTAINING
FINANCIAL STATEMENTS**

I, Thomas M. Rutledge, the Chairman and Chief Executive Officer of Charter Communications, Inc. (the "Company") in compliance with 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, hereby certify that, the Company's Annual Report on Form 10-K for the year ended December 31, 2017 (the "Report") filed with the Securities and Exchange Commission:

- fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934; and
- the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Thomas M. Rutledge
Thomas M. Rutledge
Chairman and Chief Executive Officer
February 2, 2018

Exhibit 32.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER REGARDING PERIODIC REPORT CONTAINING FINANCIAL STATEMENTS

I, Christopher L. Winfrey, the Chief Financial Officer of Charter Communications, Inc. (the "Company"), in compliance with 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, hereby certify that, the Company's Annual Report on Form 10-K for the year ended December 31, 2017 (the "Report") filed with the Securities and Exchange Commission:

- fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934; and
- the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Christopher L. Winfrey
Christopher L. Winfrey
Chief Financial Officer
(Principal Financial Officer)
February 2, 2018

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2018

or

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the Transition Period From to

Commission File Number: 001-37789

333-112593-01

CCO Holdings, LLC
CCO Holdings Capital Corp.

(Exact name of registrant as specified in its charter)

Delaware	**86-1067239**
Delaware	**20-0257904**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification Number)*
400 Atlantic Street **Stamford, Connecticut 06901**	**(203) 905-7801**
(Address of principal executive offices including zip code)	*(Registrant's telephone number, including area code)*

Securities registered pursuant to section 12(b) of the Act: None

Securities registered pursuant to section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrants have submitted electronically and posted on their corporate website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrants were required to submit and post such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See definition of "large accelerated filer," "accelerated filer," and "smaller reporting company" in Rule 12b-2 of the Exchange Act.:

Large accelerated filer ☐ Accelerated filer ☐ Non-accelerated filer ☒ Smaller reporting company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

All of the issued and outstanding shares of capital stock of CCO Holdings Capital Corp. are held by CCO Holdings, LLC. All of the limited liability company membership interests of CCO Holdings, LLC are held by CCH I Holdings, LLC (a subsidiary of Charter Communications, Inc., a reporting company under the Exchange Act). There is no public trading market for any of the aforementioned limited liability company membership interests or shares of capital stock.

CCO Holdings, LLC and CCO Holdings Capital Corp. meet the conditions set forth in General Instruction I(1)(a) and (b) to Form 10-K and are therefore filing with the reduced disclosure format.

Number of shares of common stock of CCO Holdings Capital Corporation outstanding as of December 31, 2018: 1

Documents Incorporated By Reference: None

CCO HOLDINGS, LLC

CCO HOLDINGS CAPITAL CORP.

FORM 10-K — FOR THE YEAR ENDEDDECEMBER 31, 2018

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This annual report on Form 10-K is for the year endedDecember 31, 2018. The United States Securities and Exchange Commission ("SEC") allows us to "incorporate by reference" information that we file with the SEC, which means that we can disclose important information to you by referring you directly to those documents. Information incorporated by reference is considered to be part of this annual report. In addition, information that we file with the SEC in the future will automatically update and supersede information contained in this annual report. In this annual report, "CCO Holdings," "we," "us" and "our" refer to CCO Holdings, LLC and its subsidiaries.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS:

This annual report includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), regarding, among other things, our plans, strategies and prospects, both business and financial including, without limitation, the forward-looking statements set forth in Part I. Item 1. under the heading “Business” and in Part II. Item 7. under the heading “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in this annual report. Although we believe that our plans, intentions and expectations reflected in or suggested by these forward-looking statements are reasonable, we cannot assure you that we will achieve or realize these plans, intentions or expectations. Forward-looking statements are inherently subject to risks, uncertainties and assumptions, including, without limitation, the factors described in Part I. Item 1A. under “Risk Factors” and in Part II. Item 7. under the heading, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in this annual report. Many of the forward-looking statements contained in this annual report may be identified by the use of forward-looking words such as “believe,” “expect,” “anticipate,” “should,” “planned,” “will,” “may,” “intend,” “estimated,” “aim,” “on track,” “target,” “opportunity,” “tentative,” “positioning,” “designed,” “create,” “predict,” “project,” “initiatives,” “seek,” “would,” “could,” “continue,” “ongoing,” “upside,” “increases” and “potential,” among others. Important factors that could cause actual results to differ materially from the forward-looking statements we make in this annual report are set forth in this annual report and in other reports or documents that we file from time to time with the SEC, and include, but are not limited to:

- our ability to sustain and grow revenues and cash flow from operations by offering video, Internet, voice, mobile, advertising and other services to residential and commercial customers, to adequately meet the customer experience demands in our service areas and to maintain and grow our customer base, particularly in the face of increasingly aggressive competition, the need for innovation and the related capital expenditures;
- the impact of competition from other market participants, including but not limited to incumbent telephone companies, direct broadcast satellite ("DBS") operators, wireless broadband and telephone providers, digital subscriber line (“DSL”) providers, fiber to the home providers, video provided over the Internet by (i) market participants that have not historically competed in the multichannel video business, (ii) traditional multichannel video distributors, and (iii) content providers that have historically licensed cable networks to multichannel video distributors, and providers of advertising over the Internet;
- our ability to efficiently and effectively integrate acquired operations;
- the effects of governmental regulation on our business including costs, disruptions and possible limitations on operating flexibility related to, and our ability to comply with, regulatory conditions applicable to us as a result of the Time Warner Cable Inc. and Bright House Networks, LLC Transactions;
- general business conditions, economic uncertainty or downturn, unemployment levels and the level of activity in the housing sector;
- our ability to obtain programming at reasonable prices or to raise prices to offset, in whole or in part, the effects of higher programming costs (including retransmission consents);
- our ability to develop and deploy new products and technologies including mobile products and any other consumer services and service platforms;
- any events that disrupt our networks, information systems or properties and impair our operating activities or our reputation;
- the ability to retain and hire key personnel;
- the availability and access, in general, of funds to meet our debt obligations prior to or when they become due and to fund our operations and necessary capital expenditures, either through (i) cash on hand, (ii) free cash flow, or (iii) access to the capital or credit markets; and
- our ability to comply with all covenants in our indentures and credit facilities, any violation of which, if not cured in a timely manner, could trigger a default of our other obligations under cross-default provisions.

All forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by this cautionary statement. We are under no duty or obligation to update any of the forward-looking statements after the date of this annual report.

PART I

Item 1. *Business.*

Introduction

We are the second largest cable operator in the United States and a leading broadband communications services company providing video, Internet and voice services to approximately 28.1 million residential and small and medium business customers at December 31, 2018. We also recently launched our Spectrum mobile service to residential customers. In addition, we sell video and online advertising inventory to local, regional and national advertising customers and fiber-delivered communications and managed information technology (“IT”) solutions to large enterprise customers. We also own and operate regional sports networks and local sports, news and community channels.

CCO Holdings is a holding company whose principal assets are the equity interests in its operating subsidiaries. CCO Holdings is a direct subsidiary of CCH I Holdings, LLC, which is an indirect subsidiary of Charter Communications, Inc. (“Charter”), Charter Communications Holdings, LLC (“Charter Holdings”) and Spectrum Management Holding Company, LLC.

We own and operate a high-capacity, two-way telecommunications network which passes over 50 million households and small and medium businesses across the United States. Our core strategy is to use our network to deliver high quality products at competitive prices, combined with outstanding service. This strategy, combined with simple, easy to understand pricing and packaging, is central to our goal of growing our customer base while selling more of our core connectivity services, which include both fixed and mobile Internet, video and voice services, to each individual customer. We execute this strategy by managing our operations in a consumer-friendly, efficient and cost-effective manner. Our operating strategy includes insourcing nearly all of our customer care and field operations workforces, which results in higher quality service delivery. While an insourced operating model can increase field operations and customer care costs associated with each service transaction, the higher quality nature of insourced labor service transactions significantly reduces the volume of service transactions per customer, more than offsetting the higher investment made in each insourced service transaction. As we reduce the number of service transactions and recurring costs per customer relationship, we continue to provide our customers with products and prices that we believe provide more value than what our competitors offer. The combination of offering high quality, competitively priced products and outstanding service, allows us to both increase the number of customers we serve over our fully deployed network, and to increase the number of products we sell to each customer. That combination also reduces the number of service transactions we perform per relationship, yielding higher customer satisfaction and lower customer churn, resulting in lower costs to acquire and serve customers.

We are also modifying our service operations to allow our customers to (1) interact with us through a variety of new forums, including our customer website, online chat and social media, (2) have their services installed at the time and in the manner of their own choosing, including self-installation, and to (3) receive their selected services on devices of their own choosing, including connected devices, such as Apple TV and Roku. By offering our customers growing levels of choice in how they interact, install and receive their services, we are driving higher overall levels of customer satisfaction and reducing our operating costs and capital expenditures per customer relationship. Ultimately, our operating strategy enables us to offer high quality, competitively priced services profitably, while continuing to invest in new products and services.

The capability and functionality of our two-way network continues to grow in a number of areas, especially with respect to wireless connectivity. Our Internet service offers consumers the ability to wirelessly connect to our network using WiFi technology. We estimate that approximately 250 million devices are wirelessly connected to our network. Our wireless strategy initially focused on offering wireless connectivity solutions inside the home and business. Increasingly, however, we are testing and evaluating opportunities for our customers to connect their devices to our network beyond their current service location or via our mobile virtual network operator (“MVNO”) reseller agreement with Verizon Communications Inc. ("Verizon"), using a combination of licensed and unlicensed radio spectrum for fixed and mobile service delivery from our highly distributed, high capacity network.

Our principal executive offices are located at 400 Atlantic Street, Stamford, Connecticut 06901. Our telephone number is (203) 905-7801, and Charter has a website accessible at www.charter.com. Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, and all amendments thereto, are available on Charter's website free of charge as soon as reasonably practicable after they have been filed. The information posted on Charter's website is not incorporated into this annual report.

The Transactions

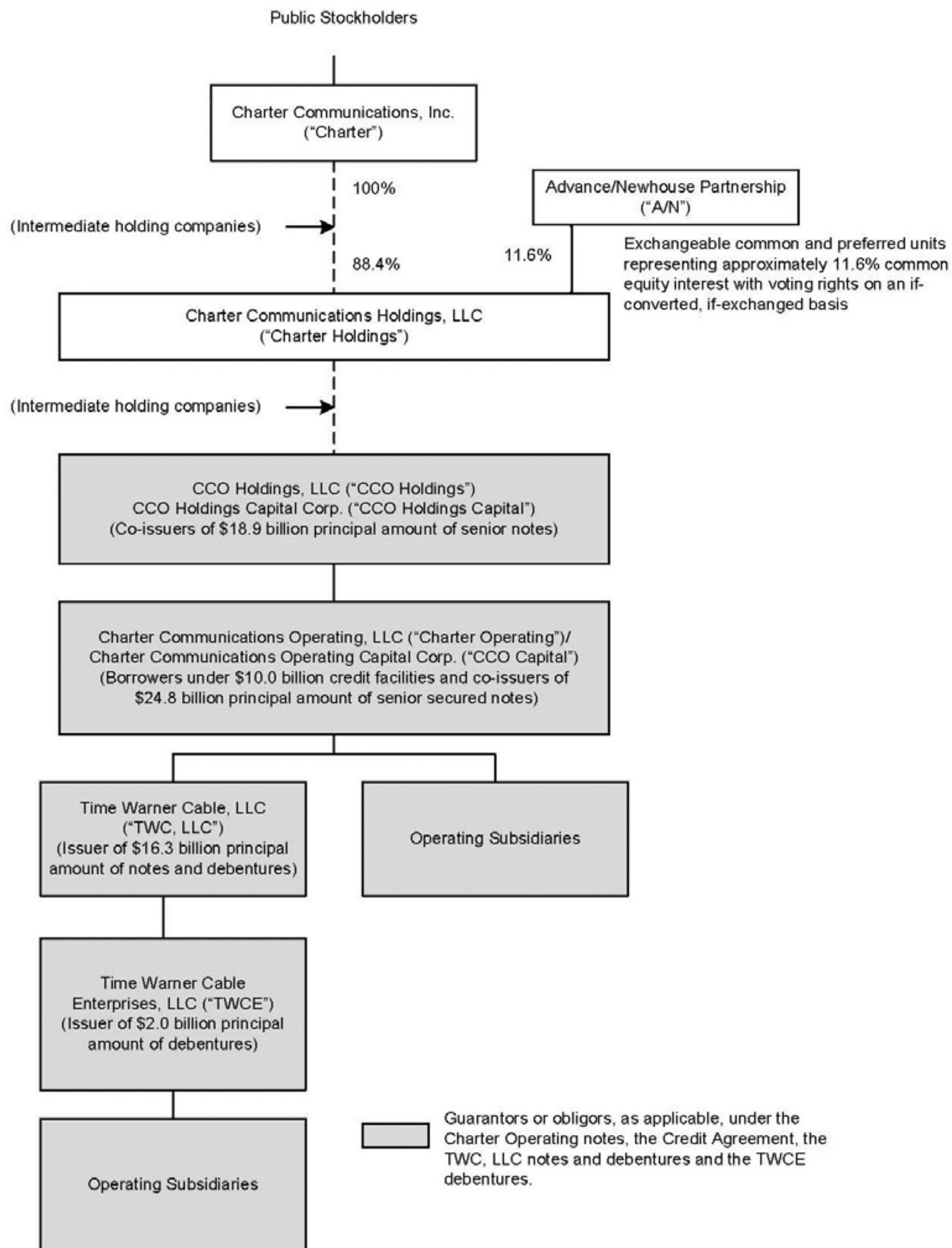
On May 18, 2016, the transactions contemplated by the Agreement and Plan of Mergers dated as of May 23, 2015 (the “Merger Agreement”), by and among Time Warner Cable Inc. ("Legacy TWC"), Charter Communications, Inc. prior to the closing of the Merger Agreement (“Legacy Charter”), CCH I, LLC, previously a wholly owned subsidiary of Legacy Charter and certain other subsidiaries of CCH I, LLC were completed (the “TWC Transaction,” and together with the Bright House Transaction described below, the “Transactions”). As a result of the TWC Transaction, CCH I, LLC became the new public parent company that holds the operations of the combined companies and was renamed Charter Communications, Inc.

Also, on May 18, 2016, Legacy Charter and Advance/Newhouse Partnership (“A/N”), the former parent of Bright House Networks, LLC (“Legacy Bright House”), completed their previously announced transaction, pursuant to a definitive Contribution Agreement (the “Contribution Agreement”), under which Charter acquired Legacy Bright House (the “Bright House Transaction”). Pursuant to the Bright House Transaction, Charter became the owner of the membership interests in Legacy Bright House and the other assets primarily related to Legacy Bright House (other than certain excluded assets and liabilities and non-operating cash).

To partially finance the Transactions, Liberty Broadband Corporation ("Liberty Broadband") purchased shares of Charter Class A common stock (the “Liberty Transaction”).

Corporate Entity Structure

The chart below sets forth our entity structure and that of our direct and indirect parents and subsidiaries. The chart does not include all of our affiliates and subsidiaries and, in some cases, we have combined separate entities for presentation purposes. The equity ownership percentages shown below are approximations. Indebtedness amounts shown below are principal amounts as of December 31, 2018. See Note 8 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data," which also includes the accreted values of the indebtedness described below.



Products and Services

We offer our customers subscription-based video services, including video on demand ("VOD"), high definition ("HD") television, and digital video recorder ("DVR") service, Internet services, voice and mobile services. As of December 31, 2018, we had eliminated the carriage of analog video signals ("all-digital") in nearly all of our footprint, further freeing up network capacity and enabling us to offer more HD channels, faster Internet speeds and better video picture quality. Our video, Internet, and voice services are offered to residential and commercial customers on a subscription basis, with prices and related charges based on the types of service selected, whether the services are sold as a "bundle" or on an individual basis, and the equipment necessary to receive our services. Bundled services are available to substantially all of our passings, and approximately 58% of our customers subscribe to a bundle of services including video, Internet and voice.

The following table summarizes our customer statistics for video, Internet and voice as ofDecember 31, 2018 and 2017 (in thousands except per customer data and footnotes).

	Approximate as of December 31,	
	2018 [b]	2017 [a][b]
Customer Relationships [c]		
Residential	26,270	25,499
Small and Medium Business	1,833	1,662
Total Customer Relationships	28,103	27,161
Residential Primary Service Units ("PSUs")		
Video	16,104	16,400
Internet	23,625	22,518
Voice	10,135	10,424
	49,864	49,342
Monthly Residential Revenue per Residential Customer[d]	$ 111.56	$ 110.28
Small and Medium Business PSUs		
Video	502	450
Internet	1,634	1,470
Voice	1,051	930
	3,187	2,850
Monthly Small and Medium Business Revenue per Customer[e]	$ 174.88	$ 187.24
Enterprise PSUs [f]	248	220

(a) Between the closing of the Transactions in May 2016 through the first quarter of 2018, we have reported our customer data and results using legacy company reporting methodologies. During the second quarter of 2018, we implemented certain reporting changes on a retrospective basis which allowed for the recasting of historical customer data and results using consistent definitions and reporting methodologies across all three legacy companies. Legacy TWC Hawaii customer statistics are expected to move to our standard methodology in 2019 and variances, if any, will be disclosed at that time.

(b) Customer statistics do not include mobile. We calculate the aging of customer accounts based on the monthly billing cycle for each account. On that basis, as of December 31, 2018 and 2017, customers include approximately 217,600 and 248,900 customers, respectively, whose accounts were over 60 days past due, approximately 24,000 and 20,600 customers, respectively, whose accounts were over 90 days past due, and approximately19,200 and 13,200 customers, respectively, whose accounts were over 120 days past due.

(c) Customer relationships include the number of customers that receive one or more levels of service, encompassing video, Internet and voice services, without regard to which service(s) such customers receive. Customers who reside in residential multiple dwelling units ("MDUs") and that are billed under bulk contracts are counted based on the number of billed units within each bulk MDU. Total customer relationships exclude enterprise customer relationships.

(d) Monthly residential revenue per residential customer is calculated as total residential video, Internet and voice annual revenue divided by twelve divided by average residential customer relationships during the respective year.

(e) Monthly small and medium business revenue per customer is calculated as total small and medium business annual revenue divided by twelve divided by average small and medium business customer relationships during the respective year.

(f) Enterprise PSUs represent the aggregate number of fiber service offerings counting each separate service offering at each customer location as an individual PSU.

Residential Services

Video Services

Our video customers receive a package of programming which generally includes a digital set-top box that provides an interactive electronic programming guide with parental controls, access to pay-per-view services, including VOD (available to nearly all of our passings), digital music channels and the option to view certain video services on third-party devices. Customers have the option to purchase additional tiers of services including premium channels which provide original programming, commercial-free movies, sports, and other special event entertainment programming. Substantially all of our video programming is available in HD. We also offer certain video packages containing a limited number of channels via our cable television systems.

In the vast majority of our footprint, we offer VOD service which allows customers to select from over 50,000 titles at any time. VOD titles are typically offered in both standard and high definition. VOD programming options may be accessed for free if the content is associated with a customer's linear subscription, or for a fee on a transactional basis. VOD services are also offered on a subscription basis included in a digital tier premium channel subscription or for a monthly fee. Pay-per-view channels allow customers to pay on a per-event basis to view a single showing of a one-time special sporting event, music concert, or similar event on a commercial-free basis.

Our goal is to provide our video customers with the programming they want, when they want it, on any device. DVR service enables customers to digitally record programming and to pause and rewind live programming. Customers are increasingly accessing their subscription content through connected devices, such as Apple TV and Roku. Customers can also use our Spectrum TV application on mobile devices and on our website, to watch over 300 channels of cable TV, view VOD programming, remotely control digital set-top boxes while in the home and to program DVRs remotely. We also enable our customers to view approximately 200 channels out of the home, along with the vast majority of our VOD titles. Our video customers also have access to programmer authenticated applications and websites (known as TV Everywhere services) such as HBO Go®, Fox Now®, Discovery Go® and WatchESPN®.

We are deploying Spectrum Guide®, our network or "cloud-based" user interface, to new video customers in the majority of our service areas. Spectrum Guide® is designed to allow our customers to enjoy a state-of-the-art video experience on our set-top boxes, and provides access to third-party video applications such as Netflix. While Spectrum Guide runs on traditional set-top boxes, it offers an advanced look and feel that is similar to that of our Spectrum TV application, which is designed to work on third-party devices. Spectrum Guide enables customers to find video content more easily across cable TV channels and VOD options. We plan to continue to enhance and expand deployment of this user interface in 2019 and beyond.

Internet Services

Our Spectrum pricing and packaging ("SPP") offers an entry level Internet download speed of at least 100 megabits per second ("Mbps") in 60% of our footprint and 200 Mbps across approximately 40% of our footprint, which among other things, allows several people within a single household to stream HD video content while simultaneously using our Internet service for non-video purposes. Additionally, leveraging DOCSIS 3.1 technology, we offer 940 Mbps speed service ("Spectrum Internet Gig") in nearly all of our footprint. Finally, we offer a security suite with our Internet services which, upon installation by customers, provides protection against computer viruses and spyware and includes parental control features.

We offer an in-home WiFi product that provides customers with high performance wireless routers to maximize their in-home wireless Internet experience. Additionally, we offer an out-of-home WiFi service, Spectrum WiFi, across our footprint to our Internet customers at designated "hot spots." We also offer Spectrum WiFi Plus in the majority of our footprint, which offers a more secure sign-in process and easier access for our customers based on the more advanced Hotspot 2.0 WiFi standards which enable seamless transition among WiFi networks and between WiFi and cellular networks.

Voice Services

We provide voice communications services using voice over Internet protocol ("VoIP") technology to transmit digital voice signals over our network. Our voice services include unlimited local and long distance calling to the United States, Canada, Mexico and

Puerto Rico, voicemail, call waiting, caller ID, call forwarding and other features and offers international calling either by the minute, or through packages of minutes per month. For customers that subscribe to both our voice and video offerings, caller ID on TV is also available in most areas.

Mobile Services

Our mobile strategy is built on the long-term vision of an integrated fixed/wireless network with differentiated products, and the ability to maximize the potential of our existing network and cable business. At the end of the second quarter of 2018, we launched our mobile product, Spectrum Mobile, to residential customers under our MVNO reseller agreement with Verizon and began mass market advertising of our Spectrum Mobile service in September 2018. We currently offer our Spectrum Mobile service to residential customers subscribing to our Internet service. We expect to begin offering mobile service to our small and medium business customers on similar terms in 2019. We believe Spectrum-branded mobile services will drive more sales of our core products, create longer customer lives and increase profitability and cash flow over time. As we launch our new mobile services, we expect an initial funding period to grow a new product as well as negative working capital impacts from the timing of device-related cash flows when we provide the handset or tablet to customers pursuant to equipment installment plans.

We plan to use our WiFi network in conjunction with additional unlicensed or licensed spectrum to improve network performance and expand capacity to offer consumers a superior mobile service at a lower total cost to us. Further, we have experimental wireless licenses from the Federal Communications Commission ("FCC") that we are utilizing to test next generation mobile services in several service areas around the country.

We are exploring working with a variety of partners and vendors in a number of operational areas within the wireless space, including creating common operating platforms, technical standards development and harmonization, device forward and reverse logistics and emerging wireless technology platforms. The efficiencies created are expected to provide more choice, innovative products and competitive prices for customers. We intend to consider and pursue opportunities in the mobile space which may include entering into joint ventures or partnerships with wireless or cable providers which may require significant investment. In 2018, we invested in C&C Wireless Operations, LLC, a mobile operating partnership with Comcast Corporation ("Comcast"), for the mobile back office platform. There is no assurance we will enter into other such arrangements or that if we do, that they will be successful.

Commercial Services

We offer scalable broadband communications solutions for businesses and carrier organizations of all sizes, selling Internet access, data networking, fiber connectivity to cellular towers and office buildings, video entertainment services and business telephone services.

Small and Medium Business

Spectrum Business offers Internet, voice and video services to small and medium businesses over our hybrid fiber coaxial network that are similar to those that we provide to our residential customers. Spectrum Business includes a full range of video programming and entry-level Internet speeds of 100 or 200 Mbps downstream (depending on service area) and 10 Mbps upstream. Additionally, customers can upgrade their Internet speeds by purchasing Internet Ultra (400 Mbps downstream) or Internet Gig (940 Mbps downstream). Spectrum Business also includes a set of business services including web hosting, e-mail and security, and multi-line telephone services with more than 30 business features including web-based service management, that are generally not available to residential customers.

Enterprise Solutions

Spectrum Enterprise offers fiber-delivered communications and managed IT solutions to larger businesses, as well as high-capacity last-mile data connectivity services to mobile and wireline carriers and other competitive carriers on a wholesale basis. Spectrum Enterprise's product portfolio includes fiber Internet access, voice trunking services, hosted voice, Ethernet services that privately and securely connect geographically dispersed client locations, and video solutions designed to meet the needs of hospitality, education, and healthcare clients. In addition, Spectrum Enterprise is running market field trials of an innovative Hybrid Software-Defined Wide Area Network that enables businesses to leverage the performance of Ethernet, the ubiquity of Internet connectivity and the flexibility of a software-defined solution to solve a wide array of business communications and networking challenges. Our managed IT portfolio includes Cloud Infrastructure as a Service and Cloud Desktop as a Service, and managed hosting, application, and messaging solutions, along with other related IT and professional services. Our large serviceable footprint allows us to effectively serve business customers with multiple sites across given geographic regions. These customers can benefit from obtaining advanced services from a single provider simplifying procurement and potentially reducing their costs.

Advertising Services

Our advertising sales division, Spectrum Reach®, offers local, regional and national businesses the opportunity to advertise in individual and multiple service areas on cable television networks and digital outlets. We receive revenues from the sale of local advertising across various platforms for networks such as MTV®, CNN® and ESPN®. In any particular service area, we typically insert local advertising on 40 to 90 channels. Our large footprint provides opportunities for advertising customers to address broader regional audiences from a single provider and thus reach more customers with a single transaction. Our size also provides scale to invest in new technology to create more targeted and addressable advertising capabilities.

Available advertising time is generally sold by our advertising sales force. In some service areas, we have formed advertising interconnects or entered into representation agreements with other video distributors, including, among others, Verizon's fiber optic service (“Fios”), AT&T Inc.’s (“AT&T”) U-verse, Comcast and DIRECTV platforms, under which we sell advertising on behalf of those operators. In other service areas, we enter into representation agreements under which another operator in the area will sell advertising on our behalf. These arrangements enable us and our partners to deliver linear commercials across wider geographic areas, replicating the reach of local broadcast television stations to the extent possible. In addition, we enter into interconnect agreements from time to time with other cable operators, which, on behalf of a number of video operators, sells advertising time to national and regional advertisers in individual or multiple service areas.

Additionally, we sell the advertising inventory of our owned and operated local sports and news channels, of our regional sports networks that carry Los Angeles Lakers’ basketball games and other sports programming and of SportsNet LA, a regional sports network that carries Los Angeles Dodgers’ baseball games and other sports programming.

In 2018, we began deploying advanced advertising products such as our Audience App, which uses our proprietary set-top box viewership data (all anonymized and aggregated) to optimize linear inventory, and, in 2019, we will be ramping up our deployment of household addressability, which allows for more precise targeting within various parts of our footprint.

Other Services

Regional Sports and News Networks

We have an agreement with the Los Angeles Lakers for rights to distribute all locally available Los Angeles Lakers’ games through 2033. We broadcast those games on our regional sports network, Spectrum SportsNet. American Media Productions, LLC ("American Media Productions"), an unaffiliated third party, owns SportsNet LA, a regional sports network carrying the Los Angeles Dodgers’ baseball games and other sports programming. In accordance with agreements with American Media Productions, we act as the network’s exclusive affiliate and advertising sales representative and have certain branding and programming rights with respect to the network. In addition, we provide certain production and technical services to American Media Productions. The affiliate, advertising, production and programming agreements continue through 2038. We also own 26.8% of Sterling Entertainment Enterprises, LLC (doing business as SportsNet New York), a New York City-based regional sports network that carries New York Mets’ baseball games as well as other regional sports programming.

We manage local news channels, including Spectrum News NY1, a 24-hour news channel focused on New York City. In 2018, we launched 10 new local news channels, expanding our connection to the communities we serve and bringing our total local news channels to 26. Our local news channels provide 24/7 hyperlocal content, focusing on news, programming and storytelling that addresses the deeper needs and interests of the diverse communities and neighborhoods we serve.

Pricing of Our Products and Services

Our revenues are principally derived from the monthly fees customers pay for the services we provide. We typically charge a one-time installation fee which is sometimes waived or discounted in certain sales channels during certain promotional periods.

Our Spectrum pricing and packaging ("SPP") generally offers a standardized price for each tier of service, bundle of services, and add-on service in a service area. We believe SPP:

- offers a higher quality and more value-based set of services relative to our competitors, including faster Internet speeds, more HD channels, lower equipment fees and a more transparent pricing structure;
- offers simplicity for customers to understand our offers, and for our employees in service delivery;
- drives our ability to package more services at the time of sale, thus increasing revenue per customer;
- drives higher customer satisfaction, lower service calls and churn; and

- allows for gradual price increases at the end of promotional periods.

We sell video and Internet packages with the option to add on voice and mobile services at attractive pricing. Our mobile customers can choose one of two simple ways to pay for data. Customers can choose an unlimited data plan or a by-the-gig data usage plan. Both plans include free nationwide talk and text and customers can easily switch mobile data plans during the month. Customers can also purchase mobile devices and accessory products and have the option to pay for devices under interest-free monthly installment plans.

Our Network Technology and Customer Premise Equipment

Our network includes three key components: a national backbone, regional/metro networks and a "last-mile" network. Both our national backbone and regional/metro network components utilize a redundant Internet Protocol ("IP") ring/mesh architecture. The national backbone component provides connectivity from regional demarcation points to nationally centralized content, connectivity and services. The regional/metro network components provide connectivity between the regional demarcation points and headends within a specific geographic area and enable the delivery of content and services between these network components.

Our last-mile network utilizes a hybrid fiber coaxial cable ("HFC") architecture, which combines the use of fiber optic cable with coaxial cable. In most systems, we deliver our signals via fiber optic cable from the headend to a group of nodes, and use coaxial cable to deliver the signal from individual nodes to the homes served by that node. For our fiber Internet, Ethernet, carrier wholesale, Session Initiation Protocol ("SIP") and Primary Rate Interface ("PRI") Spectrum Enterprise customers, fiber optic cable is extended from individual nodes to the customer's site. For certain new build and MDU sites, we increasingly bring fiber to the customer site. Our design standard is six strands of fiber to each node, with two strands activated and four strands reserved for spares and future services. This design standard allows these additional strands to be utilized for additional residential traffic capacity, and enterprise customer needs as they arise. We believe that this hybrid network design provides high capacity and signal quality. The design also provides two-way signal capabilities for the support of interactive services.

HFC architecture benefits include:

- bandwidth capacity to enable traditional and two-way video and broadband services;
- dedicated bandwidth for two-way services; and
- signal quality and high service reliability.

As of December 31, 2018, approximately 99% of our estimated passings were served by systems that have bandwidth of 750 megahertz or greater. This bandwidth capacity enables us to offer HD television, DOCSIS-based Internet services and voice services. We are currently all-digital in nearly all of our footprint. An all-digital platform enables us to offer a larger selection of HD channels, faster Internet speeds and better picture quality while providing greater plant security and enabling lower installation and disconnect service truck rolls.

We developed a new conditional access security system which can be downloaded into set-top boxes with features we specify that could be provided by a variety of manufacturers. We refer to our specified set-top box as our WorldBox. WorldBoxes are available to customers across most of our footprint. Our WorldBox design has enabled us to purchase set-top boxes from a broader array of equipment vendors in addition to reducing our per set-top box costs. WorldBox includes more advanced features and functionality than older set-top boxes, including faster processing times, IP capabilities with increased speed, greater simultaneous recording capabilities, increased DVR storage capacity, and more flexibility for customers to take Charter-provisioned set-top boxes with them, if and when, they move residences. With the deployment of WorldBox, we often utilize our cloud-based user interface, Spectrum Guide®. Spectrum Guide® improves video content search and discovery, and fully enables our on-demand offering. In addition, Spectrum Guide® can function on all of our new set-top boxes, ensuring new customer connects are eligible for the newest functionality.

Management, Customer Operations and Marketing

Our operations are centralized, with senior executives located at several key corporate offices, responsible for coordinating and overseeing operations, including establishing company-wide strategies, policies and procedures. Sales and marketing, network operations, field operations, customer operations, engineering, advertising sales, human resources, legal, government relations, information technology and finance are all directed at the corporate level. Regional and local field operations are responsible for customer premise service transactions and maintaining and constructing that portion of our network which is located outdoors.

We continue to focus on improving the customer experience through enhanced product offerings, reliability of services, and delivery of quality customer service. As part of our operating strategy, we insource most of our customer operations workload.

In 2018, our in-house domestic call centers handled approximately 90% of our total customer service calls. We manage our customer service calls centrally to ensure a consistent, high quality customer experience. In addition, we route calls by call type to specific agents that only handle such call types, enabling agents to become experts in addressing specific customer needs, creating a better customer experience. We also continue to migrate our call centers to full virtualization, allowing calls to be routed across our call centers regardless of the location origin of the call, reducing call wait times, and saving costs. A new call center agent desktop interface tool, already used at Legacy Charter, is being deployed in Legacy TWC and Legacy Bright House service areas. This new desktop interface tool, which is expected to be fully implemented in the second half of 2019, will enable full virtualization of all call centers, regardless of legacy billing platform, and will better serve our customers.

We also provide customers with the opportunity to interact with us through a variety of forums in addition to telephonic communications, including through our customer website, mobile device applications, online chat and social media. Our customer websites and mobile applications enable customers to pay their bills, manage their accounts, order new services and utilize self-service help and support.

We sell our residential and commercial services using a national brand platform known as Spectrum®, Spectrum Business® and Spectrum Enterprise®. These brands reflect our comprehensive approach to industry-leading products, driven by speed, performance and innovation. Our marketing strategy emphasizes the sale of our bundled services through targeted direct response marketing programs to existing and potential customers, and increases awareness and the value of the Spectrum brand. Our marketing organization creates and executes marketing programs intended to grow customer relationships, increase the number of services we sell per relationship, retain existing customers and cross-sell additional products to current customers. We monitor the effectiveness of our marketing efforts, customer perception, competition, pricing, and service preferences, among other factors, in order to increase our responsiveness to our customers and to improve our sales and customer retention. The marketing organization manages the majority of the sales channels including direct sales, on-line, outbound telemarketing and stores.

Programming

We believe that offering a wide variety of video programming choices influences a customer's decision to subscribe and retain our cable video services. We obtain basic and premium programming, usually pursuant to written contracts from a number of suppliers. Media corporation consolidation has, however, resulted in fewer suppliers and additional selling power on the part of programming suppliers. Although an insignificant amount of our programming budget, recently we have begun entering into agreements to co-produce or exclusively license original content which give us the right to provide our customers with certain exclusive content for a period of time.

Programming is usually made available to us for a license fee, which is generally paid based on the number of customers to whom we make that programming available. Programming license fees may include "volume" discounts and financial incentives to support the launch of a channel and/or ongoing marketing support, as well as discounts for channel placement or service penetration. For home shopping channels, we typically receive a percentage of the revenue attributable to our customers' purchases as well as channel placement fees. We also offer VOD and pay per view channels of movies and events that are subject to a revenue split with the content provider.

Our programming costs have increased in excess of customary inflationary and cost-of-living type increases. We expect programming costs to continue to increase due to a variety of factors including, annual increases pursuant to our programming contracts, contract renewals with programmers and the carriage of incremental programming, including new services and VOD programming. Increases in the cost of sports programming and the amounts paid for broadcast station retransmission consent have been the largest contributors to the growth in our programming costs over the last few years. Additionally, the demands of large media companies who link carriage of their most popular networks to carriage and cost increases of their less popular networks, has limited our flexibility in creating more tailored and cost-sensitive programming packages for consumers.

Federal law allows commercial television broadcast stations to make an election between "must-carry" rights and an alternative "retransmission-consent" regime. When a station opts for retransmission-consent, we are not allowed to carry the station's signal without that station's permission. Continuing demands by owners of broadcast stations for cash payments at substantial increases over amounts paid in prior years in exchange for retransmission consent will increase our programming costs or require us to cease carriage of popular programming, potentially leading to a loss of customers in affected service areas.

Over the past several years, increases in our video service rates have not fully offset the increases in our programming costs, and with the impact of increasing competition and other marketplace factors, we do not expect the increases in our video service rates to fully offset the increase in our programming costs for the foreseeable future. Although we pass along a portion of amounts paid for retransmission consent to the majority of our customers, our inability to fully pass programming cost increases on to our video customers has had, and is expected in the future to have, an adverse impact on our cash flow and operating margins associated

with our video product. In order to mitigate reductions of our operating margins due to rapidly increasing programming costs, we continue to review our pricing and programming packaging strategies.

Our programming contracts are generally for a fixed period of time, usually for multiple years, and are subject to negotiated renewal. The contracts set to expire in any particular year vary with a higher concentration of programming costs set to expire at, or before the end, of 2019. We will seek to renew these agreements on terms that we believe are favorable. There can be no assurance, however, that these agreements will be renewed on favorable or comparable terms. To the extent that we are unable to reach agreements with certain programmers on terms that we believe are reasonable, we have been, and may in the future be, forced to remove such programming channels from our line-up, which may result in a loss of customers.

Regions

We operate in geographically diverse areas which are organized in regional clusters. These regions are managed centrally on a consolidated level. Our eleven regions and the customer relationships within each region as of December 31, 2018 are as follows (in thousands):

Regions	Total Customer Relationships
Carolinas	2,907
Central	2,941
Florida	2,498
Great Lakes	2,199
Northeast	2,997
Northwest	1,539
New York City	1,372
South	1,985
Southern Ohio	2,236
Texas	2,887
West	4,542

Competition

Residential Services

We face intense competition for residential customers, both from existing competitors and, as a result of the rapid development of new technologies, services and products, from new entrants.

Video competition

Our residential video service faces competition from DBS service providers, which have a national footprint and compete in all of our operating areas. DBS providers offer satellite-delivered pre-packaged programming services that can be received by relatively small and inexpensive receiving dishes. DBS providers offer aggressive promotional pricing, exclusive programming (e.g., NFL Sunday Ticket) and video services that are comparable in many respects to our residential video service. Our residential video service also faces competition from large telecommunications companies, primarily AT&T U-verse, Frontier Communications Corporation ("Frontier") FiOS and Verizon Fios, which offer wireline video services in approximately 32%, 8% and 5%, respectively, of our operating areas. AT&T also owns DIRECTV, and as a combined company provides video service (via IP or satellite) and voice service (via fixed or wireless) across our entire footprint, and delivers video, Internet, voice and mobile services across 46% of our passings. AT&T also acquired Time Warner Inc. in 2018. It is not yet clear how AT&T will use the various programming and studio assets it acquired from Time Warner Inc. to benefit its own products on its four video platforms.

Our residential video service also faces growing competition from a number of other sources, including companies that deliver linear network programming, movies and television shows on demand and other video content over broadband Internet connections to televisions, computers, tablets and mobile devices. These newer categories of competitors include virtual multichannel video programming distributors ("V-MVPD") such as DirecTV NOW, Sling TV, Playstation Vue, YouTube TV and Hulu Live, and direct

to consumer products offered by programmers that have not traditionally sold programming directly to consumers, such as HBO Now, CBS All Access and Showtime Anytime. In 2018, AT&T launched WatchTV offering over 30 channels of live television for a low monthly cost or free with their wireless unlimited plan. Other online video business models have also developed, including, (i) subscription video on demand ("SVOD") services such as Netflix, Amazon Prime, and Hulu Plus, (ii) ad-supported free online video products, including YouTube and Hulu, some of which offer programming for free to consumers that we currently purchase for a fee, (iii) pay-per-view products, such as iTunes, Amazon Instant and DAZN, and (iv) additional offerings from mobile providers which continue to integrate and bundle video services and mobile products. Historically, we have generally viewed SVOD online video services as complementary to our own video offering, and we have developed a cloud-based guide that is capable of incorporating video from many online video services currently offered in the marketplace. As the proliferation of online video services grows, however, services from V-MVPDs and new direct to consumer offerings, as well as piracy and password sharing, could negatively impact the growth of our video business.

Internet competition

Our residential Internet service faces competition from fiber-to-the-home ("FTTH"), wireless broadband offerings and DSL, as well as from a variety of companies that offer other forms of online services, including fixed wireless and satellite-based broadband services. AT&T, Frontier FiOS and Verizon's Fios are our primary FTTH competitors. Given the FTTH deployments of our competitors, launches of broadband services offering 1 gigabits per second ("Gbps") speed have recently grown. Several competitors, including AT&T, Frontier FiOS, Verizon's Fios and Google, deliver 1 Gbps broadband speed in at least a portion of their footprints which overlap our footprint. DSL service is often offered at prices lower than our Internet services, although typically at speeds much lower than the minimum speeds we offer as part of SPP. Various mobile phone companies offer wireless Internet services delivered over networks which they continue to enhance to deliver faster speeds. Some have announced that they intend to offer faster fifth generation (5G) services in the future including Verizon which currently offers a 5G fixed wireless service in a small portion of our footprint and AT&T which has also announced its plans to launch 5G services. Some mobile phone companies offer unlimited data packages to customers. In addition, a growing number of commercial areas, such as retail malls, restaurants and airports, offer WiFi Internet service. Numerous local governments are also considering or actively pursuing publicly subsidized WiFi Internet access networks. These options offer alternatives to cable-based Internet access.

Voice competition

Our residential voice service competes with wireless and wireline phone providers, as well as other forms of communication, such as text messaging on cellular phones, instant messaging, social networking services, video conferencing and email. We also compete with "over-the-top" phone providers, such as Vonage, Skype, magicJack, Google Voice and Ooma, Inc., as well as companies that sell phone cards at a cost per minute for both national and international service. The increase in the number of different technologies capable of carrying voice services and the number of alternative communication options available to customers as well as the replacement of wireline services by wireless have intensified the competitive environment in which we operate our residential voice service. Our mobile service competes with other mobile providers such as Verizon, AT&T, T-Mobile US, Inc. ("T-Mobile") and Sprint Corporation ("Sprint"). In April 2018, Sprint and T-Mobile announced their intent to merge. If approved, the resulting company would be one of nation's largest mobile carriers bringing increased competition with a stated intent of pursuing broad 5G network deployment.

Regional Competitors

In some of our operating areas, other competitors have built networks that offer video, Internet and voice services that compete with our services. For example, in certain service areas, our residential video, Internet and voice services compete with Google Fiber, Cincinnati Bell Inc., Hawaiian Telcom (owned by Cincinnati Bell Inc.), RCN Telecom Services, LLC, Grande Communications Networks, LLC and WideOpenWest Finance, LLC.

Additional competition

In addition to multi-channel video providers, cable systems compete with other sources of news, information and entertainment, including over-the-air television broadcast reception, live events, movie theaters and the Internet. Competition is also posed by fixed wireless and satellite master antenna television systems, or SMATV systems, serving MDUs, such as condominiums, apartment complexes, and private residential communities.

Business Services

We face intense competition across each of our business services product offerings. Our small and medium business video, Internet, networking and voice services face competition from a variety of providers as described above. Our enterprise solutions also face

competition from the competitors described above as well as other telecommunications carriers, such as metro and regional fiber-based carriers. We also compete with cloud, hosting and related service providers and application-service providers.

Advertising

We face intense competition for advertising revenue across many different platforms and from a wide range of local and national competitors. Advertising competition has increased and will likely continue to increase as new advertising avenues seek to attract the same advertisers. We compete for advertising revenue against, among others, local broadcast stations, national cable and broadcast networks, radio stations, print media and online advertising companies and content providers.

Seasonality and Cyclicality

Our business is subject to seasonal and cyclical variations. Our results are impacted by the seasonal nature of customers receiving our cable services in college and vacation service areas. Our revenue is subject to cyclical advertising patterns and changes in viewership levels. Our advertising revenue is generally higher in the second and fourth calendar quarters of each year, due in part to increases in consumer advertising in the spring and in the period leading up to and including the holiday season. U.S. advertising revenue is also cyclical, benefiting in even-numbered years from advertising related to candidates running for political office and issue-oriented advertising. Our capital expenditures and trade working capital are also subject to significant seasonality based on the timing of subscriber growth, network programs, specific projects and construction.

Regulation and Legislation

The following summary addresses the key regulatory and legislative developments affecting the cable industry and our services for both residential and commercial customers. Cable system operations are extensively regulated by the federal government (primarily the FCC), certain state governments, and many local governments. A failure to comply with these regulations could subject us to substantial penalties. Our business can be dramatically impacted by changes to the existing regulatory framework, whether triggered by legislative, administrative, or judicial rulings. Congress and the FCC have frequently revisited the subject of communications regulation and they are likely to do so again in the future. We could be materially disadvantaged in the future if we are subject to new laws, regulations or regulatory actions that do not equally impact our key competitors. We cannot provide assurance that the already extensive regulation of our business will not be expanded in the future. In addition, we are already subject to Charter-specific conditions regarding certain business practices as a result of the FCC's approval of the Transactions.

Video Service

Must Carry/Retransmission Consent

There are two alternative legal methods for carriage of local broadcast television stations on cable systems. Federal "must carry" regulations require cable systems to carry local broadcast television stations upon the request of the local broadcaster. Alternatively, federal law includes "retransmission consent" regulations, by which popular commercial television stations can prohibit cable carriage unless the cable operator first negotiates for "retransmission consent," which may be conditioned on significant payments or other concessions. Popular stations invoking "retransmission consent" have been demanding substantial compensation increases in their recent negotiations with cable operators, thereby significantly increasing our operating costs.

Additional government-mandated broadcast carriage obligations, including those related to the FCC's newly adopted enhanced technical broadcasting option (Advanced Television Systems Committee 3.0), could disrupt existing programming commitments, interfere with our preferred use of limited channel capacity, and limit our ability to offer services that appeal to our customers and generate revenues.

Cable Equipment

In 1996, Congress enacted a statute requiring the FCC to adopt regulations designed to assure the development of an independent retail market for "navigation devices," such as cable set-top boxes. As a result, the FCC required cable operators to make a separate offering of security modules (*i.e*., a "CableCARD") that can be used with retail navigation devices. A companion rule that effectively required us to use CableCARDs in our own new set-top boxes was repealed by Congress in 2014, but the basic obligation to provide separable security for retail devices remains in place. Various parties may continue to advocate new regulatory approaches to reduce consumer dependency on traditional operator provided set-top boxes that, if adopted, could affect our business in the future.

Privacy and Information Security Regulation

The Communications Act of 1934, as amended (the "Communications Act") limits our ability to collect, use, and disclose customers' personally identifiable information for our video, voice, and Internet services. We are subject to additional federal, state, and local laws and regulations that impose additional restrictions on the collection, use and disclosure of consumer information. Further, the FCC, Federal Trade Commission ("FTC"), and many states regulate and restrict the marketing practices of communications service providers, including telemarketing and sending unsolicited commercial emails.

As a result of the FCC's 2017 decision reclassifying broadband Internet access service as an "information service," the FTC once again has the authority, pursuant to its general authority to enforce against unfair or deceptive acts and practices, to protect the privacy of Internet service customers, including our use and disclosure of certain customer information.

Our operations are also subject to federal and state laws governing information security. In the event of an information security breach, such rules may require consumer and government agency notification and may result in regulatory enforcement actions with the potential of monetary forfeitures. The FCC, the FTC and state attorneys general regularly bring enforcement actions against companies related to information security breaches and privacy violations.

Various security standards provide guidance to telecommunications companies in order to help identify and mitigate cybersecurity risk. One such standard is the voluntary framework released by the National Institute for Standards and Technologies ("NIST") in 2014 and updated in 2018, in cooperation with other federal agencies and owners and operators of U.S. critical infrastructure. The NIST cybersecurity framework provides a prioritized and flexible model for organizations to identify and manage cyber risks inherent to their business. It was designed to supplement, not supersede, existing cybersecurity regulations and requirements. Several government agencies have encouraged compliance with the NIST cybersecurity framework, including the FCC, which is also considering expansion of its cybersecurity guidelines or the adoption of cybersecurity requirements.

After the repeal of the FCC's 2016 privacy rules through the Congressional Review Act, and despite language in the FCC's 2017 decision reclassifying broadband Internet access service as an "information service" and preempting state and local privacy regulations conflicting with federal policy, many states and local authorities have considered legislative or other actions that would impose additional restrictions on our ability to collect, use and disclose certain information. California, for example, enacted in a complex law in June 2018 which, under certain circumstances, will regulate companies' use and disclosure of the personal information of California residents and authorizes enforcement actions by the California Attorney General and private class actions. The California Consumer Privacy Act is subject to amendment by the California legislature and further regulatory clarification by the California Attorney General before it goes into effect in January 2020. We expect state and local efforts to regulate online privacy to continue in 2019. Additionally, several state legislatures are considering the adoption of new data security and cybersecurity legislation that could result in additional network and information security requirements for our business. There are also bills pending in both the U.S. House of Representatives and Senate that could impose new privacy and data security obligations. We cannot predict whether any of these efforts will be successful or preempted, or how new legislation and regulations, if any, would affect our business.

Pole Attachments

The Communications Act requires most utilities owning utility poles to provide cable systems with access to poles and conduits and simultaneously subjects the rates charged for this access to either federal or state regulation. After FCC regulatory amendments and litigation challenging those amendments, the federally regulated rates now applicable to pole attachments used for cable, Internet, and telecommunications services are substantially similar. The FCC regulatory amendments do not directly affect the rate in states that self-regulate, but many of those states have substantially the same rate for all communications attachments.

Some municipalities have enacted "one-touch" make-ready pole attachment ordinances, which permit third parties to alter components of our network attached to utility poles in ways that could adversely affect our businesses. Some of these ordinances have been challenged with differing results. In 2018, the FCC adopted "one-touch" make-ready ("OTMR") rules that will apply in states where pole attachments are FCC regulated, and they may impact many of our existing pole attachments. Various utilities have sought review of the OTMR rules in federal court.

Cable Rate Regulation

Federal law strictly limits the potential scope of cable rate regulation. Pursuant to federal law, all video offerings are universally exempt from rate regulation, except for a cable system's minimum level of video programming service, referred to as "basic service," and associated equipment. Rate regulation of basic service and associated equipment operates pursuant to a federal formula, with local governments, commonly referred to as local franchising authorities, primarily responsible for administering

this regulation. FCC regulations require a local franchise authority interested in regulating cable rates to first make an affirmative showing that there is no "effective competition" (as defined under federal law) in the community. Very few local franchise authorities have filed the necessary rate regulation certification, and we have a petition pending at the FCC challenging the remaining certifications. The FCC is also considering possible reforms to any remaining rate regulations.

Access Channels

Local franchise agreements often require cable operators to set aside certain channels for public, educational, and governmental access programming. Federal law also requires cable systems to designate up to 15% of their channel capacity for commercial leased access by unaffiliated third parties, who may offer programming that our customers do not particularly desire. Although commercial leased access activity historically has been relatively limited, the FCC is currently considering changes to its leased access regulations, and increased activity in this area could further burden the channel capacity of our cable systems.

Other FCC Regulatory Matters

FCC regulations cover a variety of additional areas, including, among other things: (1) ownership restrictions: (2) equal employment opportunity obligations; (3) customer service standards; (4) technical service standards; (5) mandatory blackouts of certain network and syndicated programming; (6) restrictions on political advertising; (7) restrictions on advertising in children's programming; (8) licensing of systems and facilities; (9) maintenance of public files; (10) emergency alert systems; (11) inside wiring and exclusive contracts for MDU complexes; and (12) disability access, including requirements governing video-description and closed-captioning. Each of these regulations restricts our business practices to varying degrees and may impose additional costs on our operations. Further, the FCC regulates spectrum usage and other communications enterprises in ways that could impact our operations. For example, the FCC is currently considering proposals to reallocate for other purposes certain spectrum currently used by cable operators to deliver video programming to individual cable systems.

It is possible that Congress or the FCC will expand or modify its regulation of cable systems in the future, and we cannot predict at this time how that might impact our business.

Copyright

Cable systems are subject to a federal compulsory copyright license covering carriage of television and radio broadcast signals. The copyright law provides copyright owners the right to audit our payments under the compulsory license, and the Copyright Office is currently considering modifications to the license's royalty calculations and reporting obligations. The possible modification or elimination of this license is the subject of continuing legislative proposals and administrative review and could adversely affect our ability to obtain desired broadcast programming.

Copyright clearances for non-broadcast programming services are arranged through private negotiations. Cable operators also must obtain music rights for locally originated programming and advertising from the major music performing rights organizations. These licensing fees have been the source of litigation in the past, and we cannot predict with certainty whether license fee disputes may arise in the future.

Franchise Matters

Our cable systems generally are operated pursuant to nonexclusive franchises, permits, and similar authorizations granted by a municipality or other state or local government entity in order to utilize and cross public rights-of-way.

Cable franchises generally are granted for fixed terms and in many cases include monetary penalties for noncompliance and may be terminable if the franchisee fails to comply with material provisions. The specific terms and conditions of cable franchises vary significantly between jurisdictions. They generally contain provisions governing cable operations, franchise fees, system construction, maintenance, technical performance, customer service standards, supporting and carrying public access channels, and changes in the ownership of the franchisee. Although local franchising authorities have considerable discretion in establishing franchise terms, certain federal protections benefit cable operators. For example, federal law caps local franchise fees.

A number of states have adopted franchising laws that provide for statewide franchising, some of which subject cable systems to the jurisdiction of centralized state government agencies, such as public utility commissions. Generally, state-wide cable franchises are issued for a fixed term, but streamline many of the traditional local cable franchise requirements and eliminate local negotiation.

Prior to the scheduled expiration of our franchises, we generally initiate renewal proceedings with the granting authorities. The Communications Act, which is the primary federal statute regulating interstate communications, provides for an orderly franchise

renewal process in which granting authorities may not unreasonably withhold renewals. In connection with the franchise renewal process, however, many local governmental authorities and some state agencies, may require the cable operator to make additional costly commitments. Historically, we have been able to renew our franchises without incurring significant costs, although any particular franchise may not be renewed on commercially favorable terms or otherwise. If we fail to obtain renewals of franchises representing a significant number of our customers, it could have a material adverse effect on our consolidated financial condition, results of operations, or our liquidity. Similarly, if a franchising authority's consent is required for the purchase or sale of a cable system, the franchising authority may attempt to impose more burdensome requirements as a condition for providing its consent. In July 2018, the New York State Public Service Commission revoked its earlier approval of Charter's acquisition of Legacy TWC, alleging that Charter had not complied with its Transaction commitments to extend availability of high-speed Internet services to 145,000 underserved or unserved homes or businesses over a four year period. Charter is vigorously opposing the Public Service Commission's revocation, which, if not reversed, could materially impact our operations in New York state. See "Item 3. Legal Proceedings."

The traditional cable franchising regime has undergone significant change in recent years as a result of various federal and state actions, and the FCC continues to address cable franchising issues.

Internet Service

In 2015, the FCC determined that broadband Internet access services, such as those we offer, were "telecommunications services" under the Communications Act and, on that basis, imposed a number of "net neutrality" rules governing the provision of broadband service, including a "transparency" requirement, *i.e.,* an obligation to disclose all material terms and conditions of our service to consumers.

In December 2017, the FCC adopted a new order reclassifying broadband as an "information service" and eliminating the 2015 rules other than the transparency requirement, which it eased in significant ways. The FCC also ruled that state regulators may not impose obligations similar to federal obligations that the FCC removed.

Various parties have challenged the FCC's December 2017 ruling, seeking a court order to reinstate the FCC's 2015 rules. At the same time, several states (including California) have adopted state obligations replacing the Internet access obligations that the FCC removed. California's legislation has been challenged in court, and, we cannot predict how any such legislation and court challenges will be resolved. Moreover, irrespective of these cases, it is possible that the FCC might further revise its approach to broadband Internet access in the future, or that Congress might enact legislation affecting the rules applicable to the service.

Notwithstanding the reclassification of Internet access service as an "information service," broadband providers remain obliged by the Communications Assistance for Law Enforcement Act ("CALEA") to configure their networks in a manner that facilitates the ability of law enforcement, with proper legal authorization, to obtain information about our customers, including the content of their Internet communications. It is also possible that Internet access services will be subjected to Universal Service funding requirements. These funding requirements could impose significant new costs on our Internet service. The FCC and some state regulatory commissions direct certain subsidies to telephone companies deploying broadband to areas deemed to be "unserved" or "underserved." We have opposed such subsidies when directed to areas that we serve. Despite our efforts, future subsidies may be directed to areas served by us, which could result in subsidized competitors operating in our service territories. State and local governmental organizations have also adopted Internet-related regulations. These various governmental jurisdictions are also considering additional regulations in these and other areas, such as privacy, pricing, service and product quality, imposition of local franchise fees on Internet-related revenue and taxation. The adoption of new Internet regulations or the adaptation of existing laws to the Internet, including potential responsibility for the infringing activities of Internet subscribers, could adversely affect our business.

Aside from the FCC's generally applicable regulations, we have made certain commitments to comply with the FCC's order in connection with the FCC's approval of the TWC Transaction and the Bright House Transaction (discussed below).

Voice Service

The Telecommunications Act of 1996 created a more favorable regulatory environment for us to provide telecommunications and/or competitive voice services than had previously existed. In particular, it established requirements ensuring that competitive telephone companies could interconnect their networks with those providers of traditional telecommunications services to open the market to competition. The FCC has subsequently ruled that competitive telephone companies that support VoIP services, such as those we offer our customers, are entitled to interconnection with incumbent providers of traditional telecommunications services, which ensures that our VoIP services can compete in the market. Since that time, the FCC has initiated a proceeding to determine whether such interconnection rights should extend to traditional and competitive networks utilizing IP technology, and

how to encourage the transition to IP networks throughout the industry. The FCC initiated a further proceeding in 2017 to consider whether additional changes to interconnection obligations are needed, including how and where companies interconnect their networks with the networks of other providers. New rules or obligations arising from these proceedings may affect our ability to compete in the provision of voice services.

Further regulatory changes are being considered that could impact our voice business and that of our primary telecommunications competitors. The FCC and state regulatory authorities are considering, for example, whether certain common carrier regulations traditionally applied to incumbent local exchange carriers should be modified or reduced, and, in some jurisdictions, the extent to which common carrier requirements should be extended to VoIP providers. The FCC has already determined that certain providers of voice services using Internet Protocol technology, like our VoIP services, must comply with requirements relating to 911 emergency services ("E911"), the CALEA (the statute governing law enforcement access to and surveillance of communications), Universal Service Fund contributions, customer privacy and Customer Proprietary Network Information issues, number portability, network outage reporting, rural call completion, disability access, regulatory fees, back-up power obligations, and discontinuance of service. In 2007, a federal appeals court affirmed the FCC's decision concerning federal regulation of certain VoIP services, but declined to specifically find that VoIP service provided by cable companies, such as we provide, should be regulated only at the federal level. As a result, some states have begun proceedings to subject cable VoIP services to state level regulation, and at least one state has asserted jurisdiction over our VoIP services. We prevailed on a legal challenge to that state's assertion of jurisdiction. Although we have registered with, or obtained certificates or authorizations from the FCC and the state regulatory authorities in those states in which we offer competitive voice services in order to ensure the continuity of our services and to maintain needed network interconnection arrangements, it is unclear whether and how these and other ongoing regulatory matters ultimately will be resolved.

Mobile Service

We recently launched our Spectrum mobile service to residential customers. Under current arrangements, we provision this service as an MVNO which allows us to deliver service over Verizon's network and our network of Spectrum WiFi hotspots. As an MVNO, we are subject to many of the same FCC regulations that apply to facilities-based wireless carriers, as well as certain state or local regulations, including (but not limited to): E911, local number portability, customer privacy, CALEA, universal service fund, hearing aid compatibility and other requirements, as well as safety and emission standards applicable to mobile devices. To the extent Spectrum Mobile provides broadband Internet access, it must comply with the FCC's transparency rule. The FCC or other regulatory authorities may adopt new or different regulations for MVNOs and/or mobile broadband providers in the future, or impose new taxes or fees applicable to Spectrum Mobile, which could adversely affect the service offering or our business generally.

Transaction-Related Commitments

In connection with approval of the Transactions, federal and state regulators imposed a number of post-merger conditions on us including but not limited to the following.

FCC Conditions

- Offer settlement-free Internet interconnection to any party that meets the requirements of our Interconnection Policy (available on Charter's website) on terms generally consistent with the policy for seven years (with a possible reduction to five);
- Deploy and offer high-speed broadband Internet access service to an additional two million locations over five years;
- Refrain from charging usage-based prices or imposing data caps on any fixed mass market broadband Internet access service plans for seven years (with a possible reduction to five);
- Offer 30/4 Mbps discounted broadband where technically feasible to eligible customers throughout our service area for four years from the offer's commencement; and
- Continue to provide CableCARDs to any new or existing customer upon request for use in third-party retail devices for four years and continue to support such CableCARDs for seven years (in each case, unless the FCC changes the relevant rules).

The FCC conditions also contain a number of compliance reporting requirements.

DOJ Conditions

The Department of Justice ("DOJ") Order prohibits us from entering into or enforcing any agreement with a video programmer that forbids, limits or creates incentives to limit the video programmer's provision of content to online video distributors ("OVDs"). We will not be able to avail ourself of other distributors' most favored nation ("MFN") provisions if they are inconsistent with

this prohibition. The DOJ's conditions are effective for seven years, although we may petition the DOJ to eliminate the conditions after five years.

State Conditions

Certain state regulators, including California, New York, Hawaii and New Jersey also imposed conditions in connection with the approval of the Transactions. These conditions include requirements related to:

- Upgrading networks within the designated state, including upgrades to broadband speeds and conversion of all households served within California and New York to an all-digital platform;
- Building out our network to certain households and business locations that are not currently served by cable within the designated states;
- Offering LifeLine service discounts and low-income broadband to eligible households served within the applicable states;
- Investing in service improvement programs and customer service enhancements and maintaining customer-facing jobs within the designated state;
- Continuing to make legacy service offerings available, including allowing Legacy TWC and Legacy Bright House customers to maintain their existing service offerings for a period of three years; and
- Complying with reporting requirements.

Employees

As of December 31, 2018, we had approximately 98,000 active full-time equivalent employees.

Item 1A. Risk Factors.

Risks Related to Our Business

We operate in a very competitive business environment, which affects our ability to attract and retain customers and can adversely affect our business, operations and financial results.

The industry in which we operate is highly competitive and has become more so in recent years. In some instances, we compete against companies with fewer regulatory burdens, better access to financing, greater personnel resources, greater resources for marketing, greater and more favorable brand name recognition, and long-established relationships with regulatory authorities and customers. Increasing consolidation in the telecommunications and content industries have provided additional benefits to certain of our competitors, either through access to financing, resources, or efficiencies of scale including the ability to launch new video services.

Our video service faces competition from a number of sources, including DBS services, as well as other companies that deliver movies, television shows and other video programming over broadband Internet connections to TVs, computers, tablets and mobile devices. Our Internet service faces competition from the phone companies' DSL, FTTH and wireless broadband offerings as well as from a variety of companies that offer other forms of online services, including wireless and satellite-based broadband services. Various mobile phone companies offer wireless Internet services delivered over networks which they continue to enhance to deliver faster speeds and some have announced that they intend to offer faster 5G services in the future. Our voice and mobile services compete with mobile and wireline phone providers, as well as other forms of communication, such as text messaging on cellular phones, instant messaging, social networking services, video conferencing and email. Competition from these companies, including intensive marketing efforts with aggressive pricing, exclusive programming and increased HD broadcasting may have an adverse impact on our ability to attract and retain customers.

Wireline and wireless overbuilds could also adversely affect our growth, financial condition, and results of operations, by creating or increasing competition. We are aware of traditional overbuild situations impacting certain of our service areas, however, we are unable to predict the extent to which additional overbuild situations may occur.

Our services may not allow us to compete effectively. Competition may reduce our expected growth of future cash flows which may contribute to future impairments of our franchises and goodwill and our ability to meet cash flow requirements, including debt service requirements. For additional information regarding the competition we face, see "Item 1. Business -Competition" and "-Regulation and Legislation."

If we are not able to successfully complete the integration of our business with that of Legacy TWC and Legacy Bright House, the anticipated benefits of the Transactions may not be fully realized or may take longer to realize than expected. In such circumstance, we may not perform as expected.

There can be no assurances that we can successfully complete the integration of our business with that of Legacy TWC and Legacy Bright House. We now have significantly more systems, assets, investments, businesses, customers and employees than each company did prior to the Transactions. It is possible that the integration process could result in the loss of customers, the disruption of our ongoing businesses or in unexpected integration issues, higher than expected integration costs and an overall post-completion integration process that takes longer than originally anticipated. The process of integrating Legacy TWC and Legacy Bright House with the Legacy Charter operations requires significant capital expenditures and the expansion of certain operations and operating and financial systems. Management continues to devote a significant amount of time and attention to the integration process and there is a significant degree of difficulty and management involvement inherent in that process.

Even if the new businesses are successfully integrated, it may not be possible to realize the benefits that are expected to result from the Transactions, or realize these benefits within the time frame that is expected. For example, the benefits of our pricing and packaging and converting our video product to all-digital in certain Legacy TWC and Legacy Bright House systems may not be fully realized or may take longer than anticipated to realize, or the benefits from the Transactions may be offset by costs incurred or delays in integrating the businesses and increased operating costs. If the combined company fails to realize the anticipated benefits from the Transactions, our liquidity, results of operations, financial condition and/or share price may be adversely affected. In addition, at times, the attention of certain members of our management and resources may be focused on the integration of the businesses and diverted from day-to-day business operations, which may disrupt the business of the combined company.

We face risks relating to competition for the leisure time and discretionary spending of audiences, which has intensified in part due to advances in technology and changes in consumer expectations and behavior.

In addition to the various competitive factors discussed above, we are subject to risks relating to increasing competition for the leisure time, shifting consumer needs and discretionary spending of consumers. We compete with all other sources of entertainment, news and information delivery, as well as a broad range of communications products and services. Technological advancements, such as new video formats and Internet streaming and downloading of programming that can be viewed on televisions, computers, smartphones and tablets, many of which have been beneficial to us, have nonetheless increased the number of entertainment and information delivery choices available to consumers and intensified the challenges posed by audience fragmentation. These newer categories of competitors including V-MVPDs and other new direct to consumer offerings, as well as piracy and password sharing, could negatively impact the growth of our business.

Newer products and services, particularly alternative methods for the distribution, sale and viewing of content will likely continue to be developed, further increasing the number of competitors that we face. The increasing number of choices available to audiences, including low-cost or free choices, could negatively impact not only consumer demand for our products and services, but also advertisers’ willingness to purchase advertising from us. We compete for the sale of advertising revenue with television networks and stations, as well as other advertising platforms, such as radio, print and, increasingly, online media. Our failure to effectively anticipate or adapt to new technologies and changes in consumer expectations and behavior could significantly adversely affect our competitive position and our business and results of operations.

Our exposure to the economic conditions of our current and potential customers, vendors and third parties could adversely affect our cash flow, results of operations and financial condition.

We are exposed to risks associated with the economic conditions of our current and potential customers, the potential financial instability of our customers and their financial ability to purchase our products. If there were a general economic downturn, we may experience increased cancellations by our customers or unfavorable changes in the mix of products purchased, including an increase in the number of homes that replace their video service with Internet-delivered and/or over-air content, which would negatively impact our ability to attract customers, increase rates and maintain or increase revenue. In addition, providing video services is an established and highly penetrated business. Our ability to gain new video subscribers is dependent to a large extent on growth in occupied housing in our service areas, which is influenced by both national and local economic conditions. Weak economic conditions may also have a negative impact on our advertising revenue. These events have adversely affected us in the past, and may adversely affect our cash flow, results of operations and financial condition if a downturn were to occur.

In addition, we are susceptible to risks associated with the potential financial instability of the vendors and third parties on which we rely to provide products and services or to which we outsource certain functions. The same economic conditions that may affect our customers, as well as volatility and disruption in the capital and credit markets, also could adversely affect vendors and third parties and lead to significant increases in prices, reduction in output or the bankruptcy of our vendors or third parties upon

which we rely. Any interruption in the services provided by our vendors or by third parties could adversely affect our cash flow, results of operation and financial condition.

We face risks inherent in our commercial business.

We may encounter unforeseen difficulties as we increase the scale of our service offerings to businesses. We sell Internet access, data networking and fiber connectivity to cellular towers and office buildings, and video and business voice services to businesses. In order to grow our commercial business, we expect to continue to invest in technology, equipment and personnel focused on the commercial business. Commercial business customers often require service level agreements and generally have heightened customer expectations for reliability of services. If our efforts to build the infrastructure to scale the commercial business are not successful, the growth of our commercial services business would be limited. We depend on interconnection and related services provided by certain third parties for the growth of our commercial business. As a result, our ability to implement changes as the services grow may be limited. If we are unable to meet these service level requirements or expectations, our commercial business could be adversely affected. Competition continues to increase as well, as more companies deploy more fiber to more buildings, which may negatively impact our growth and/or put pressure on margins. Finally, we expect advances in communications technology, as well as changes in the marketplace and the regulatory and legislative environment. Consequently, we are unable to predict the effect that ongoing or future developments in these areas might have on our voice and commercial businesses and operations.

Programming costs are rising at a much faster rate than wages or inflation, and we may not have the ability to reduce or moderate the growth rates of, or pass on to our customers, our increasing programming costs, which would adversely affect our cash flow and operating margins.

Video programming has been, and is expected to continue to be, our largest operating expense item. In recent years, the cable industry has experienced a rapid escalation in the cost of programming. Media corporation consolidation has resulted in fewer suppliers and additional selling power on the part of programming suppliers. We expect programming costs to continue to increase due to a variety of factors including amounts paid for broadcast station retransmission consent, annual increases imposed by programmers, including sports programmers, and the carriage of incremental programming, including new services and VOD programming. The inability to fully pass programming cost increases on to our customers has had, and is expected in the future to have, an adverse impact on our cash flow and operating margins associated with the video product. The contracts set to expire in any particular year vary with a higher concentration of programming costs set to expire at, or before the end, of 2019. There can be no assurance that these agreements will be renewed on favorable or comparable terms. In addition, a number of programmers have begun to sell their services through alternative distribution channels, including IP-based platforms, which are less secure than our own video distribution platforms. There is growing evidence that these less secure video distribution platforms are leading to video product theft via password sharing among consumers. Password sharing may drive down the number of customers who pay for certain programming, putting programmer revenues at risk, and which in turn may cause certain programmers to seek even higher programming fees from us. To the extent that we are unable to reach agreement with certain programmers on terms that we believe are reasonable, we have been, and may be in the future, forced to remove such programming channels from our line-up, which may result in a loss of customers. Our failure to carry programming that is attractive to our customers could adversely impact our customer levels, operations and financial results. In addition, if our Internet customers are unable to access desirable content online because content providers block or limit access by our customers as a class, our ability to gain and retain customers, especially Internet customers, may be negatively impacted.

Increased demands by owners of some broadcast stations for carriage of other services or payments to those broadcasters for retransmission consent are likely to further increase our programming costs. Federal law allows commercial television broadcast stations to make an election between “must-carry” rights and an alternative “retransmission-consent” regime. When a station opts for the retransmission consent regime, we are not allowed to carry the station’s signal without that station’s permission. In some cases, we carry stations under short-term arrangements while we attempt to negotiate new long-term retransmission agreements. If negotiations with these programmers prove unsuccessful, they could require us to cease carrying their signals, possibly for an indefinite period. Any loss of stations could make our video service less attractive to customers, which could result in less subscription and advertising revenue. In retransmission-consent negotiations, broadcasters often condition consent with respect to one station on carriage of one or more other stations or programming services in which they or their affiliates have an interest. Carriage of these other services, as well as increased fees for retransmission rights, may increase our programming expenses and diminish the amount of capacity we have available to introduce new services, which could have an adverse effect on our business and financial results.

Our inability to respond to technological developments and meet customer demand for new products and services could adversely affect our ability to compete effectively.

We operate in a highly competitive, consumer-driven and rapidly changing environment. From time to time, we may pursue strategic initiatives, including, for example, our wireless strategy which includes the launch of our mobile product through an MVNO and testing the deployment of unlicensed and licensed spectrum for fixed and mobile wireless services. Our success is, to a large extent, dependent on our ability to acquire, develop, adopt, upgrade and exploit new and existing technologies to address consumers' changing demands and distinguish our services from those of our competitors. We may not be able to accurately predict technological trends or the success of new products and services. If we choose technologies or equipment that are less effective, cost-efficient or attractive to customers than those chosen by our competitors, if we offer services that fail to appeal to consumers, are not available at competitive prices or that do not function as expected, or we are not able to fund the expenditures necessary to keep pace with technological developments, our competitive position could deteriorate, and our business and financial results could suffer.

The ability of some of our competitors to introduce new technologies, products and services more quickly than we do may adversely affect our competitive position. Furthermore, advances in technology, decreases in the cost of existing technologies or changes in competitors' product and service offerings may require us in the future to make additional research and development expenditures or to offer at no additional charge or at a lower price certain products and services that we currently offer to customers separately or at a premium. In addition, the uncertainty of our ability, and the costs, to obtain intellectual property rights from third parties could impact our ability to respond to technological advances in a timely and effective manner.

Our inability to maintain and expand our upgraded systems and provide advanced services such as a state of the art user interface in a timely manner, or to anticipate the demands of the marketplace, could materially adversely affect our ability to attract and retain customers. In addition, as we launch our new mobile services using virtual network operator rights from a third party, we expect an initial funding period to grow a new product as well as negative working capital impacts from the timing of device-related cash flows when we provide the handset or tablet pursuant to equipment installation plans. Consequently, our growth, financial condition and results of operations could suffer materially.

We depend on third party service providers, suppliers and licensors; thus, if we are unable to procure the necessary services, equipment, software or licenses on reasonable terms and on a timely basis, our ability to offer services could be impaired, and our growth, operations, business, financial results and financial condition could be materially adversely affected.

We depend on a limited number of third party service providers, suppliers and licensors to supply some of the services, hardware, software and operational support necessary to provide some of our services. Some of our hardware, software and operational support vendors, and service providers represent our sole source of supply or have, either through contract or as a result of intellectual property rights, a position of some exclusivity. If any of these parties breaches or terminates its agreement with us or otherwise fails to perform its obligations in a timely manner, demand exceeds these vendors' capacity, tariffs are imposed that impact vendors' ability to perform their obligations or significantly increase the amount we pay, they experience operating or financial difficulties, they significantly increase the amount we pay for necessary products or services, or they cease production of any necessary product due to lack of demand, profitability or a change in ownership or are otherwise unable to provide the equipment or services we need in a timely manner, at our specifications and at reasonable prices, our ability to provide some services might be materially adversely affected, or the need to procure or develop alternative sources of the affected materials or services might delay our ability to serve our customers. In addition, the existence of only a limited number of vendors of key technologies can lead to less product innovation and higher costs. These events could materially and adversely affect our ability to retain and attract customers and our operations, business, financial results and financial condition.

Our business may be adversely affected if we cannot continue to license or enforce the intellectual property rights on which our business depends.

We rely on patent, copyright, trademark and trade secret laws and licenses and other agreements with our employees, customers, suppliers and other parties to establish and maintain our intellectual property rights in technology and the products and services used in our operations. Also, because of the rapid pace of technological change, we both develop our own technologies, products and services and rely on technologies developed or licensed by third parties. However, any of our intellectual property rights, or the rights of our suppliers, could be challenged or invalidated, or such intellectual property rights may not be sufficient to permit us to take advantage of current industry trends or otherwise to provide competitive advantages, which could result in costly redesign efforts, discontinuance of certain product or service offerings or other competitive harm. We may not be able to obtain or continue to obtain licenses from these third parties on reasonable terms, if at all. In addition, claims of intellectual property infringement could require us to enter into royalty or licensing agreements on unfavorable terms, incur substantial monetary liability or be enjoined preliminarily or permanently from further use of the intellectual property in question, which could require us to change

our business practices or offerings and limit our ability to compete effectively. Even unsuccessful claims can be time-consuming and costly to defend and may divert management's attention and resources away from our business. Infringement claims continue to be brought frequently in the communications and entertainment industries, and we are also often a party to such litigation alleging that certain of our services or technologies infringe the intellectual property rights of others.

Various events could disrupt or result in unauthorized access to our networks, information systems or properties and could impair our operating activities and negatively impact our reputation and financial results.

Network and information systems technologies are critical to our operating activities, both for our internal uses, such as network management and supplying services to our customers, including customer service operations and programming delivery. Network or information system shutdowns or other service disruptions caused by events such as computer hacking, phishing, dissemination of computer viruses, worms and other destructive or disruptive software, "cyber attacks," process breakdowns, denial of service attacks and other malicious activity pose increasing risks. Both unsuccessful and successful "cyber attacks" on companies have continued to increase in frequency, scope and potential harm in recent years. While we develop and maintain systems seeking to prevent systems-related events and security breaches from occurring, the development and maintenance of these systems is costly and requires ongoing monitoring and updating as techniques used in such attacks become more sophisticated and change frequently. We, and the third parties on which we rely, may be unable to anticipate these techniques or implement adequate preventive measures. While from time to time attempts have been made to access our network, these attempts have not as yet resulted in any material release of information, degradation or disruption to our network and information systems.

Our network and information systems are also vulnerable to damage or interruption from power outages, telecommunications failures, accidents, natural disasters (including extreme weather arising from short-term or any long-term changes in weather patterns), terrorist attacks and similar events. Further, the impacts associated with extreme weather or long-term changes in weather patterns, such as rising sea levels or increased and intensified storm activity, may cause increased business interruptions or may require the relocation of some of our facilities. Our system redundancy may be ineffective or inadequate, and our disaster recovery planning may not be sufficient for all eventualities.

Any of these events, if directed at, or experienced by, us or technologies upon which we depend, could have adverse consequences on our network, our customers and our business, including degradation of service, service disruption, excessive call volume to call centers, and damage to our or our customers' equipment and data. Large expenditures may be necessary to repair or replace damaged property, networks or information systems or to protect them from similar events in the future. Moreover, the amount and scope of insurance that we maintain against losses resulting from any such events or security breaches may not be sufficient to cover our losses or otherwise adequately compensate us for any disruptions to our business that may result. Any such significant service disruption could result in damage to our reputation and credibility, customer dissatisfaction and ultimately a loss of customers or revenue. Any significant loss of customers or revenue, or significant increase in costs of serving those customers, could adversely affect our growth, financial condition and results of operations.

Furthermore, our operating activities could be subject to risks caused by misappropriation, misuse, leakage, falsification or accidental release or loss of information maintained in our information technology systems and networks and those of our third-party vendors, including customer, personnel and vendor data. We provide certain confidential, proprietary and personal information to third parties in connection with our business, and there is a risk that this information may be compromised.

As a result of the increasing awareness concerning the importance of safeguarding personal information, the potential misuse of such information and legislation that has been adopted or is being considered regarding the protection, privacy and security of personal information, information-related risks are increasing, particularly for businesses like ours that process, store and transmit large amount of data, including personal information for our customers. We could be exposed to significant costs if such risks were to materialize, and such events could damage our reputation, credibility and business and have a negative impact on our revenue. We could be subject to regulatory actions and claims made by consumers in private litigations involving privacy issues related to consumer data collection and use practices. We also could be required to expend significant capital and other resources to remedy any such security breach.

For tax purposes, Charter could experience a deemed ownership change in the future that could limit its ability to use its tax loss carryforwards.

Charter had approximately $10.2 billion of federal tax net operating loss carryforwards resulting in a gross deferred tax asset of approximately $2.1 billion as of December 31, 2018. These losses resulted from the operations of Charter Communications Holding Company, LLC ("Charter Holdco") and its subsidiaries and from loss carryforwards received as a result of the TWC Transaction. Federal tax net operating loss carryforwards expire in the years 2019 through 2035. In addition, Charter had state tax net operating

loss carryforwards resulting in a gross deferred tax asset (net of federal tax benefit) of approximately $309 million as of December 31, 2018. State tax net operating loss carryforwards generally expire in the years 2019 through 2038.

In the past, Charter has experienced ownership changes as defined in Section 382 of the Internal Revenue Code of 1986, as amended (the "Code"). In general, an ownership change occurs whenever the percentage of the stock of a corporation owned, directly or indirectly, by 5-percent stockholders (within the meaning of Section 382 of the Code) increases by more than 50 percentage points over the lowest percentage of the stock of such corporation owned, directly or indirectly, by such 5-percent stockholders at any time over the preceding three years. As a result, Charter is subject to an annual limitation on the use of its loss carryforwards which existed at November 30, 2009 for the first ownership change, those that existed at May 1, 2013 for the second ownership change, and those created at May 18, 2016 for the third ownership change. The limitation on Charter's ability to use its loss carryforwards, in conjunction with the loss carryforward expiration provisions, could reduce Charter's ability to use a portion of its loss carryforwards to offset future taxable income, which could result in Charter being required to make material cash tax payments. Charter's ability to make such income tax payments, if any, will depend at such time on its liquidity or its ability to raise additional capital, and/or on receipt of payments or distributions from Charter Holdco and its subsidiaries, including us.

If Charter were to experience additional ownership changes in the future (as a result of purchases and sales of stock by its 5-percent stockholders, new issuances or redemptions of our stock, certain acquisitions of its stock and issuances, redemptions, sales or other dispositions or acquisitions of interests in its 5-percent stockholders), Charter's ability to use its loss carryforwards could become subject to further limitations.

If we are unable to retain key employees, our ability to manage our business could be adversely affected.

Our operational results have depended, and our future results will depend, upon the retention and continued performance of our management team. Our ability to retain and hire new key employees for management positions could be impacted adversely by the competitive environment for management talent in the broadband communications industry. The loss of the services of key members of management and the inability or delay in hiring new key employees could adversely affect our ability to manage our business and our future operational and financial results.

Risks Related to Our Indebtedness

We have a significant amount of debt and expect to incur significant additional debt, including secured debt, in the future, which could adversely affect our financial health and our ability to react to changes in our business.

We have a significant amount of debt and expect to (subject to applicable restrictions in our debt instruments) incur additional debt in the future as we maintain our stated objective of 4.0 to 4.5 times leverage (our net debt divided by our last twelve months Adjusted EBITDA). As of December 31, 2018, our total principal amount of debt was approximately $72.0 billion with a leverage ratio of 4.5 times.

Our significant amount of debt could have consequences, such as:

- impact our ability to raise additional capital at reasonable rates, or at all;
- make us vulnerable to interest rate increases, in part because approximately 15% of our borrowings as of December 31, 2018 were, and may continue to be, subject to variable rates of interest;
- expose us to increased interest expense to the extent we refinance existing debt with higher cost debt;
- require us to dedicate a significant portion of our cash flow from operating activities to make payments on our debt, reducing our funds available for working capital, capital expenditures, and other general corporate expenses;
- limit our flexibility in planning for, or reacting to, changes in our business, the cable and telecommunications industries, and the economy at large;
- place us at a disadvantage compared to our competitors that have proportionately less debt; and
- adversely affect our relationship with customers and suppliers.

If current debt amounts increase, our business results are lower than expected, or credit rating agencies downgrade our debt limiting our access to investment grade markets, the related risks that we now face will intensify. In addition, our variable rate indebtedness may use London Interbank Offering Rate ("LIBOR") as a benchmark for establishing the rate. LIBOR is the subject of recent national, international and other regulatory guidance and proposals for reform. These reforms and other pressures may cause LIBOR to disappear entirely or to perform differently than in the past. The consequences of these developments cannot be entirely predicted, but could include an increase in the cost of our variable rate indebtedness.

The agreements and instruments governing our debt contain restrictions and limitations that could significantly affect our ability to operate our business, as well as significantly affect our liquidity.

Our credit facilities and the indentures governing our debt contain a number of significant covenants that could adversely affect our ability to operate our business, our liquidity, and our results of operations. These covenants restrict, among other things, our and our subsidiaries' ability to:

- incur additional debt;
- repurchase or redeem equity interests and debt;
- issue equity;
- make certain investments or acquisitions;
- pay dividends or make other distributions;
- dispose of assets or merge;
- enter into related party transactions; and
- grant liens and pledge assets.

Additionally, the Charter Communications Operating, LLC ("Charter Operating") credit facilities require Charter Operating to comply with a maximum total leverage covenant and a maximum first lien leverage covenant. The breach of any covenants or obligations in our indentures or credit facilities, not otherwise waived or amended, could result in a default under the applicable debt obligations and could trigger acceleration of those obligations, which in turn could trigger cross defaults under other agreements governing our long-term indebtedness. In addition, the secured lenders under our notes and the Charter Operating credit facilities could foreclose on their collateral, which includes equity interests in our subsidiaries, and exercise other rights of secured creditors.

Risks Related to Ownership Position of Liberty Broadband Corporation and Advance/Newhouse Partnership

Liberty Broadband and A/N have governance rights that give them influence over corporate transactions and other matters.

Liberty Broadband currently owns a significant amount of Charter Class A common stock and is entitled to certain governance rights with respect to Charter and us. A/N currently owns Charter Class A common stock and a significant amount of membership interests in our indirect parent company, Charter Holdings, that are convertible into Charter Class A common stock and is entitled to certain governance rights with respect to Charter. Members of the Charter board of directors include a director who is also an officer and director of Liberty Broadband and directors who are current or former officers and directors of A/N. Mr. Greg Maffei is the President and Chief Executive Officer of Liberty Broadband. Steven Miron is the Chief Executive Officer of A/N and Michael Newhouse is an officer or director of several of A/N's affiliates. As of December 31, 2018, Liberty Broadband beneficially held approximately 22% of Charter's Class A common stock (including shares owned by GCI Liberty, Inc. ("GCI Liberty," formerly known as Liberty Interactive Corporation) over which Liberty Broadband holds an irrevocable voting proxy) and A/N beneficially held approximately 13% of Charter's Class A common stock, in each case assuming the conversion of the membership interests held by A/N. Pursuant to the stockholders agreement between Liberty Broadband, A/N and Charter, Liberty Broadband currently has the right to designate up to three directors as nominees for Charter's board of directors and A/N currently has the right to designate up to two directors as nominees for Charter's board of directors. Each of A/N and Liberty Broadband is entitled to nominate at least one director to each of the committees of Charter's board of directors, subject to applicable stock exchange listing rules and certain specified voting or equity ownership thresholds for each of A/N and Liberty Broadband, and provided that the Nominating and Corporate Governance Committee and the Compensation and Benefit Committee each have at least a majority of directors independent from A/N, Liberty Broadband and Charter (referred to as the "unaffiliated directors").

In connection with the TWC Transaction, Liberty Broadband and GCI Liberty entered into a proxy and right of first refusal agreement, pursuant to which GCI Liberty granted Liberty Broadband an irrevocable proxy to vote all Charter Class A common stock owned beneficially or of record by GCI Liberty, with certain exceptions. In addition, at the closing of the Bright House Transaction, A/N and Liberty Broadband entered into a proxy agreement pursuant to which A/N granted to Liberty Broadband a 5-year irrevocable proxy (which we refer to as the "A/N proxy") to vote, subject to certain exceptions, that number of shares of Charter Class A common stock and Charter Class B common stock, in each case held by A/N (such shares are referred to as the "proxy shares"), that will result in Liberty Broadband having voting power in Charter equal to 25.01% of the outstanding voting power of Charter, provided, that the voting power of the proxy shares is capped at 7.0% of the outstanding voting power of Charter. Therefore, giving effect to the GCI Liberty proxy and the A/N proxy and the voting cap contained in the stockholders agreement, Liberty Broadband has 25.01% of the outstanding voting power in Charter. The stockholders agreement and Charter's amended and restated certificate of incorporation fixes the size of the board at 13 directors. Liberty Broadband and A/N are required to vote (subject to the applicable voting cap) their respective shares of Charter Class A common stock and Charter Class B common stock for the director nominees nominated by the nominating and corporate governance committee of the board of directors, including the respective designees of Liberty Broadband and A/N, and against any other nominees, except that, with respect to the unaffiliated

directors, Liberty Broadband and A/N must instead vote in the same proportion as the voting securities are voted by stockholders other than A/N and Liberty Broadband or any group which includes any of them are voted, if doing so would cause a different outcome with respect to the unaffiliated directors. As a result of their rights under the stockholders agreement and their significant equity and voting stakes in Charter, Liberty Broadband and/or A/N, who may have interests different from those of other stockholders, will be able to exercise substantial influence over certain matters relating to the governance of Charter and us, including the approval of significant corporate actions, such as mergers and other business combination transactions.

Risks Related to Regulatory and Legislative Matters

Our business is subject to extensive governmental legislation and regulation, which could adversely affect our business.

Regulation of the cable industry has increased cable operators' operational and administrative expenses and limited their revenues. Cable operators are subject to various laws and regulations including those covering the following:

- the provision of high-speed Internet service, including transparency rules;
- the provision of voice communications;
- cable franchise renewals and transfers;
- the provisioning and marketing of cable equipment and compatibility with new digital technologies;
- customer and employee privacy and data security;
- limited rate regulation of video service;
- copyright royalties for retransmitting broadcast signals;
- when a cable system must carry a particular broadcast station and when it must first obtain retransmission consent to carry a broadcast station;
- the provision of channel capacity to unaffiliated commercial leased access programmers;
- limitations on our ability to enter into exclusive agreements with multiple dwelling unit complexes and control our inside wiring;
- equal employment opportunity, emergency alert systems, disability access, technical standards, marketing practices, customer service, and consumer protection; and
- approval for mergers and acquisitions often accompanied by the imposition of restrictions and requirements on an applicant's business in order to secure approval of the proposed transaction.

Legislators and regulators at all levels of government frequently consider changing, and sometimes do change, existing statutes, rules, regulations, or interpretations thereof, or prescribe new ones. Any future legislative, judicial, regulatory or administrative actions may increase our costs or impose additional restrictions on our businesses.

As a result of the closing of the Transactions, our businesses are subject to the conditions set forth in the FCC Order and the DOJ Consent Decree and those imposed by state utility commissions and local franchise authorities, and there can be no assurance that these conditions will not have an adverse effect on our businesses and results of operations.

In connection with the Transactions, the FCC Order, the DOJ Consent Decree, and the approvals from state utility commissions and local franchise authorities incorporated numerous commitments and voluntary conditions made by the parties and imposed numerous conditions on our businesses relating to the operation of our business and other matters. Under federal approvals, among other things, (i) we are not permitted to charge usage-based prices or impose data caps and are prohibited from charging interconnection fees for qualifying parties; (ii) we are prohibited from entering into or enforcing any agreement with a programmer that forbids, limits or creates incentives to limit the programmer's provision of content to OVD and cannot retaliate against programmers for licensing to OVDs; (iii) we are not able to avail ourself of other distributors' MFN provisions if they are inconsistent with this prohibition; (iv) we must undertake a number of actions designed to promote diversity; (v) we appointed an independent compliance monitor and comply with a broad array of reporting requirements; and (vi) we must satisfy various other conditions relating to our Internet services, including building out an additional two million locations with access to a high-speed connection of at least 60 megabits per second, and implementing a reduced price high-speed Internet program for low income families. These and other conditions and commitments relating to the Transactions are of varying duration, ranging from three to seven years. In light of the breadth and duration of the conditions and potential changes in market conditions during the time the conditions and commitments are in effect, there can be no assurance that our compliance, and ability to comply, with the conditions will not have a material adverse effect on our business or results of operations. For example, in July 2018, the New York State Public Service Commission revoked its earlier approval of Charter's acquisition of TWC, alleging that Charter had not complied with its Transaction commitments to extend availability of high-speed Internet services to 145,000 underserved or unserved homes or businesses over a four year period. Although Charter is vigorously opposing the Public Service Commission's revocation, if this, or any similar, revocation is not reversed, it could materially impact our operations. See "Item 3. Legal Proceedings."

Changes to existing statutes, rules, regulations, or interpretations thereof, or adoption of new ones, could have an adverse effect on our business.

There are ongoing efforts to amend or expand the federal, state, and local regulation of some of the services offered over our cable systems, which may compound the regulatory risks we already face. For example, with respect to our retail broadband Internet access service, the FCC has reclassified the service twice in the last few years, with the first change adding regulatory obligations and the second change largely removing those new regulatory obligations. These changes reflect a lack of regulatory certainty in this business area, which may continue as a result of litigation, as well as future legislative or administrative changes.

Other potential legislative and regulatory changes could adversely impact our business by increasing our costs and competition and limiting our ability to offer services in a manner that that would maximize our revenue potential. These changes could include, for example, the adoption of new privacy restrictions on our collection, use and disclosure of certain customer information, new data security and cybersecurity mandates that could result in additional network and information security requirements for our business, new restraints on our discretion over programming decisions, including the provision of public, educational and governmental access programming and unaffiliated, commercial leased access programming, new restrictions on the rates we charge for video programming and the marketing of that video programming, changes to the cable industry's compulsory copyright license to carry broadcast signals, new requirements to assure the availability of navigation devices (such as set-top boxes) from third-party providers, new Universal Service Fund obligations on our provision of Internet service that would add to the cost of that service; increases in government-administered broadband subsidies to rural areas that could result in subsidized overbuilding of our more rural facilities, and changes in the regulatory framework for VoIP phone service, including the scope of regulatory obligations associated with our VoIP service and our ability to interconnect our VoIP service with incumbent providers of traditional telecommunications service.

If any of these such laws or regulations are enacted, they could affect our operations and require significant expenditures. We cannot predict future developments in these areas, and we are already subject to Charter-specific conditions regarding certain Internet practices as a result of the FCC's approval of the Transactions, but any changes to the regulatory framework for our video, Internet or VoIP services could have a negative impact on our business and results of operations.

It remains uncertain what rule changes, if any, will ultimately be adopted by Congress and the FCC and what operating or financial impact any such rules might have on us, including on our programming agreements, customer privacy and the user experience. In addition, the FCC, the FTC, and various state agencies and attorney generals actively investigate industry practices and could impose substantial forfeitures for alleged regulatory violations.

Our cable system franchises are subject to non-renewal or termination and are non-exclusive. The failure to renew a franchise or the grant of additional franchises in one or more service areas could adversely affect our business.

Our cable systems generally operate pursuant to franchises, permits, and similar authorizations issued by a state or local governmental authority controlling the public rights-of-way. Many franchises establish comprehensive facilities and service requirements, as well as specific customer service standards and monetary penalties for non-compliance. In many cases, franchises are terminable if the franchisee fails to comply with significant provisions set forth in the franchise agreement governing system operations. Franchises are generally granted for fixed terms and must be periodically renewed. Franchising authorities may resist granting a renewal if either past performance or the prospective operating proposal is considered inadequate. Franchise authorities often demand concessions or other commitments as a condition to renewal. In some instances, local franchises have not been renewed at expiration, and we have operated and are operating under either temporary operating agreements or without a franchise while negotiating renewal terms with the local franchising authorities.

We cannot assure you that we will be able to comply with all significant provisions of our franchise agreements and certain of our franchisers have from time to time alleged that we have not complied with these agreements. Additionally, although historically we have renewed our franchises without incurring significant costs, we cannot assure you that we will be able to renew, or to renew as favorably, our franchises in the future. A termination of or a sustained failure to renew a franchise in one or more service areas could adversely affect our business in the affected geographic area.

Our cable system franchises are non-exclusive. Consequently, local and state franchising authorities can grant additional franchises to competitors in the same geographic area or operate their own cable systems. In some cases, local government entities and municipal utilities may legally compete with us on more favorable terms. Potential competitors (like Google) have recently pursued and obtained local franchises that are more favorable than the incumbent operator's franchise.

Tax legislation and administrative initiatives or challenges to our tax and fee positions could adversely affect our results of operations and financial condition.

We operate cable systems in locations throughout the United States and, as a result, we are subject to the tax laws and regulations of federal, state and local governments. From time to time, various legislative and/or administrative initiatives may be proposed that could adversely affect our tax positions. There can be no assurance that our effective tax rate or tax payments will not be adversely affected by these initiatives. Certain states and localities have imposed or are considering imposing new or additional taxes or fees on our services or changing the methodologies or base on which certain fees and taxes are computed. Potential changes include additional taxes or fees on our services which could impact our customers, changes to income tax sourcing rules and other changes to general business taxes, central/unit-level assessment of property taxes and other matters that could increase our income, franchise, sales, use and/or property tax liabilities. For example, some local franchising authorities are seeking to impose franchise fee assessments on our broadband Internet access service, and more may do so in the future. If they do so, and challenges to such assessments are unsuccessful, it could adversely impact our costs. In addition, federal, state and local tax laws and regulations are extremely complex and subject to varying interpretations. There can be no assurance that our tax positions will not be challenged by relevant tax authorities or that we would be successful in any such challenge.

Item 1B. ***Unresolved Staff Comments.***

None.

Item 2. ***Properties.***

Our principal physical assets consist of cable distribution plant and equipment, including signal receiving, encoding and decoding devices, headend reception facilities, distribution systems, and customer premise equipment for each of our cable systems.

Our cable plant and related equipment are generally attached to utility poles under pole rental agreements with local public utilities and telephone companies, and in certain locations are buried in underground ducts or trenches. We own or lease real property for signal reception sites, and own our service vehicles.

We generally lease space for business offices. Our headend and tower locations are located on owned or leased parcels of land, and we generally own the towers on which our equipment is located.

The physical components of our cable systems require maintenance as well as periodic upgrades to support the new services and products we introduce. See “Item 1. Business – Our Network Technology and Customer Premise Equipment.” We believe that our properties are generally in good operating condition and are suitable for our business operations.

Item 3. ***Legal Proceedings.***

See below for legal proceedings information as well as Note 17 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data” in this Annual Report on Form 10-K which is incorporated herein by reference.

On March 28, 2017, prior to the expiration of the collective bargaining agreement on March 31, 2017, approximately 1,600 of our employees in New York City and New Jersey, represented by Local 3 of the International Brotherhood of Electrical Workers (the “IBEW”) commenced a strike. Charter proposed substantial wage increases and a reduction of its share in contributions into IBEW-sponsored multi-employer pension and healthcare plans. Local 3 rejected Charter’s proposal and went on strike in furtherance of its demand that Charter increase its contributions into the IBEW-sponsored plans with only modest wage increases. As a result of an impasse in the negotiations, Charter implemented the terms of its last proposal, which included substantial wage increases and replaced the IBEW-sponsored plans with Charter benefit plans. In May 2018, a bargaining unit petitioned the National Labor Relations Board ("NLRB") for an election to decertify the IBEW as the collective bargaining representative for the New York City and New Jersey bargaining unit employees. The ballots for the decertification vote were mailed by the NLRB on January 25, 2019 with a return date of February 22 and a ballot count scheduled for February 25, 2019.

During this period of the IBEW strike, the New York Public Service Commission (the “PSC”) issued multiple orders against Charter. These orders included two orders on July 27, 2018 relating to the agreement by which the PSC approved Charter’s merger with Time Warner Cable. One order rejected Charter’s arguments as to why Charter continued to be compliant with the merger conditions and determined that Charter had failed to satisfy one of its merger conditions by not extending its high speed broadband network according to the PSC’s recent interpretation of which homes and businesses Charter built to should count. The order

further directed the initiation of a court action to impose financial and other penalties on Charter. The second order, based primarily upon Charter's progress in meeting its broadband expansion commitment as judged by the PSC, purported to rescind the PSC's January 2016 approval of Charter's acquisition of Time Warner Cable's New York operations and directs Charter to submit a plan to effect an orderly transition to a successor provider or providers for Charter to cease operations in New York within six months of the order. Such plan had been ordered to be submitted within 60 days of the July 27, 2018 order. On July 30, 2018, the PSC filed a petition for penalties and injunctive relief in the Supreme Court of the State of New York seeking penalties of $100,000 per day from June 18, 2018 and until Charter complies with the PSC order and also seeks injunctive relief from the court to enjoin failure to comply with the New York Public Service Laws or any regulation or order of the PSC. The PSC and Charter have entered into discussions with the possibility of resolving these matters and so have extended the deadline several times regarding the submission of an exit plan and the deadline by when Charter would have to file formal oppositions to the PSC orders.

Charter continues to believe that its plain reading of the merger conditions is correct and that it is in compliance with the merger conditions. Although Charter has entered into discussions with the PSC with the possibility of resolving the PSC matters, Charter has substantial defenses and appeal rights regarding the actions of the PSC and will aggressively defend against these unprecedented actions by the PSC. We expect these proceedings to continue for up to several years unless a settlement is reached. While we believe the actions by the PSC are without merit and intend to defend the actions vigorously and do not believe the results of the proceedings will have a material adverse effect on Charter, no assurance can be given that, should an adverse outcome result, it would not be material to our consolidated financial condition, results of operations or liquidity. We cannot predict the outcome of the PSC claims, including any negotiations, nor can we reasonably estimate a range of possible loss in the event of an adverse result.

Item 4. ***Mine Safety Disclosures.***

Not applicable.

PART II

Item 5. ***Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.***

Our membership interests are not publicly traded. All of the membership interests of CCO Holdings are owned by CCH I Holdings, LLC. All of the outstanding capital stock of CCO Holdings Capital Corp. is owned by CCO Holdings.

Securities Authorized for Issuance Under Equity Compensation Plans

The following information is provided as of December 31, 2018 with respect to Charter's equity compensation plans:

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	Weighted Average Exercise Price of Outstanding Warrants and Rights	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans
Equity compensation plans approved by security holders	12,621,045 (1)	$ 224.42	4,108,291 (1)
Equity compensation plans not approved by security holders	—	$ —	—
TOTAL	12,621,045 (1)		4,108,291 (1)

(1) This total does not include 10,223 shares issued pursuant to restricted stock grants made under Charter's 2009 Stock Incentive Plan, which are subject to vesting based on continued employment and market conditions.

For information regarding securities issued under Charter's equity compensation plans, see Note 14 to our accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Item 7. ***Management's Discussion and Analysis of Financial Condition and Results of Operations.***

Reference is made to "Part I. Item 1A. Risk Factors" and "Cautionary Statement Regarding Forward-Looking Statements," which describe important factors that could cause actual results to differ from expectations and non-historical information contained herein. In addition, the following discussion should be read in conjunction with the audited consolidated financial statements and accompanying notes thereto of CCO Holdings included in "Part II. Item 8. Financial Statements and Supplementary Data."

Overview

We are the second largest cable operator in the United States and a leading broadband communications services company providing video, Internet and voice services to approximately 28.1 million residential and small and medium business customers at December 31, 2018. We also recently launched our Spectrum mobile service to residential customers. In addition, we sell video and online advertising inventory to local, regional and national advertising customers and fiber-delivered communications and managed IT solutions to large enterprise customers. We also own and operate regional sports networks and local sports, news and community channels. See "Part I. Item 1. Business — Products and Services" for further description of these services, including customer statistics for different services.

Since the close of the Transactions in 2016, we have been focused on integrating the practices and systems of Legacy Charter, Legacy TWC and Legacy Bright House, centralizing our product, marketing, sales and service operations, insourcing the Legacy TWC and Legacy Bright House workforces in our call centers and field operations, and rolling out SPP to Legacy TWC and Legacy Bright House service areas. In 2018, we completed the conversion of the remaining Legacy TWC and Legacy Bright House analog service areas to an all-digital platform enabling us to deliver more HD channels and higher Internet speeds. As of December 31, 2018, nearly all of our footprint was all-digital. Additionally, we have doubled minimum Internet speeds to 200 Mbps in a number of service areas at no additional cost to new and existing Internet customers. In 2018, leveraging DOCSIS 3.1 technology, we also expanded the availability of our Spectrum Internet Gig service to nearly all of our footprint. With our integration nearly complete, we are focused on operating as one company, with a unified product, marketing and service infrastructure, which will allow us to accelerate growth and innovate faster. With significantly less customer-facing change expected in 2019, we are focused on deploying superior products and service with minimal service disruptions. We expect our growing levels of productivity

will result in lower customer churn, longer customer lifetimes and improved productivity with fewer customer calls and truck rolls. With over 75% of our residential customer base currently in SPP packages, we expect additional benefits from higher SPP penetration and as current SPP customers roll off introductory pricing combined with modest price increases. Further, we expect to continue to drive customer relationship growth through sales of video, Internet, and wireline and mobile voice packaged services. Additionally, with the completion of our all-digital conversion, roll-out of DOCSIS 3.1 technology across our footprint, and the integration of Legacy TWC and Legacy Bright House mostly complete, we expect a meaningful reduction in capital expenditures in dollars and as a percent of revenue in 2019.

At the end of the second quarter of 2018, we launched our mobile product, Spectrum Mobile, under our MVNO reseller agreement with Verizon. Our Spectrum Mobile service is offered to our residential customers subscribing to our Internet service and runs on Verizon's mobile network combined with our existing network of in-home and outdoor WiFi hotspots. We began mass market advertising of Spectrum Mobile in September 2018. We also continue to explore ways to manage our own network and drive even more mobile traffic to our network through our continued deployment of in-home and outdoor WiFi hotspots. In 2018, we invested in our mobile operating partnership with Comcast Corporation, with a portion representing our equity investment in the partnership and a portion representing a prepayment of software development and related services for the mobile back office platform. As the partnership delivers services, we will reflect such services as capital or operating expense depending on the nature of services delivered.

We believe Spectrum-branded mobile services will drive higher sales of our core products, create longer customer lives and increase profitability and cash flow over time. As a result of growth costs associated with our new mobile product line, we cannot be certain that we will be able to grow revenues or maintain our margins at recent historical rates. During the year ended December 31, 2018, our mobile product line increased revenues by$106 million, and reduced Adjusted EBITDA and free cash flow by approximately $240 million and $594 million, respectively. As we continue to launch our mobile service and scale the business, we expect continued negative impacts to Adjusted EBITDA, as well as negative working capital impacts from the timing of device-related cash flows when we provide the handset or tablet to customers pursuant to equipment installment plans. In 2019, we intend to expand our Spectrum Mobile bring-your-own-device ("BYOD") program across our key sales channels to include a broader set of devices. We believe our BYOD program will lower the cost for consumers of switching mobile carriers, and will reduce the short-term working capital impact of selling new mobile devices on installment plans.

The Company realized revenue, Adjusted EBITDA and income from operations during the periods presented as follows (in millions; all percentages are calculated using whole numbers. Minor differences may exist due to rounding).

	Years ended December 31,						
	Actual					Pro Forma	
	2018	2017	2016	2018 vs. 2017 Growth	2017 vs. 2016 Growth	2016	2017 vs. 2016 Growth
Revenues	$ 43,620	$ 41,578	$ 29,003	4.9%	43.4%	$ 40,023	3.9%
Adjusted EBITDA	$ 16,014	$ 15,279	$ 10,577	4.8%	44.5%	$ 14,450	5.7%
Income from operations[(a)]	$ 5,192	$ 3,995	$ 2,709	30.0%	47.5%	$ 3,881	2.9%

(a) Income from operations for the year ended December 31, 2016 has been reduced from what was previously reported to reflect the adoption of pension accounting guidance by $899 million and $915 million on an actual and pro forma basis, respectively.

Adjusted EBITDA is defined as consolidated net income plus net interest expense, income taxes, depreciation and amortization, stock compensation expense, loss on extinguishment of debt, (gain) loss on financial instruments, net, other pension benefits, other (income) expense, net and other operating (income) expenses, such as merger and restructuring costs, special charges and (gain) loss on sale or retirement of assets. See "—Use of Adjusted EBITDA and Free Cash Flow" for further information on Adjusted EBITDA and free cash flow.

Growth in total revenue, Adjusted EBITDA and income from operations was primarily due to growth in our residential Internet and commercial business customers as well as an increase in advertising sales revenue primarily due to an increase in political revenue. Adjusted EBITDA growth was additionally affected by increases in operating costs and expenses primarily programming and, in 2018, mobile. Income from operations was also affected by changes in depreciation and amortization as well as decreases in merger and restructuring costs.

Approximately 91%, 91% and 90% of our revenues for years endedDecember 31, 2018, 2017 and 2016, respectively, are attributable to monthly subscription fees charged to customers for our video, Internet, voice and commercial services provided by our cable systems. Generally, these customer subscriptions may be discontinued by the customer at any time subject to a fee for certain commercial customers. The remaining 9%, 9% and 10% of revenue for fiscal years 2018, 2017 and 2016, respectively, is derived primarily from advertising revenues, franchise and other regulatory fee revenues (which are collected by us but then paid to local authorities), VOD and pay-per-view programming, installation, processing fees or reconnection fees charged to customers to commence or reinstate service, revenue from regional sports and news channels and commissions related to the sale of merchandise by home shopping services.

Critical Accounting Policies and Estimates

Certain of our accounting policies require our management to make difficult, subjective and/or complex judgments. Management has discussed these policies with the Audit Committee of Charter's board of directors, and the Audit Committee has reviewed the following disclosure. We consider the following policies to be the most critical in understanding the estimates, assumptions and judgments that are involved in preparing our financial statements, and the uncertainties that could affect our results of operations, financial condition and cash flows:

- Property, plant and equipment
  - Capitalization of labor and overhead costs
  - Valuation and impairment of property, plant and equipment
  - Useful lives of property, plant and equipment
- Intangible assets
  - Valuation and impairment of franchises
  - Valuation and impairment of goodwill
  - Valuation, impairment and amortization of customer relationships
- Income taxes
- Litigation
- Programming agreements
- Pension plans

In addition, there are other items within our financial statements that require estimates or judgment that are not deemed critical, such as the allowance for doubtful accounts and valuations of our financial instruments, but changes in estimates or judgment in these other items could also have a material impact on our financial statements.

Property, plant and equipment

The cable industry is capital intensive, and a large portion of our resources are spent on capital activities associated with extending, rebuilding, and upgrading our cable network. As of December 31, 2018 and 2017, the net carrying amount of our property, plant and equipment (consisting primarily of cable distribution systems) was approximately $34.7 billion (representing 24% of total assets) and $33.6 billion (representing 23% of total assets), respectively. Total capital expenditures for the years ended December 31, 2018, 2017 and 2016 were approximately $9.1 billion, $8.7 billion and $5.3 billion, respectively.

Capitalization of labor and overhead costs. Costs associated with network construction or upgrades, initial placement of the customer drop to the dwelling and the initial placement of outlets within a dwelling along with the costs associated with the initial deployment of customer premise equipment necessary to provide video, Internet or voice services, are capitalized. Costs capitalized include materials, direct labor and certain indirect costs. These indirect costs are associated with the activities of personnel who assist in installation activities, and consist of compensation and overhead costs associated with these support functions. While our capitalization is based on specific activities, once capitalized, we track these costs on a composite basis by fixed asset category at the cable system level, and not on a specific asset basis. For assets that are sold or retired, we remove the estimated applicable cost and accumulated depreciation. The costs of disconnecting service and removing customer premise equipment from a dwelling and the costs to reconnect a customer drop or to redeploy previously installed customer premise equipment are charged to operating expense as incurred. Costs for repairs and maintenance are charged to operating expense as incurred, while plant and equipment replacement, including replacement of certain components, betterments, and replacement of cable drops and outlets, are capitalized.

We make judgments regarding the installation and construction activities to be capitalized. We capitalize direct labor and overhead using standards developed from actual costs and applicable operational data. We calculate standards annually (or more frequently if circumstances dictate) for items such as the labor rates, overhead rates, and the actual amount of time required to perform a capitalizable activity. For example, the standard amounts of time required to perform capitalizable activities are based on studies of the time required to perform such activities. Overhead rates are established based on an analysis of the nature of costs incurred

in support of capitalizable activities, and a determination of the portion of costs that is directly attributable to capitalizable activities. The impact of changes that resulted from these studies were not material in the periods presented.

Labor costs directly associated with capital projects are capitalized. Capitalizable activities performed in connection with installations include such activities as:

- dispatching a "truck roll" to the customer's dwelling or business for service connection or placement of new equipment;
- verification of serviceability to the customer's dwelling or business (i.e., determining whether the customer's dwelling is capable of receiving service by our cable network);
- customer premise activities performed by in-house field technicians and third-party contractors in connection with the installation, replacement and betterment of equipment and materials to enable video, Internet or voice services; and
- verifying the integrity of the customer's network connection by initiating test signals downstream from the headend to the customer premise equipment, as well as testing signal levels at the utility pole or pedestal.

Judgment is required to determine the extent to which overhead costs incurred result from specific capital activities, and therefore should be capitalized. The primary costs that are included in the determination of the overhead rate are (i) employee benefits and payroll taxes associated with capitalized direct labor, (ii) direct variable costs associated with capitalizable activities, (iii) the cost of support personnel, such as care personnel and dispatchers, who assist with capitalizable installation activities, and (iv) indirect costs directly attributable to capitalizable activities.

While we believe our existing capitalization policies are appropriate, a significant change in the nature or extent of our system activities could affect management's judgment about the extent to which we should capitalize direct labor or overhead in the future. We monitor the appropriateness of our capitalization policies, and perform updates to our internal studies on an ongoing basis to determine whether facts or circumstances warrant a change to our capitalization policies. We capitalized direct labor and overhead of $1.8 billion, $1.7 billion and $991 million, respectively, for the years ended December 31, 2018, 2017 and 2016.

Valuation and impairment of property, plant and equipment. We evaluate the recoverability of our property, plant and equipment upon the occurrence of events or changes in circumstances indicating that the carrying amount of an asset may not be recoverable. Such events or changes in circumstances could include such factors as the impairment of our indefinite life assets, changes in technological advances, fluctuations in the fair value of such assets, adverse changes in relationships with local franchise authorities, adverse changes in market conditions, or a deterioration of current or expected future operating results. A long-lived asset is deemed impaired when the carrying amount of the asset exceeds the projected undiscounted future cash flows associated with the asset. No impairments of long-lived assets held for use were recorded in the years ended December 31, 2018, 2017 and 2016.

We utilize the cost approach as the primary method used to establish fair value for our property, plant and equipment in connection with business combinations. The cost approach considers the amount required to replace an asset by constructing or purchasing a new asset with similar utility, then adjusts the value in consideration of physical depreciation and functional and economic obsolescence as of the valuation date. The cost approach relies on management's assumptions regarding current material and labor costs required to rebuild and repurchase significant components of our property, plant and equipment along with assumptions regarding the age and estimated remaining useful lives of our property, plant and equipment.

Useful lives of property, plant and equipment. We evaluate the appropriateness of estimated useful lives assigned to our property, plant and equipment, based on annual analysis of such useful lives, and revise such lives to the extent warranted by changing facts and circumstances. Any changes in estimated useful lives as a result of this analysis are reflected prospectively beginning in the period in which the study is completed. Our analysis of useful lives in 2018 did not indicate any significant changes in useful lives of our fixed assets. The effect of a one-year decrease in the weighted average remaining useful life of our property, plant and equipment as of December 31, 2018 would be an increase in annual depreciation expense of approximately $571 million. The effect of a one-year increase in the weighted average remaining useful life of our property, plant and equipment as of December 31, 2018 would be a decrease in annual depreciation expense of approximately $854 million.

Depreciation expense related to property, plant and equipment totaled $7.9 billion, $7.8 billion and $5.0 billion for the years ended December 31, 2018, 2017 and 2016, respectively, representing approximately 21%, 21% and 19% of costs and expenses, respectively. Depreciation is recorded using the straight-line composite method over management's estimate of the useful lives of the related assets as listed below:

Cable distribution systems	8-21 years
Customer premise equipment and installations	3-8 years
Vehicles and equipment	4-9 years
Buildings and improvements	15-40 years
Furniture, fixtures and equipment	2-10 years

Intangible assets

Valuation and impairment of franchises. The net carrying value of franchises as of both December 31, 2018 and 2017 was approximately $67.3 billion (representing 46% of total assets). For more information and a complete discussion of how we value and test franchise assets for impairment, see Note 5 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

We perform an impairment assessment of franchise assets annually or more frequently as warranted by events or changes in circumstances. We performed a qualitative assessment in 2018. Our assessment included consideration of a fair value appraisal performed for tax purposes in the beginning of 2018 as of a December 31, 2017 valuation date (the "Appraisal") along with a multitude of factors that affect the fair value of our franchise assets. Examples of such factors include environmental and competitive changes within our operating footprint, actual and projected operating performance, the consistency of our operating margins, equity and debt market trends, including changes in our market capitalization, and changes in our regulatory and political landscape, among other factors. Based on our assessment, we concluded that it was more likely than not that the estimated fair values of our franchise assets equals or exceeds their carrying values and that a quantitative impairment test is not required.

The Appraisal indicated that the fair value of our franchise assets exceeded carrying value by approximately 69% in the aggregate. At our unit of accounting level for franchise asset impairment testing, the amount by which fair value exceeded carrying value varied based on the extent to which the unit of accounting was comprised of operations acquired in 2016. For units of accounting comprised entirely or substantially of newly-acquired operations, the Appraisal fair value exceeded carrying value by a range of 21% to 70% due to the recency of the Transactions, while fair value for units of accounting comprised of at least 25% Legacy Charter operations, exceeded carrying value by a range of 54% to 289%.

Valuation and impairment of goodwill. The net carrying value of goodwill as of both December 31, 2018 and 2017 was approximately $29.6 billion (representing 20% of total assets). For more information and a complete discussion on how we test goodwill for impairment, see Note 5 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data." We perform our impairment assessment of goodwill annually as of November 30. As with our franchise impairment testing, we elected to perform a qualitative assessment of goodwill in 2018 which included the fair value Appraisal and other factors described above. Based on the Appraisal, we determined that the fair value of our goodwill exceeded carrying value by approximately 18%. Given the completion of the assessment and absence of significant adverse changes in factors impacting our fair value estimates, we concluded that it is more likely than not that our goodwill is not impaired.

Valuation, impairment and amortization of customer relationships. The net carrying value of customer relationships as of December 31, 2018 and 2017 was approximately $9.6 billion (representing 7% of total assets) and $12.0 billion (representing 8% of total assets), respectively. Amortization expense related to customer relationships for the years ended December 31, 2018, 2017 and 2016 was approximately $2.4 billion, $2.7 billion and $1.9 billion, respectively. No impairment of customer relationships was recorded in the years ended December 31, 2018, 2017 and 2016. For more information and a complete discussion on our valuation methodology and amortization method, see Note 5 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Income taxes

In determining our tax provision for financial reporting purposes, we establish a reserve for uncertain tax positions unless such positions are determined to be "more likely than not" of being sustained upon examination, based on their technical merits. In evaluating whether a tax position has met the more-likely-than-not recognition threshold, we presume the position will be examined by the appropriate taxing authority that has full knowledge of all relevant information. A tax position that meets the more-likely-

than-not recognition threshold is measured to determine the amount of benefit to be recognized in our financial statements. The tax position is measured as the largest amount of benefit that has a greater than 50% likelihood of being realized when the position is ultimately resolved. There is considerable judgment involved in determining whether positions taken on the tax return are "more likely than not" of being sustained. We adjust our uncertain tax reserve estimates periodically because of ongoing examinations by, and settlements with, the various taxing authorities, as well as changes in tax laws, regulations and interpretations.

No tax years for Charter or Charter Holdco, our indirect parent companies, for income tax purposes, are currently under examination by the IRS. Charter's 2016 through 2018 tax years remain open for examination and assessment. Legacy Charter's tax years ending 2015 through the short period return dated May 17, 2016 remain subject to examination and assessment. Years prior to 2015 remain open solely for purposes of examination of Legacy Charter's loss and credit carryforwards. The IRS is currently examining Charter Holdings' income tax returns for 2016. Charter Holdings' 2017 and 2018 tax years remain open for examination and assessment. The IRS is currently examining Legacy TWC's income tax returns for 2011 through 2014. Legacy TWC's tax year 2015 remains subject to examination and assessment. Prior to Legacy TWC's separation from Time Warner Inc. ("Time Warner") in March 2009 (the "Separation"), Legacy TWC was included in the consolidated U.S. federal and certain state income tax returns of Time Warner. The IRS is currently examining Time Warner's 2008 through 2010 income tax returns. We do not anticipate that these examinations will have a material impact on our consolidated financial position or results of operations. In addition, we are also subject to ongoing examinations of our tax returns by state and local tax authorities for various periods. Activity related to these state and local examinations did not have a material impact on our consolidated financial position or results of operations during the year ended December 31, 2018, nor do we anticipate a material impact in the future.

Litigation

Legal contingencies have a high degree of uncertainty. When a loss from a contingency becomes estimable and probable, a reserve is established. The reserve reflects management's best estimate of the probable cost of ultimate resolution of the matter and is revised as facts and circumstances change. A reserve is released when a matter is ultimately brought to closure or the statute of limitations lapses. We have established reserves for certain matters. Although these matters are not expected individually to have a material adverse effect on our consolidated financial condition, results of operations or liquidity, such matters could have, in the aggregate, a material adverse effect on our consolidated financial condition, results of operations or liquidity.

Programming agreements

We exercise judgment in estimating programming expense associated with certain video programming contracts. Our policy is to record video programming costs based on the substance of our contractual agreements with our programming vendors, which are generally multi-year agreements that provide for us to make payments to the programming vendors at agreed upon market rates based on the number of customers to which we provide the programming service. If a programming contract expires prior to the parties' entry into a new agreement and we continue to distribute the service, we estimate the programming costs during the period there is no contract in place. In doing so, we consider the previous contractual rates, inflation and the status of the negotiations in determining our estimates. When the programming contract terms are finalized, an adjustment to programming expense is recorded, if necessary, to reflect the terms of the new contract. We also make estimates in the recognition of programming expense related to other items including the allocation of consideration exchanged between the parties among the various items in multiple-element transactions.

Judgment is also involved when we enter into agreements that result in us receiving cash consideration from the programming vendor, usually in the form of advertising sales, channel positioning fees, launch support or marketing support. In these situations, we must determine based upon facts and circumstances if such cash consideration should be recorded as revenue, a reduction in programming expense or a reduction in another expense category (e.g., marketing).

Pension plans

We sponsor two qualified defined benefit pension plans, the TWC Pension Plan and the TWC Union Pension Plan (collectively, the "TWC Pension Plans"), that provide pension benefits to a majority of Legacy TWC employees. We also provide a nonqualified defined benefit pension plan for certain employees under the TWC Excess Pension Plan. As of December 31, 2018, the accumulated benefit obligation and fair value of plan assets for the TWC Pension Plans was $3.0 billion and $2.9 billion, respectively, and the net underfunded liability of the TWC Pension Plans was recorded as a $1 million noncurrent asset, $4 million current liability and $95 million long-term liability. As of December 31, 2017, the accumulated benefit obligation and fair value of plan assets for the TWC Pension Plans was $3.6 billion and $3.3 billion, respectively, and the net underfunded liability of the TWC Pension Plans was recorded as a $1 million noncurrent asset, $5 million current liability and $292 million long-term liability.

Pension benefits are based on formulas that reflect the employees' years of service and compensation during their employment period. Actuarial gains or losses are changes in the amount of either the benefit obligation or the fair value of plan assets resulting from experience different from that assumed or from changes in assumptions. We have elected to follow a mark-to-market pension accounting policy for recording the actuarial gains or losses annually during the fourth quarter, or earlier if a remeasurement event occurs during an interim period. We use a December 31 measurement date for our pension plans.

We recognized net periodic pension benefits of $192 million, $1 million and $813 million in 2018, 2017 and 2016, respectively. Net periodic pension benefit or expense is determined using certain assumptions, including the expected long-term rate of return on plan assets, discount rate and mortality assumptions. We determined the discount rate used to compute pension expense based on the yield of a large population of high-quality corporate bonds with cash flows sufficient in timing and amount to settle projected future defined benefit payments. In developing the expected long-term rate of return on assets, we considered the current pension portfolio's composition, past average rate of earnings, and our asset allocation targets. We used a discount rate of 3.68% from January 1, 2018 to September 30, 2018 and 4.24% from October 1, 2018 to December 31, 2018 to compute2018 pension expense. A decrease in the discount rate of 25 basis points would result in a $137 million increase in our pension plan benefit obligation as of December 31, 2018 and net periodic pension expense recognized in 2018 under our mark-to-market accounting policy. Our expected long-term rate of return on plan assets used to compute 2018 pension expense was 5.75%. A decrease in the expected long-term rate of return of 25 basis points, from 5.75% to 5.50%, while holding all other assumptions constant, would result in an increase in our 2019 net periodic pension expense of approximately $7 million. See Note 18 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data" for additional discussion on these assumptions.

Results of Operations

The following table sets forth the consolidated statements of operations for the periods presented (dollars in millions, except per share data):

	Year Ended December 31,		
	2018	2017	2016
Revenues	$ 43,620	$ 41,578	$ 29,003
Costs and Expenses:			
Operating costs and expenses (exclusive of items shown separately below)	27,891	26,560	18,670
Depreciation and amortization	10,307	10,579	6,902
Other operating expenses, net	230	444	722
	38,428	37,583	26,294
Income from operations	5,192	3,995	2,709
Other Expenses:			
Interest expense, net	(3,579)	(3,115)	(2,123)
Loss on extinguishment of debt	—	(40)	(111)
Gain (loss) on financial instruments, net	(110)	69	89
Other pension benefits	192	1	899
Other expense, net	(46)	(4)	(3)
	(3,543)	(3,089)	(1,249)
Income before income taxes	1,649	906	1,460
Income tax expense	(16)	(23)	(3)
Consolidated net income	1,633	883	1,457
Less: Net income attributable to noncontrolling interests	(1)	(1)	(1)
Net income attributable to CCO Holdings member	$ 1,632	$ 882	$ 1,456

Revenues. Total revenues grew $2.0 billion or 4.9% during the year ended December 31, 2018 as compared to 2017 and grew $12.6 billion or 43.4% during the year ended December 31, 2017 as compared to 2016. Revenue growth primarily reflects increases in the number of residential Internet and commercial business customers, price adjustments as well as the launch of our mobile service in 2018 offset by a decrease in limited basic video customers. The Transactions increased revenues for the year ended

2017 as compared to 2016 by approximately $11.4 billion. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, total revenue growth was 3.9% for the year ended December 31, 2017 as compared to the year ended December 31, 2016.

Revenues by service offering were as follows (dollars in millions; all percentages are calculated using whole numbers. Minor differences may exist due to rounding):

	Years ended December 31,						
	Actual					Pro Forma	
	2018	2017	2016	2018 vs. 2017 Growth	2017 vs. 2016 Growth	2016	2017 vs. 2016 Growth
Video	$ 17,348	$ 16,621	$ 11,955	4.4 %	39.0%	$ 16,370	1.5 %
Internet	15,181	14,101	9,270	7.7 %	52.1%	12,684	11.2 %
Voice	2,114	2,542	2,005	(16.8)%	26.8%	2,905	(12.5)%
Residential revenue	34,643	33,264	23,230	4.1 %	43.2%	31,959	4.1 %
Small and medium business	3,665	3,547	2,384	3.3 %	48.8%	3,283	8.0 %
Enterprise	2,528	2,373	1,539	6.5 %	54.1%	2,175	9.1 %
Commercial revenue	6,193	5,920	3,923	4.6 %	50.9%	5,458	8.5 %
Advertising sales	1,785	1,510	1,235	18.2 %	22.3%	1,696	(10.9)%
Mobile	106	—	—	NM	NM	—	NM
Other	893	884	615	1.0 %	43.7%	910	(2.9)%
	$ 43,620	$ 41,578	$ 29,003	4.9 %	43.4%	$ 40,023	3.9 %

Video revenues consist primarily of revenues from basic and digital video services provided to our residential customers, as well as franchise fees, equipment service fees and video installation revenue. The increases in video revenues are attributable to the following (dollars in millions):

	2018 compared to 2017	2017 compared to 2016
Increase related to rate changes	$ 1,089	$ 408
Decrease in average residential video customers	(298)	(205)
Increase (decrease) in VOD and pay-per-view	(64)	35
TWC Transaction	—	3,800
Bright House Transaction	—	628
	$ 727	$ 4,666

The increases related to rate changes were primarily due to price adjustments including promotional roll-off, service level changes and bundle revenue allocation. Residential video customers decreased by 296,000 and 301,000 in 2018 and 2017, respectively.

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, the increase in video revenues is attributable to the following (dollars in millions):

	2017 compared to 2016
Increase related to rate changes	$ 513
Increase in VOD and pay-per-view	32
Decrease in average residential video customers	(294)
	$ 251

The increases in Internet revenues from our residential customers are attributable to the following (dollars in millions):

	2018 compared to 2017	2017 compared to 2016
Increase in average residential Internet customers	$ 695	$ 574
Increase related to rate changes	385	418
TWC Transaction	—	3,267
Bright House Transaction	—	572
	$ 1,080	$ 4,831

Residential Internet customers grew by 1,107,000 and 1,159,000 in 2018 and 2017, respectively. The increases related to rate changes were primarily due to price adjustments including promotional roll-off and bundle revenue allocation.

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, the increase in Internet revenues is attributable to the following (dollars in millions):

	2017 compared to 2016
Increase in average residential Internet customers	$ 818
Increase related to rate changes	599
	$ 1,417

The changes in voice revenues from our residential customers are attributable to the following (dollars in millions):

	2018 compared to 2017	2017 compared to 2016
Decrease related to rate changes	$ (408)	$ (312)
Increase (decrease) in average residential voice customers	(20)	20
TWC Transaction	—	707
Bright House Transaction	—	122
	$ (428)	$ 537

The decreases related to rate changes were primarily due to value-based pricing and bundle revenue allocation. Residential voice customers decreased by 289,000 and grew by 93,000 in 2018 and 2017, respectively.

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, the decrease in voice revenues is attributable to the following (dollars in millions):

	2017 compared to 2016
Decrease related to rate changes	$ (412)
Increase in average residential voice customers	49
	$ (363)

The increases in small and medium business commercial revenues are attributable to the following (dollars in millions):

	2018 compared to 2017	2017 compared to 2016
Increase in small and medium business customers	$ 377	$ 279
Decrease related to rate changes	(259)	(109)
TWC Transaction	—	860
Bright House Transaction	—	133
	$ 118	$ 1,163

Small and medium business PSUs increased by 337,000 and 340,000 in 2018 and 2017, respectively. The decreases related to rate changes were primarily due to value pricing related to SPP, net of promotional roll-off and price adjustments.

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, the increase in small and medium business commercial revenues is attributable to the following (dollars in millions):

	2017 compared to 2016
Increase in small and medium business customers	$ 373
Decrease related to rate changes	(109)
	$ 264

Enterprise revenues increased $155 million during the year ended December 31, 2018 as compared to the corresponding period in 2017 primarily due to growth in customers. Enterprise PSUs increased by 28,000 and 29,000 in 2018 and 2017, respectively. The Transactions increased enterprise commercial revenues for year ended December 31, 2017 as compared to the corresponding prior period by approximately $655 million. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, enterprise revenues increased $198 million during the year ended December 31, 2017 as compared to the corresponding prior period.

Advertising sales revenues consist primarily of revenues from commercial advertising customers, programmers and other vendors, as well as local cable and advertising on regional sports and news channels. Advertising sales revenues increased $275 million during the year ended December 31, 2018 as compared to the corresponding period in 2017 primarily due to an increase in political and continued roll-out of addressability and newer advanced advertising products that allows for more targeted media purchases using our inventory. Advertising sales revenues increased in 2017 as compared to 2016 primarily due to the Transactions. The Transactions increased advertising sales revenues for the year ended December 31, 2017 as compared to the corresponding prior period by $425 million. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, advertising sales revenues decreased $186 million during 2017 as compared to 2016 primarily due to a decrease in political advertising.

Mobile revenues represent approximately $97 million of device revenues and approximately $9 million of service revenues related to our mobile service. As of December 31, 2018, we had 134,000 mobile lines.

Other revenues consist of revenue from regional sports and news channels (excluding intercompany charges or advertising sales on those channels), home shopping, late payment fees, wire maintenance fees and other miscellaneous revenues. The increase during the year ended December 31, 2018 as compared to the corresponding period in 2017 was primarily due to an increase in late payment fees. Other revenues increased in 2017 as compared to 2016 primarily due to the Transactions. The Transactions increased other revenues for the year ended December 31, 2017 as compared to the corresponding prior period by $255 million. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, other revenues decreased $26 million during 2017 as compared to the corresponding prior period primarily due to a settlement incurred in 2016 related to an early contract termination at Legacy TWC and Legacy Bright House.

Operating costs and expenses. The increases in our operating costs and expenses, exclusive of items shown separately in the consolidated statements of operations, are attributable to the following (dollars in millions):

	2018 compared to 2017	2017 compared to 2016
Programming	$ 528	$ 3,562
Regulatory, connectivity and produced content	146	597
Costs to service customers	92	1,928
Marketing	6	900
Mobile	346	—
Other	213	903
	$ 1,331	$ 7,890

Programming costs were approximately $11.1 billion, $10.6 billion and $7.0 billion, representing 40%, 40% and 38% of operating costs and expenses for the years ended December 31, 2018, 2017 and 2016, respectively. Programming costs consist primarily of costs paid to programmers for basic, digital, premium, VOD, and pay-per-view programming. The increase in programming costs is primarily a result of contractual rate adjustments, including renewals and increases in amounts paid for retransmission consents partly offset by lower video customers, pay-per-view and one-time programming benefits during the year ended December 31, 2018. We expect programming expenses will continue to increase due to a variety of factors, including annual increases imposed by programmers with additional selling power as a result of media consolidation, increased demands by owners of broadcast stations for payment for retransmission consent or linking carriage of other services to retransmission consent, and additional programming, particularly new services. We have been unable to fully pass these increases on to our customers and do not expect to be able to do so in the future without a potential loss of customers.

Regulatory, connectivity and produced content increased $146 million during the year ended December 31, 2018 compared to the corresponding period in 2017 primarily due to the adoption of Accounting Standards Update 2014-09 as of January 1, 2018, which results in the reclassification of expenses related to the amortization of up-front fees paid to market and serve customers who reside in MDUs that were recorded in depreciation and amortization expense in the prior-year period to regulatory, connectivity and produced content expenses, as well as higher regulatory fees related to higher revenue. For more information, see Note 19 to the accompanying consolidated financial statements contained in "Item 1. Financial Statements."

Costs to service customers increased $92 million during 2018 as compared to 2017 primarily due to an increase in bad debt expense.

Mobile costs of $346 million for the year ended December 31, 2018 were comprised of mobile launch costs, mobile device costs and mobile service and operating costs.

The increases in other expense are attributable to the following (dollars in millions):

	2018 compared to 2017	2017 compared to 2016
Advertising sales expense	$ 99	$ 242
Property tax and insurance	40	108
Stock compensation expense	24	17
Corporate costs	17	190
Enterprise	13	246
Other	20	100
	$ 213	$ 903

The increases in all categories of operating costs and expenses in 2017 as compared to 2016 was primarily due to the Transactions.

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, the increase in our operating costs and expenses in 2017 as compared to 2016, exclusive of items shown separately in the consolidated statements of operations, is attributable to the following (dollars in millions):

	2017 compared to 2016
Programming	$ 982
Regulatory, connectivity and produced content	(29)
Costs to service customers	(173)
Marketing	72
Other	(160)
	$ 692

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, programming costs were approximately $9.6 billion, representing 37% of total operating costs and expenses for the year ended December 31, 2016. The increase in programming costs on a pro forma basis is primarily a result of contractual rate adjustments, including renewals and increases in amounts paid for retransmission consents and higher pay-per-view events offset by synergies as a result of the Transactions.

Costs to service customers decreased $173 million during 2017 as compared to 2016, on a pro forma basis, assuming the Transactions occurred as of January 1, 2015, primarily due to benefits from combining Legacy TWC and Legacy Bright House into Charter, including lower employee benefit and maintenance costs, higher labor and material capitalization with increases in placement of new customer equipment and improved productivity.

On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, the change in other expense is attributable to the following (dollars in millions):

	2017 compared to 2016
Corporate costs	$ (174)
Stock compensation expense	(34)
Property tax and insurance	(22)
Advertising sales expense	34
Enterprise	26
Other	10
	$ (160)

Corporate costs and stock compensation expense decreased in 2017 as compared to 2016 primarily as a result of lower headcount as a result of integration synergies.

Depreciation and amortization. Depreciation and amortization expense decreased by $272 million and increased by $3.7 billion in 2018 and 2017 as compared to the corresponding prior periods. The decrease during the year ended December 31, 2018 as compared to 2017 was primarily due to a decrease in depreciation and amortization as certain assets acquired from Legacy TWC and Legacy Bright House become fully depreciated offset by an increase in depreciation as a result of more recent capital expenditures. The increase during the year ended December 31, 2017 as compared to 2016 was impacted by additional depreciation and amortization related to the Transactions, inclusive of the incremental amounts as a result of the higher fair values recorded in acquisition accounting.

Other operating expenses, net. The changes in other operating expenses, net are attributable to the following (dollars in millions):

	2018 compared to 2017	2017 compared to 2016
Merger and restructuring costs	$ (254)	$ (357)
Special charges, net	(29)	60
(Gain) loss on sale of assets, net	69	19
	$ (214)	$ (278)

The changes in merger and restructuring costs is primarily due to $70 million, $279 million and $611 million of employee retention and employee termination costs incurred during 2018, 2017 and 2016, respectively.

The changes in special charges, net is primarily due to changes in employee termination costs not related to the Transactions and net amounts of litigation settlements. In 2018 and 2017, special charges, net also includes a $22 million and $83 million charge related to a withdrawal liability from a multiemployer pension plan, respectively.

The increase in loss on sale of assets, net for the year ended December 31, 2018 as compared to the year ended December 31, 2017 is primarily due to an impairment of non-strategic assets. For more information, see Note 13 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Interest expense, net. Net interest expense increased by $464 million in 2018 from 2017 and by $992 million in 2017 from 2016. The increases in 2018 and 2017 as compared to the corresponding prior periods are primarily due to an increase in weighted average debt outstanding of approximately $6.6 billion and $11.6 billion, respectively, primarily as a result of the issuance of notes in 2018 and 2017 for general corporate purposes including distributions to parent companies for stock buybacks. Interest expense associated with debt assumed from Legacy TWC also increased interest expense during the year ended December 31, 2017 compared to the corresponding period in 2016 by approximately $336 million.

Loss on extinguishment of debt. Loss on extinguishment of debt of $40 million and $111 million for the years ended December 31, 2017 and 2016, respectively, primarily represents losses recognized as a result of the repurchase of CCO Holdings notes and amendments to Charter Operating's credit facilities. For more information, see Note 8 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Gain (loss) on financial instruments, net. Gains and losses on financial instruments are recognized due to changes in the fair value of our interest rate and our cross currency derivative instruments, and the foreign currency remeasurement of the fixed-rate British pound sterling denominated notes (the “Sterling Notes”) into U.S. dollars. For more information, see Note 10 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Other pension benefits. Other pension benefits increased by $191 million during 2018 compared to 2017 primarily due to a net remeasurement gain of $122 million recognized in 2018 as opposed to remeasurement losses of $55 million recognized in 2017. Other pension benefits decreased $898 million during 2017 compared to 2016 primarily due to remeasurement losses of $55 million recognized in 2017 as opposed to a pension curtailment gain of $675 million and remeasurement gain of $195 million recognized in 2016. For more information, see Note 18 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Other expense, net. Other expense, net primarily represents equity losses on our equity-method investments. For more information, see Note 6 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Income tax expense. We recognized income tax expense of $16 million, $23 million and $3 million for the years ended December 31, 2018, 2017 and 2016, respectively. For more information, see Note 15 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Net income attributable to noncontrolling interest. Net income attributable to noncontrolling interest relates to our third-party interest in CV of Viera, LLP, a consolidated joint venture in a small cable system in Florida.

Net income attributable to CCO Holdings member. Net income attributable to CCO Holdings member was $1.6 billion, $882 million and $1.5 billion for the years ended December 31, 2018, 2017 and 2016, respectively, primarily as a result of the factors

described above. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, net income attributable to CCO Holdings member was $1.9 billion for the year ended December 31, 2016.

Use of Adjusted EBITDA and Free Cash Flow

We use certain measures that are not defined by U.S. generally accepted accounting principles ("GAAP") to evaluate various aspects of our business. Adjusted EBITDA and free cash flow are non-GAAP financial measures and should be considered in addition to, not as a substitute for, consolidated net income and net cash flows from operating activities reported in accordance with GAAP. These terms, as defined by us, may not be comparable to similarly titled measures used by other companies. Adjusted EBITDA and free cash flow are reconciled to consolidated net income and net cash flows from operating activities, respectively, below.

Adjusted EBITDA eliminates the significant non-cash depreciation and amortization expense that results from the capital-intensive nature of our businesses as well as other non-cash or special items, and is unaffected by our capital structure or investment activities. However, this measure is limited in that it does not reflect the periodic costs of certain capitalized tangible and intangible assets used in generating revenues and our cash cost of financing. These costs are evaluated through other financial measures.

Free cash flow is defined as net cash flows from operating activities, less capital expenditures and changes in accrued expenses related to capital expenditures.

Management and Charter's board of directors use Adjusted EBITDA and free cash flow to assess our performance and our ability to service our debt, fund operations and make additional investments with internally generated funds. In addition, Adjusted EBITDA generally correlates to the leverage ratio calculation under our credit facilities or outstanding notes to determine compliance with the covenants contained in the facilities and notes (all such documents have been previously filed with the SEC). For the purpose of calculating compliance with leverage covenants, we use Adjusted EBITDA, as presented, excluding certain expenses paid by our operating subsidiaries to other Charter entities. Our debt covenants refer to these expenses as management fees, which fees were in the amount of $1.1 billion, $1.1 billion and $930 million for the years ended December 31, 2018, 2017 and 2016, respectively.

	Years ended December 31,		
	2018	2017	2016
		Actual	
Consolidated net income	$ 1,633	$ 883	$ 1,457
Plus: Interest expense, net	3,579	3,115	2,123
Income tax expense	16	23	3
Depreciation and amortization	10,307	10,579	6,902
Stock compensation expense	285	261	244
Loss on extinguishment of debt	—	40	111
(Gain) loss on financial instruments, net	110	(69)	(89)
Other pension benefits	(192)	(1)	(899)
Other, net	276	448	725
Adjusted EBITDA	$ 16,014	$ 15,279	$ 10,577
Net cash flows from operating activities	$ 11,657	$ 11,608	$ 8,765
Less: Purchases of property, plant and equipment	(9,109)	(8,681)	(5,325)
Change in accrued expenses related to capital expenditures	(470)	820	603
Free cash flow	$ 2,078	$ 3,747	$ 4,043

	Year Ended December 31, 2016
	Pro Forma
Consolidated net income	$ 1,891
Plus: Interest expense, net	2,892
Income tax expense	3
Depreciation and amortization	9,547
Stock compensation expense	295
Loss on extinguishment of debt	111
Gain on financial instruments, net	(89)
Other pension benefits	(915)
Other, net	715
Adjusted EBITDA	$ 14,450

Liquidity and Capital Resources

Overview

We have significant amounts of debt. The principal amount of our debt as of December 31, 2018 was $72.0 billion, consisting of $10.0 billion of credit facility debt, $43.0 billion of investment grade senior secured notes and $18.9 billion of high-yield senior unsecured notes. Our business requires significant cash to fund principal and interest payments on our debt.

Our projected cash needs and projected sources of liquidity depend upon, among other things, our actual results, and the timing and amount of our expenditures. As we launch our new mobile services, we expect an initial funding period to grow a new product as well as negative working capital impacts from the timing of device-related cash flows when we provide the handset or tablet to customers pursuant to equipment installment plans. Free cash flow was $2.1 billion, $3.7 billion and $4.0 billion for the years ended December 31, 2018, 2017 and 2016, respectively. The decrease in free cash flow in 2018 as compared to 2017 is primarily due to an unfavorable change in working capital as well as an increase in cash paid for interest and capital expenditures. As of December 31, 2018, the amount available under our credit facilities was approximately $2.8 billion and cash on hand was approximately $300 million. We expect to utilize free cash flow, cash on hand and availability under our credit facilities as well as future refinancing transactions to further extend the maturities of our obligations. The timing and terms of any refinancing transactions will be subject to market conditions among other considerations. Additionally, we may, from time to time, and depending on market conditions and other factors, use cash on hand and the proceeds from securities offerings or other borrowings to retire our debt through open market purchases, privately negotiated purchases, tender offers or redemption provisions. We believe we have sufficient liquidity from cash on hand, free cash flow and Charter Operating's revolving credit facility as well as access to the capital markets to fund our projected cash needs.

We continue to evaluate the deployment of our cash on hand and anticipated future free cash flow including to invest in our business growth and other strategic opportunities, including mergers and acquisitions as well as distributions to our parent companies for stock repurchases and dividends. Charter's target leverage of net debt to the last twelve months Adjusted EBITDA remains at 4 to 4.5 times, and up to 3.5 times at the Charter Operating level. Our leverage ratio was 4.5 as of December 31, 2018. We expect to increase the total amount of our indebtedness to maintain leverage within Charter's target leverage range. During the years ended December 31, 2018, 2017 and 2016, Charter purchased approximately 14.1 million, 33.4 million and 5.1 million shares, respectively, of Charter Class A common stock for approximately $4.3 billion, $11.6 billion and $1.3 billion, respectively.

In December 2017, Charter and A/N entered into an amendment to the letter agreement (the "Letter Agreement") that requires A/N to sell to Charter or to Charter Holdings, on a monthly basis, a number of shares of Charter Class A common stock or Charter Holdings common units that represents a pro rata participation by A/N and its affiliates in any repurchases of shares of Charter Class A common stock from persons other than A/N effected by Charter during the immediately preceding calendar month, at a purchase price equal to the average price paid by Charter for the shares repurchased from persons other than A/N during such immediately preceding calendar month. A/N and Charter both have the right to terminate or suspend the pro rata repurchase arrangement on a prospective basis once Charter or Charter Holdings have repurchased shares of Class A common stock or Charter Holdings common units from A/N and its affiliates for an aggregate purchase price of $400 million, which threshold has been reached. Charter Holdings purchased from A/N 2.1 million, 4.8 million and 0.8 million Charter Holdings common units at an average price per unit of $308.90, $347.03 and $289.83, or $656 million, $1.7 billion and $218 million during the years ended December 31, 2018, 2017 and 2016, respectively.

As of December 31, 2018, Charter had remaining board authority to purchase an additional $480 million of Charter's Class A common stock and/or Charter Holdings common units. Charter is not obligated to acquire any particular amount of common stock, and the timing of any purchases that may occur cannot be predicted and will largely depend on market conditions and other potential uses of capital. Purchases may include open market purchases, tender offers or negotiated transactions. To the extent such purchases occur, CCO Holdings and its subsidiaries are the primary source for funding such purchases through distributions to their parent companies.

As possible acquisitions, swaps or dispositions arise, we actively review them against our objectives including, among other considerations, improving the operational efficiency, geographic clustering of assets, product development or technology capabilities of our business and achieving appropriate return targets, and we may participate to the extent we believe these possibilities present attractive opportunities. However, there can be no assurance that we will actually complete any acquisitions, dispositions or system swaps, or that any such transactions will be material to our operations or results.

Recent Events

In January 2019, Charter Operating and Charter Communications Operating Capital Corp. jointly issued $1.25 billion aggregate principal amount of 5.050% senior notes due 2029 at a price of 99.935% of the aggregate principal amount and an additional $750 million aggregate principal amount of 5.75% senior notes due 2048 at a price of 94.970% of the aggregate principal amount. The net proceeds will be used to pay related fees and expenses and for general corporate purposes, including distributions to our parent companies to fund buybacks of Charter Class A common stock and Charter Holdings common units as well as to repay certain indebtedness, including to repay at maturity Time Warner Cable, LLC's 8.75% senior notes due 2019.

In January 2019, Charter Operating entered into an amendment to its Credit Agreement raising an additional $1.7 billion term loan A-3 and increasing revolving loan capacity to $4.75 billion as well as extending the maturities on a portion of the term loan A-2 and a portion of the revolving loan to 2024. Pricing on the new term loan A-3 is LIBOR plus 1.50%.

Free Cash Flow

Free cash flow decreased $1.7 billion and $296 million during the years ended December 31, 2018 and 2017 compared to the corresponding prior periods, respectively, due to the following.

	2018 compared to 2017	2017 compared to 2016
Increase in Adjusted EBITDA	$ 735	$ 4,702
Decrease in merger and restructuring costs	210	158
Decrease in working capital, excluding change in accrued interest, net of effects from acquisitions	(1,703)	(595)
Increase in cash paid for interest, net	(449)	(1,215)
Increase in capital expenditures	(428)	(3,356)
Other, net	(34)	10
	$ (1,669)	$ (296)

Free cash flow was reduced by $594 million due to mobile during the year ended December 31, 2018 compared to the corresponding prior period with impacts negatively affecting working capital, capital expenditures and Adjusted EBITDA. The decrease in working capital during the year ended December 31, 2018 compared to the corresponding prior period, excluding change in accrued interest, is primarily due to the timing of fourth quarter 2017 capital expenditures and other payments.

Contractual Obligations

The following table summarizes our payment obligations as of December 31, 2018 under our long-term debt and certain other contractual obligations and commitments inclusive of parent company obligations and commitments, the expense of which are pushed down to us (dollars in millions).

	Payments by Period				
	Total	**Less than 1 year**	**1-3 years**	**3-5 years**	**More than 5 years**
Long-Term Debt Principal Payments [a]	$ 71,961	$ 3,457	$ 6,114	$ 11,847	$ 50,543
Long-Term Debt Interest Payments [b]	44,573	3,800	7,035	6,329	27,409
Capital and Operating Lease Obligations [c]	1,611	296	479	332	504
Programming Minimum Commitments [d]	191	124	67	—	—
Other [e]	16,278	2,209	4,693	1,047	8,329
	$ 134,614	$ 9,886	$ 18,388	$ 19,555	$ 86,785

(a) The table presents maturities of long-term debt outstanding as of December 31, 2018. Refer to Notes 8 and 17 to our accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data" for a description of our long-term debt and other contractual obligations and commitments.

(b) Interest payments on variable debt are estimated using amounts outstanding at December 31, 2018 and the average implied forward LIBOR rates applicable for the quarter during the interest rate reset based on the yield curve in effect at December 31, 2018. Actual interest payments will differ based on actual LIBOR rates and actual amounts outstanding for applicable periods.

(c) We lease certain facilities and equipment under noncancelable capital and operating leases. Capital lease obligations represented $111 million of total capital and operating lease obligations as of December 31, 2018. Lease and rental costs charged to expense for the years ended December 31, 2018, 2017 and 2016, were $382 million, $321 million and $215 million, respectively.

(d) We pay programming fees under multi-year contracts typically based on a flat fee per customer, which may be fixed for the term, or may in some cases escalate over the term. Programming costs included in the accompanying statement of operations were approximately $11.1 billion, $10.6 billion and $7.0 billion, for the years ended December 31, 2018, 2017 and 2016, respectively. Certain of our programming agreements are based on a flat fee per month or have guaranteed minimum payments. The table sets forth the aggregate guaranteed minimum commitments under our programming contracts.

(e) "Other" represents other guaranteed minimum commitments, including rights negotiated directly with content owners for distribution on company-owned channels or networks, commitments related to our role as an advertising and distribution sales agent for third party-owned channels or networks, commitments to our customer premise equipment and device vendors and contractual obligations related to third-party network augmentation.

The following items are not included in the contractual obligations table because the obligations are not fixed and/or determinable due to various factors discussed below. However, we incur these costs as part of our operations:

- We rent utility poles used in our operations. Generally, pole rentals are cancelable on short notice, but we anticipate that such rentals will recur. Rent expense incurred for pole rental attachments for the years ended December 31, 2018, 2017 and 2016 was $171 million, $167 million and $115 million, respectively.
- We pay franchise fees under multi-year franchise agreements based on a percentage of revenues generated from video service per year. We also pay other franchise related costs, such as public education grants, under multi-year agreements. Franchise fees and other franchise-related costs included in the accompanying statement of operations were $747 million, $705 million and $534 million for the years ended December 31, 2018, 2017 and 2016, respectively.
- We have $358 million in letters of credit, of which $138 million is secured under the Charter Operating credit facility, primarily to our various casualty carriers as collateral for reimbursement of workers' compensation, auto liability and general liability claims.
- Minimum pension funding requirements have not been presented in the table above as such amounts have not been determined beyond 2018. We made no cash contributions to the qualified pension plans in 2018; however, we are permitted to make discretionary cash contributions to the qualified pension plans in 2019. For the nonqualified pension plan, we contributed $6 million during 2018 and will continue to make contributions in 2019 to the extent benefits are paid.

See "Part I. Item 1. Business — Transaction-Related Commitments" for a listing of commitments as a result of the Transactions.

Historical Operating, Investing, and Financing Activities

Cash and Cash Equivalents. We held $300 million and $330 million in cash and cash equivalents as of December 31, 2018 and 2017, respectively.

Operating Activities. Net cash provided by operating activities increased $49 million during the year ended December 31, 2018 compared to the year ended December 31, 2017, primarily due to an increase in Adjusted EBITDA of $735 million and a decrease in merger and restructuring costs of $210 million offset by changes in working capital, excluding the change in accrued interest and accrued expenses related to capital expenditures, that used $413 million more cash and an increase in cash paid for interest, net of $449 million.

Net cash provided by operating activities increased $2.8 billion during the year ended December 31, 2017 compared to the year ended December 31, 2016, primarily due to an increase in Adjusted EBITDA of $4.7 billion offset by an increase in cash paid for interest, net of $1.2 billion as a result of the Transactions and long-term debt issued for general corporate purposes including distributions to our parent companies for stock buybacks as well as changes in operating assets and liabilities, excluding the change in accrued interest and accrued expenses related to capital expenditures, that provided $812 million less cash during the year ended December 31, 2017.

Investing Activities. Net cash used in investing activities for the years ended December 31, 2018, 2017 and 2016, was $9.7 billion, $8.0 billion and $4.8 billion, respectively. The changes in cash used were primarily due to increases in capital expenditures and changes in accrued expenses related to capital expenditures.

Financing Activities. Net cash used in financing activities decreased $2.6 billion during the year ended December 31, 2018 compared to the year ended December 31, 2017 primarily due to a decrease in distributions to parent companies offset by a decrease in the amount by which borrowings of long-term debt exceeded repayments.

Net cash used in financing activities increased $1.9 billion during the year ended December 31, 2017 compared to the year ended December 31, 2016 primarily due to an increase in distributions to parent companies offset by an increase in the amount by which borrowings of long-term debt exceeded repayments.

Capital Expenditures

We have significant ongoing capital expenditure requirements. Capital expenditures were $9.1 billion, $8.7 billion and $5.3 billion for the years ended December 31, 2018, 2017 and 2016, respectively. The increase in 2018 compared to 2017 was primarily due to higher scalable infrastructure related to the timing of spend and planned product improvements, higher support capital investments due to the timing of spend and mobile and higher line extensions as a result of regulatory merger conditions, offset by a decrease in CPE expenditures due to timing. On a pro forma basis, assuming the Transactions occurred as of January 1, 2015, the increase during 2017 as compared to 2016 was driven by higher CPE purchases for SPP, our all-digital initiative and early inventory purchases to operationally stage 2018 activity, higher support capital investments and line extensions. See the table below for more details.

We currently expect capital expenditures, excluding capital expenditures related to mobile, to be approximately $7 billion in 2019, versus $8.9 billion in 2018. Our expectation for lower capital expenditures in 2019 versus 2018, is primarily driven by our expectation for lower customer premise equipment spend with the completion of our all-digital conversion, lower scalable infrastructure spend with the completion of the roll-out of DOCSIS 3.1 technology across our footprint and lower support capital spend with the substantial completion of the integration of Legacy TWC and Legacy Bright House. The actual amount of our capital expenditures in 2019 will depend on a number of factors including further spend related to product development and growth rates of both our residential and commercial businesses.

Our capital expenditures are funded primarily from cash flows from operating activities and borrowings on our credit facility. In addition, our accrued liabilities related to capital expenditures decreased $470 million and increased $820 million and $603 million for the years ended December 31, 2018, 2017 and 2016, respectively.

The following tables present our major capital expenditures categories on an actual and pro forma basis, assuming the Transactions occurred as of January 1, 2015, in accordance with National Cable and Telecommunications Association ("NCTA") disclosure guidelines for the years ended December 31, 2018, 2017 and 2016. These disclosure guidelines are not required disclosures under GAAP, nor do they impact our accounting for capital expenditures under GAAP (dollars in millions):

	Year ended December 31,		
	2018	2017	2016
	Actual		
Customer premise equipment [(a)]	$ 3,124	$ 3,385	$ 1,864
Scalable infrastructure [(b)]	2,227	2,007	1,390
Line extensions [(c)]	1,373	1,176	721
Upgrade/rebuild [(d)]	704	572	456
Support capital [(e)]	1,681	1,541	894
Total capital expenditures	$ 9,109	$ 8,681	$ 5,325
Capital expenditures included in total related to:			
Commercial services	$ 1,313	$ 1,305	$ 824
All-digital transition	$ 344	$ 122	$ —
Mobile	$ 242	$ —	$ —

	Year ended December 31, 2016
	Pro Forma
Customer premise equipment [(a)]	$ 2,761
Scalable infrastructure [(b)]	2,009
Line extensions [(c)]	1,005
Upgrade/rebuild [(d)]	610
Support capital [(e)]	1,160
Total capital expenditures	$ 7,545

(a) Customer premise equipment includes costs incurred at the customer residence to secure new customers and revenue generating units, including customer installation costs and customer premise equipment (e.g., set-top boxes and cable modems).

(b) Scalable infrastructure includes costs not related to customer premise equipment, to secure growth of new customers and revenue generating units, or provide service enhancements (e.g., headend equipment).

(c) Line extensions include network costs associated with entering new service areas (e.g., fiber/coaxial cable, amplifiers, electronic equipment, make-ready and design engineering).

(d) Upgrade/rebuild includes costs to modify or replace existing fiber/coaxial cable networks, including betterments.

(e) Support capital includes costs associated with the replacement or enhancement of non-network assets due to technological and physical obsolescence (e.g., non-network equipment, land, buildings and vehicles).

Debt

As of December 31, 2018, the accreted value of our total debt was approximately$72.8 billion, as summarized below (dollars in millions):

	December 31, 2018			
	Principal Amount	Accreted Value [(a)]	Interest Payment Dates	Maturity Date [(b)]
CCO Holdings, LLC:				
5.250% senior notes due 2021	$ 500	$ 498	3/15 & 9/15	3/15/2021
5.250% senior notes due 2022	1,250	1,238	3/30 & 9/30	9/30/2022
5.125% senior notes due 2023	1,000	994	2/15 & 8/15	2/15/2023
4.000% senior notes due 2023	500	496	3/1 & 9/1	3/1/2023
5.125% senior notes due 2023	1,150	1,144	5/1 & 11/1	5/1/2023

5.750% senior notes due 2023	500	497	3/1 & 9/1	9/1/2023
5.750% senior notes due 2024	1,000	993	1/15 & 7/15	1/15/2024
5.875% senior notes due 2024	1,700	1,688	4/1 & 10/1	4/1/2024
5.375% senior notes due 2025	750	745	5/1 & 11/1	5/1/2025
5.750% senior notes due 2026	2,500	2,467	2/15 & 8/15	2/15/2026
5.500% senior notes due 2026	1,500	1,490	5/1 & 11/1	5/1/2026
5.875% senior notes due 2027	800	795	5/1 & 11/1	5/1/2027
5.125% senior notes due 2027	3,250	3,219	5/1 & 11/1	5/1/2027
5.000% senior notes due 2028	2,500	2,466	2/1 & 8/1	2/1/2028
Charter Communications Operating, LLC:				
3.579% senior notes due 2020	2,000	1,992	1/23 & 7/23	7/23/2020
4.464% senior notes due 2022	3,000	2,982	1/23 & 7/23	7/23/2022
Senior floating rate notes due 2024	900	903	2/1, 5/1, 8/1 & 11/1	2/1/2024
4.500% senior notes due 2024	1,100	1,091	2/1 & 8/1	2/1/2024
4.908% senior notes due 2025	4,500	4,466	1/23 & 7/23	7/23/2025
3.750% senior notes due 2028	1,000	986	2/15 & 8/15	2/15/2028
4.200% senior notes due 2028	1,250	1,240	3/15 & 9/15	3/15/2028
6.384% senior notes due 2035	2,000	1,982	4/23 & 10/23	10/23/2035
5.375% senior notes due 2038	800	785	4/1 & 10/1	4/1/2038
6.484% senior notes due 2045	3,500	3,467	4/23 & 10/23	10/23/2045
5.375% senior notes due 2047	2,500	2,506	5/1 & 11/1	5/1/2047
5.750% senior notes due 2048	1,700	1,683	4/1 & 10/1	4/1/2048
6.834% senior notes due 2055	500	495	4/23 & 10/23	10/23/2055
Credit facilities	10,038	9,959		Varies
Time Warner Cable, LLC:				
8.750% senior notes due 2019	1,250	1,260	2/14 & 8/14	2/14/2019
8.250% senior notes due 2019	2,000	2,030	4/1 & 10/1	4/1/2019
5.000% senior notes due 2020	1,500	1,541	2/1 & 8/1	2/1/2020
4.125% senior notes due 2021	700	721	2/15 & 8/15	2/15/2021
4.000% senior notes due 2021	1,000	1,033	3/1 & 9/1	9/1/2021
5.750% sterling senior notes due 2031 [c]	796	855	6/2	6/2/2031
6.550% senior debentures due 2037	1,500	1,680	5/1 & 11/1	5/1/2037
7.300% senior debentures due 2038	1,500	1,780	1/1 & 7/1	7/1/2038
6.750% senior debentures due 2039	1,500	1,719	6/15 & 12/15	6/15/2039
5.875% senior debentures due 2040	1,200	1,256	5/15 & 11/15	11/15/2040
5.500% senior debentures due 2041	1,250	1,258	3/1 & 9/1	9/1/2041
5.250% sterling senior notes due 2042 [d]	827	798	7/15	7/15/2042
4.500% senior debentures due 2042	1,250	1,140	3/15 & 9/15	9/15/2042
Time Warner Cable Enterprises LLC:				
8.375% senior debentures due 2023	1,000	1,191	3/15 & 9/15	3/15/2023
8.375% senior debentures due 2033	1,000	1,298	7/15 & 1/15	7/15/2033
	$ 71,961	$ 72,827		

(a) The accreted values presented in the table above represent the principal amount of the debt adjusted for original issue discount or premium at the time of sale, deferred financing costs, and, in regards to the Legacy TWC debt assumed, fair value premium adjustments as a result of applying acquisition accounting plus the accretion of those amounts to the balance sheet date. However, the amount that is currently payable if the debt becomes immediately due is equal to the principal amount of the debt. In regards to the Sterling Notes, the principal amount of the debt and any premium or discount is remeasured into US dollars as of each balance sheet date. We have availability under our credit facilities of approximately $2.8 billion as of December 31, 2018.

(b) In general, the obligors have the right to redeem all of the notes set forth in the above table in whole or in part at their option, beginning at various times prior to their stated maturity dates, subject to certain conditions, upon the payment of the outstanding principal amount (plus a specified redemption premium) and all accrued and unpaid interest.

(c) Principal amount includes £625 million valued at $796 million as of December 31, 2018 using the exchange rate as of December 31, 2018.

(d) Principal amount includes £650 million valued at $827 million as of December 31, 2018 using the exchange rate as of December 31, 2018.

See Note 8 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data" for further details regarding our outstanding debt and other financing arrangements, including certain information about maturities, covenants and restrictions related to such debt and financing arrangements. The agreements and instruments governing our debt and financing arrangements are complicated and you should consult such agreements and instruments which are filed with the SEC for more detailed information.

At December 31, 2018, Charter Operating had a consolidated leverage ratio of approximately 3.1 to 1.0 and a consolidated first lien leverage ratio of 3.0 to 1.0. Both ratios are in compliance with the ratios required by the Charter Operating credit facilities of 5.0 to 1.0 consolidated leverage ratio and 4.0 to 1.0 consolidated first lien leverage ratio. A failure by Charter Operating to maintain the financial covenants would result in an event of default under the Charter Operating credit facilities and the debt of CCO Holdings. See "Part I. Item 1A. Risk Factors — The agreements and instruments governing our debt contain restrictions and limitations that could significantly affect our ability to operate our business, as well as significantly affect our liquidity."

Recently Issued Accounting Standards

See Note 19 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data" for a discussion of recently issued accounting standards.

Item 7A. ***Quantitative and Qualitative Disclosures About Market Risk.***

We use derivative instruments to manage foreign exchange risk on the Sterling Notes, and do not hold or issue derivative instruments for speculative trading purposes.

Cross-currency derivative instruments are used to effectively convert £1.275 billion aggregate principal amount of fixed-rate British pound sterling denominated debt, including annual interest payments and the payment of principal at maturity, to fixed-rate U.S. dollar denominated debt. The cross-currency derivative instruments have maturities of June 2031 and July 2042. We are required to post collateral on the cross-currency derivative instruments when such instruments are in a liability position. In May 2016, we entered into a collateral holiday agreement for 80% of both the 2031 and 2042 cross-currency swaps, which eliminates the requirement to post collateral for three years. The fair value of our cross-currency derivatives included in other long-term liabilities on our consolidated balance sheets was $237 million and $25 million as of December 31, 2018 and 2017, respectively. For more information, see Note 10 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

As of December 31, 2018 and 2017, the weighted average interest rate on the credit facility debt and floating rate notes was approximately 4.3% and 3.4%, respectively, and the weighted average interest rate on the senior notes was approximately 5.6% and 5.7%, respectively, resulting in a blended weighted average interest rate of 5.4% and 5.4%, respectively. The interest rate on approximately 85% and 86% of the total principal amount of our debt was effectively fixed as of December 31, 2018 and 2017, respectively.

The table set forth below summarizes the fair values and contract terms of financial instruments subject to interest rate risk maintained by us as of December 31, 2018 (dollars in millions):

	2019	2020	2021	2022	2023	Thereafter	Total	Fair Value
Debt:								
Fixed Rate	$ 3,250	$ 3,500	$ 2,200	$ 4,250	$ 4,150	$ 43,673	$ 61,023	$ 60,204
Average Interest Rate	8.44%	4.19%	4.32%	4.70%	5.85%	5.65%	5.61%	
Variable Rate	$ 207	$ 207	$ 207	$ 207	$ 3,240	$ 6,870	$ 10,938	$ 10,491
Average Interest Rate	4.19%	4.01%	3.94%	3.96%	3.91%	4.52%	4.30%	

Interest rates on variable-rate debt are estimated using the average implied forward LIBOR for the year of maturity based on the yield curve in effect at December 31, 2018 including applicable bank spread.

Item 8. ***Financial Statements and Supplementary Data.***

Our consolidated financial statements, the related notes thereto, and the reports of independent accountants are included in this annual report beginning on page F-1.

Item 9. ***Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.***

None.

Item 9A. ***Controls and Procedures.***

Conclusion Regarding the Effectiveness of Disclosure Controls and Procedures

As of the end of the period covered by this report, under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we have evaluated the effectiveness of the design and operation of disclosure controls and procedures with respect to the information generated for use in this annual report. The evaluation was based upon reports and certifications provided by a number of executives. Based on, and as of the date of that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that the disclosure controls and procedures were effective to provide reasonable assurances that information required to be disclosed in the reports we file or submit under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms.

In designing and evaluating the disclosure controls and procedures, our management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable, not absolute, assurance of achieving the desired control objectives, and management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based upon the above evaluation, we believe that our controls provide such reasonable assurances.

During the quarter ended December 31, 2018, there was no change in our internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) for the Company. Our internal control system was designed to provide reasonable assurance to our management and board of directors regarding the preparation and fair presentation of published financial statements.

Management has assessed the effectiveness of our internal control over financial reporting as ofDecember 31, 2018. In making this assessment, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in *Internal Control — Integrated Framework* (2013). Based on management's assessment utilizing these criteria we believe that, as of December 31, 2018, our internal control over financial reporting was effective.

Item 9B. ***Other Information.***

None.

PART III

Item 14. *Principal Accounting Fees and Services.*

Principal Accounting Firm

KPMG acted as Charter and its subsidiaries' independent registered public accounting firm since 2002, and, subject to ratification by stockholders at Charter's annual meeting, KPMG is expected to serve as our independent registered public accounting firm for 2019.

Services of Independent Registered Public Accounting Firm

Charter's Audit Committee has adopted policies and procedures requiring the pre-approval of non-audit services that may be provided by our independent registered public accounting firm. We have also complied and will continue to comply with the provisions of the Sarbanes-Oxley Act of 2002 and the related SEC rules pertaining to auditor independence and audit committee pre-approval of audit and non-audit services.

Audit Fees

During the years ended December 31, 2018 and 2017, we incurred fees and related expenses for professional services rendered by KPMG for the audits of Charter and its subsidiaries' financial statements (including CCO Holdings), for the review of Charter and its subsidiaries' interim financial statements (including CCO Holdings), registration statement filings and offering memoranda filings totaling approximately $8 million and $9 million, respectively.

Audit-Related Fees

Charter incurred audit-related fees to KPMG of approximately $0.2 million during each of the years ended December 31, 2018 and 2017. These services were primarily related to diligence services in 2018 and accounting and reporting consultation in 2017.

Tax Fees

Charter incurred tax fees to KPMG of approximately $1 million and $2 million during the years ended December 31, 2018 and 2017, respectively.

All Other Fees

None.

Charter's Audit Committee appoints, retains, compensates and oversees the independent registered public accounting firm (subject, if applicable, to board of director and/or stockholder ratification), and approves in advance all fees and terms for the audit engagement and non-audit engagements where non-audit services are not prohibited by Section 10A of the Securities Exchange Act of 1934, as amended with respect to independent registered public accounting firms. Pre-approvals of non-audit services are sometimes delegated to a single member of Charter's Audit Committee. However, any pre-approvals made by Charter's Audit Committee's designee are presented at Charter's Audit Committee's next regularly scheduled meeting. Charter's Audit Committee has an obligation to consult with management on these matters. Charter's Audit Committee approved 100% of the KPMG fees for the years ended December 31, 2018 and 2017. Each year, including 2018, with respect to the proposed audit engagement, Charter's Audit Committee reviews the proposed risk assessment process in establishing the scope of examination and the reports to be rendered.

In its capacity as a committee of the board, Charter's Audit Committee oversees the work of the independent registered public accounting firm (including resolution of disagreements between management and the public accounting firm regarding financial reporting) for the purpose of preparing or issuing an audit report or performing other audit, review or attest services. The independent registered public accounting firm reports directly to Charter's Audit Committee. In performing its functions, Charter's Audit Committee undertakes those tasks and responsibilities that, in its judgment, most effectively contribute to and implement the purposes of Charter's Audit Committee charter. For more detail of Charter's Audit Committee's authority and responsibilities, see Charter's Audit Committee charter on Charter's website, www.charter.com.

PART IV

Item 15. ***Exhibits and Financial Statement Schedules.***

(a) The following documents are filed as part of this annual report:

(1) Financial Statements.

A listing of the financial statements, notes and reports of independent public accountants required by "Part II. Item 8. Financial Statements and Supplementary Data" begins on page F-1 of this annual report.

(2) Financial Statement Schedules.

No financial statement schedules are required to be filed by Items 8 and 15(c) because they are not required or are not applicable, or the required information is set forth in the applicable financial statements or notes thereto.

(3) The index to the exhibits begins on page E-1 of this annual report.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, CCO Holdings, LLC and CCO Holdings Capital Corp. have duly caused this annual report to be signed on their behalf by the undersigned, thereunto duly authorized.

CCO HOLDINGS, LLC
Registrant

By: /s/ Kevin D. Howard
Kevin D. Howard
Senior Vice President – Finance, Controller and
Chief Accounting Officer

Date: February 8, 2019

CCO HOLDINGS CAPITAL CORP.
Registrant

By: /s/ Kevin D. Howard
Kevin D. Howard
Senior Vice President – Finance, Controller and
Chief Accounting Officer

Date: February 8, 2019

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of CCO Holdings, LLC and CCO Holdings Capital Corp. and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Thomas M. Rutledge Thomas M. Rutledge	Chairman, Chief Executive Officer, Director (Principal Executive Officer)	February 8, 2019
/s/ Christopher L. Winfrey Christopher L. Winfrey	Chief Financial Officer (Principal Financial Officer)	February 8, 2019
/s/ Kevin D. Howard Kevin D. Howard	Senior Vice President – Finance, Controller and Chief Accounting Officer (Principal Accounting Officer)	February 8, 2019

CHARTER COMMUNICATIONS, INC., in its sole capacity as manager of CCO Holdings, LLC

By: /s/ Kevin D. Howard
Kevin D. Howard
Senior Vice President – Finance, Controller and
Chief Accounting Officer

Date: February 8, 2019

Exhibit Index

Exhibits are listed by numbers corresponding to the Exhibit Table of Item 601 in Regulation S-K.

Exhibit	Description
2.1	Agreement and Plan of Mergers, dated as of May 23, 2015, among Time Warner Cable Inc., Charter Communications, Inc., CCH I, LLC, Nina Corporation I, Inc., Nina Company II, LLC and Nina Company III, LLC (incorporated by reference to Exhibit 2.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 29, 2015 (File No. 001-33664)).
2.2	Contribution Agreement, dated March 31, 2015, by and among Advance/Newhouse Partnership, A/NPC Holdings LLC, Charter Communications, Inc., CCH I, LLC, and Charter Communications Holding Company, LLC (incorporated by reference to Exhibit 2.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 1, 2015 (File No. 001-33664)).
3.1	Certificate of Formation of CCO Holdings, LLC (incorporated by reference to Exhibit 3.1 to the registration statement on Form S-4 of CCO Holdings, LLC and CCO Holdings Capital Corporation filed on February 6, 2004 (File No. 333-112593)).
3.2	By-laws of CCO Holdings Capital Corp. (incorporated by reference to Exhibit 3.6 to the registration statement on Form S-4 of CCO Holdings, LLC and CCO Holdings Capital Corporation filed on February 6, 2004 (File No. 333-112593))
3.3	Amended and Restated Limited Liability Company Agreement of CCO Holdings, LLC (incorporated by reference to Exhibit 3.3 to the quarterly report on Form 10-Q of CCO Holdings, LLC and CCO Holdings Capital Corporation filed on August 15, 2016 (File No. 001-37789)).
4.1(a)	Amended and Restated Stockholders Agreement, dated March 31, 2015, by and among Charter Communications, Inc., Liberty Broadband Corporation and Advance/Newhouse Partnership (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 1, 2015 (File No. 001-33664)).
4.1(b)	Second Amended and Restated Stockholders Agreement, dated May 23, 2015, by and among Charter Communications, Inc., CCH I, LLC, Liberty Broadband Corporation and Advance/Newhouse Partnership (incorporated by reference to Annex C to the registration statement on Form S-4 filed by CCH I, LLC on June 26, 2015 (File No. 333-205240)).
10.1	Indenture dated as of May 10, 2011, by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K of Charter Communications, Inc. filed on May 16, 2011 (File No. 001-33664)).
10.2	Third Supplemental Indenture dated as of January 26, 2012 by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K of Charter Communications, Inc. filed on February 1, 2012 (File No. 001-33664))
10.3	Fourth Supplemental Indenture dated August 22, 2012 relating to the 5.25% Senior Notes due 2022 by and among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 10.1 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed on November 6, 2012 (File No. 001-33664)).
10.4	Fifth Supplemental Indenture dated December 17, 2012 relating to the 5.125% Senior Notes due 2023 by and among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 10.9 to the annual report on Form 10-K of Charter Communications, Inc. filed February 22, 2013 (File No. 001-33664)).
10.5	Sixth Supplemental Indenture relating to the 5.25% senior notes due 2021, dated as of March 14, 2013, by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed March 15, 2013 (File No. 001-33664)).
10.6	Seventh Supplemental Indenture relating to the 5.75% senior notes due 2023, dated as of March 14, 2013, by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed March 15, 2013 (File No. 001-33664)).
10.7	Eighth Supplemental Indenture relating to the 5.75% senior notes due 2024, dated as of May 3, 2013, by and among CCO Holdings, LLC and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 10.7 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed on May 7, 2013 (File No. 001-33664)).

10.8	Indenture dated as of November 5, 2014, by and among CCO Holdings, LLC, CCO Holdings Capital Corp. and CCOH Safari, LLC, as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K of Charter Communications, Inc. filed on November 10, 2014 (File No. 001-33664)).
10.9	Third Supplemental Indenture, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.10	Fourth Supplemental Indenture, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.11	Fifth Supplemental Indenture, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.12	Exchange and Registration Rights Agreement, dated as of April 21, 2015 relating to the 5.125% Senior Notes due 2023, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.13	Exchange and Registration Rights Agreement relating to the 5.375% Senior Notes due 2025, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.14	Exchange and Registration Rights Agreement relating to the 5.875% Senior Notes due 2027, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.3 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.15	Indenture, dated as of July 23, 2015, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp. and CCO Safari II, LLC, as issuers, and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 27, 2015 (File No. 001-33664)).
10.16	First Supplemental Indenture, dated as of July 23, 2015, among CCO Safari II, LLC, as escrow issuer, CCH II, LLC, as limited guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on July 27, 2015 (File No. 001-33664)).
10.17	Exchange and Registration Rights Agreement, dated July 23, 2015 relating to the 3.579% Senior Secured Notes due 2020, 4.464% Senior Secured Notes due 2022, 4.908% Senior Secured Notes due 2025, 6.384% Senior Secured Notes due 2035, 6.484% Senior Secured Notes due 2045 and 6.834% Senior Secured Notes due 2055, between CCO Safari II, LLC and Goldman, Sachs & Co., Credit Suisse Securities (USA) LLC, Merrill Lynch, Pierce, Fenner & Smith Incorporated, Deutsche Bank Securities Inc. and UBS Securities LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 27, 2015 (File No. 001-33664)).
10.18	Indenture, dated as of November 20, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp. and CCOH Safari, LLC, as issuers, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on November 25, 2015 (File No. 001-33664)).
10.19	First Supplemental Indenture, dated as of November 20, 2015, between CCOH Safari, LLC, as escrow issuer, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on November 25, 2015 (File No. 001-33664)).
10.20	Exchange and Registration Rights Agreement, dated November 20, 2015 relating to the 5.750% Senior Notes due 2026, between CCOH Safari, LLC and Credit Suisse Securities (USA) LLC, Goldman, Sachs & Co., Merrill Lynch, Pierce, Fenner & Smith Incorporated, UBS Securities LLC and Deutsche Bank Securities Inc., as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on November 25, 2015 (File No. 001-33664)).

10.21	Sixth Supplemental Indenture, dated as of February 19, 2016, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 22, 2016 (File No. 001-33664)).
10.22	Exchange and Registration Rights Agreement, dated February 19, 2016, relating to the 5.875% Senior Notes due 2024, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Deutsche Bank Securities Inc., Credit Suisse Securities (USA) LLC, Goldman, Sachs & Co., Merrill Lynch, Pierce, Fenner & Smith Incorporated, UBS Securities LLC, Citigroup Global Markets Inc. and Wells Fargo Securities, LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 22, 2016 (File No. 001-33664)).
10.23	Seventh Supplemental Indenture, dated as of April 21, 2016, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 27, 2016 (File No. 001-33664)).
10.24	Exchange and Registration Rights Agreement, dated April 21, 2016, relating to the 5.500% Senior Notes due 2026, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Merrill Lynch, Pierce, Fenner & Smith Incorporated, Citigroup Global Markets Inc., Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co., UBS Securities LLC and Wells Fargo Securities, LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 27, 2016 (File No. 001-33664)).
10.25	Second Supplemental Indenture, dated as of May 18, 2016, by and among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Safari II, LLC and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.26	Third Supplemental Indenture, dated as of May 18, 2016, by and among CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.27	Second Supplemental Indenture, dated as of May 18, 2016, by and among CCO Holdings, LLC, CCO Holdings Capital Corp., CCOH Safari, LLC and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.28	Third Supplemental Indenture, dated as of February 6, 2017, among CCO Holdings, LLC, CCO Holdings Capital Corp., and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated herein by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 6, 2017 (File No. 001-33664)).
10.29	Exchange and Registration Rights Agreement, dated February 6, 2017, relating to the 5.125% Senior Notes due 2027, among CCO Holdings, LLC, CCO Holdings Capital Corp., and Merrill Lynch, Pierce, Fenner & Smith Incorporated, Citigroup Global Markets Inc., Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co., UBS Securities LLC, and Wells Fargo Securities, LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 6, 2017 (File No. 001-33664)).
10.30	Exchange and Registration Rights Agreement, dated March 29, 2017, relating to the 5.125% Senior Notes due 2027, among CCO Holdings, LLC, CCO Holdings Capital Corp., and Deutsche Bank Securities Inc., Merrill Lynch, Pierce, Fenner & Smith Incorporated, Citigroup Global Markets Inc., Credit Suisse Securities (USA) LLC, Goldman, Sachs & Co., UBS Securities LLC, and Wells Fargo Securities, LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on March 31, 2017 (File No. 001-33664)).
10.31	Fifth Supplemental Indenture, dated as of April 20, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on April 26, 2017 (File No. 001-33664)).
10.32	Exchange and Registration Rights Agreement, dated April 20, 2017, relating to the 5.125% Senior Notes due 2027, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Citigroup Global Markets Inc., as a representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 26, 2017 (File No. 001-33664)).
10.33	Exchange and Registration Rights Agreement, dated April 20, 2017, relating to the 5.375% Senior Notes due 2047, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Citigroup Global Markets Inc., as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 26, 2017 (File No. 001-33664)).

10.34	Sixth Supplemental Indenture, dated as of July 6, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on July 12, 2017 (File No. 001-33664)).
10.35	Exchange and Registration Rights Agreement, dated July 6, 2017, relating to the 3.750% Senior Notes due 2028, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 12, 2017 (File No. 001-33664)).
10.36	Exchange and Registration Rights Agreement, dated July 6, 2017, relating to the 5.375% Senior Notes due 2047, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on July 12, 2017 (File No. 001-33664)).
10.37	Fourth Supplemental Indenture, dated as of August 8, 2017, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on August 14, 2017 (File No. 001-33664)).
10.38	Exchange and Registration Rights Agreement, dated August 8, 2017, relating to the 5.000% Senior Notes due 2028, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on August 14, 2017 (File No. 001-33664)).
10.39	Seventh Supplemental Indenture, dated as of September 18, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on September 21, 2017 (File No. 001-33664)).
10.40	Exchange and Registration Rights Agreement, dated September 18, 2017, relating to the 4.200% Senior Secured Notes due 2028, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated and Citigroup Global Markets Inc., as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on September 21, 2017 (File No. 001-33664)).
10.41	Exchange and Registration Rights Agreement, dated September 18, 2017, relating to the 5.375% Senior Secured Notes due 2047, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated and Citigroup Global Markets Inc., as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on September 21, 2017 (File No. 001-33664)).
10.42	Fifth Supplemental Indenture, dated as of October 17, 2017, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on October 20, 2017 (File No. 001-33664)).
10.43	Exchange and Registration Rights Agreement, dated October 17, 2017, relating to the 5.000% Senior Notes due 2028, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on October 20, 2017 (File No. 001-33664)).
10.44	Exchange and Registration Rights Agreement, dated October 17, 2017, relating to the 4.000% Senior Notes due 2023, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on October 20, 2017 (File No. 001-33664)).
10.45	Eighth Supplemental Indenture, dated as of December 21, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, the subsidiary guarantor parties thereto and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.5 to the current report on Form S-3 filed by Charter Communications, Inc. on December 22, 2017 (File No. 333-222241)).
10.46	Underwriting Agreement, dated as of April 3, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Citigroup Global Markets Inc. and Deutsche Bank Securities Inc., as representatives of the several underwriters named therein (incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 6, 2018 (File No. 001-33664)).

10.47	Ninth Supplemental Indenture, dated as of April 17, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., as issuers, CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 20, 2018 (File No. 001-33664)).
10.48	Underwriting Agreement, dated as of June 28, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Citigroup Global Markets Inc. and Morgan Stanley & Co. LLC, as representatives of the several underwriters named therein (incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 3, 2018 (File No. 001-33664)).
10.49	Tenth Supplemental Indenture, dated as of July 3, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., as issuers, CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on July 9, 2018 (File No. 001-33664)).
10.50	Underwriting Agreement, dated as of August 9, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Morgan Stanley & Co. LLC, as underwriter (incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on August 15, 2018 (File No. 001-33664)).
10.51	Indenture, dated as of April 30, 1992 (the "TWCE Indenture"), as amended by the First Supplemental Indenture, dated as of June 30, 1992, among Time Warner Entertainment Company, L.P. ("TWE"), Time Warner Companies, Inc. ("TWCI"), certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibits 10(g) and 10(h) to TWCI's current report on Form 8-K dated June 26, 1992 and filed with the SEC on July 15, 1992 (File No. 1-8637)). (P)
10.52	Second Supplemental Indenture to the TWCE Indenture, dated as of December 9, 1992, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.2 to Amendment No. 1 to TWE's Registration Statement on Form S-4 dated and filed with the SEC on October 25, 1993 (Registration No. 33-67688) (the "TWE October 25, 1993 Registration Statement")). (P)
10.53	Third Supplemental Indenture to the TWCE Indenture, dated as of October 12, 1993, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.3 to the TWE October 25, 1993 Registration Statement). (P)
10.54	Fourth Supplemental Indenture to the TWCE Indenture, dated as of March 29, 1994, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.4 to TWE's Annual Report on Form 10-K for the year ended December 31, 1993 and filed with the SEC on March 30, 1994 (File No. 1-12878)). (P)
10.55	Fifth Supplemental Indenture to the TWCE Indenture, dated as of December 28, 1994, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.5 to TWE's Annual Report on Form 10-K for the year ended December 31, 1994 and filed with the SEC on March 30, 1995 (File No. 1-12878)). (P)
10.56	Sixth Supplemental Indenture to the TWCE Indenture, dated as of September 29, 1997, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.7 to Historic TW Inc.'s ("Historic TW") Annual Report on Form 10-K for the year ended December 31, 1997 and filed with the SEC on March 25, 1998 (File No. 1-12259) (the "Time Warner 1997 Form 10-K")).
10.57	Seventh Supplemental Indenture to the TWCE Indenture, dated as of December 29, 1997, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.8 to the Time Warner 1997 Form 10-K).
10.58	Eighth Supplemental Indenture to the TWCE Indenture, dated as of December 9, 2003, among Historic TW, TWE, Warner Communications Inc. ("WCI"), American Television and Communications Corporation ("ATC"), TWC and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.10 to Time Warner Inc.'s ("Time Warner") Annual Report on Form 10-K for the year ended December 31, 2003 (File No. 1-15062)).
10.59	Ninth Supplemental Indenture to the TWCE Indenture, dated as of November 1, 2004, among Historic TW, TWE, Time Warner NY Cable Inc., WCI, ATC, TWC and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.1 to Time Warner's Quarterly Report on Form 10-Q for the quarter ended September 30, 2004 (File No. 1-15062)).
10.60	Tenth Supplemental Indenture to the TWCE Indenture, dated as of October 18, 2006, among Historic TW, TWE, TW NY Cable Holding Inc. ("TW NY"), Time Warner NY Cable LLC ("TW NY Cable"), TWC, WCI, ATC and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.1 to Time Warner's current report on Form 8-K dated and filed October 18, 2006 (File No. 1-15062)).

10.61	Eleventh Supplemental Indenture to the TWCE Indenture, dated as of November 2, 2006, among TWE, TW NY, TWC and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 99.1 to Time Warner's current report on Form 8-K dated and filed November 2, 2006 (File No. 1-15062)).
10.62	Twelfth Supplemental Indenture to the TWCE Indenture, dated as of September 30, 2012, among Time Warner Cable Enterprises LLC ("TWCE"), TWC, TW NY, Time Warner Cable Internet Holdings II LLC ("TWC Internet Holdings II") and The Bank of New York Mellon, as trustee, supplementing the Indenture dated April 30, 1992, as amended (incorporated herein by reference to Exhibit 4.2 to TWC's current report on Form 8-K dated September 30, 2012 and filed with the SEC on October 1, 2012 (File No. 1-33335) (the "TWC September 30, 2012 Form 8-K")).
10.63	Thirteenth Supplemental Indenture, dated as of May 18, 2016, by and among Time Warner Cable Enterprises LLC, the guarantors party thereto and The Bank of New York Mellon (formerly known as The Bank of New York), as trustee (incorporated by reference to Exhibit 4.4 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.64	Indenture, dated as of April 9, 2007 (the "TWC Indenture"), among TWC, TW NY, TWE and The Bank of New York, as trustee (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated April 4, 2007 and filed with the SEC on April 9, 2007 (File No. 1-33335) (the "TWC April 4, 2007 Form 8-K")).
10.65	First Supplemental Indenture to the TWC Indenture, dated as of April 9, 2007, among TWC, TW NY, TWE and The Bank of New York, as trustee (incorporated herein by reference to Exhibit 4.2 to the TWC April 4, 2007 Form 8-K).
10.66	Second Supplemental Indenture to the TWC Indenture, dated as of September 30, 2012, among TWC, TW NY, TWCE, TWC Internet Holdings II and The Bank of New York Mellon, as trustee, supplementing the Indenture dated April 9, 2007, as amended (incorporated herein by reference to Exhibit 4.1 to the TWC September 30, 2012 Form 8-K).
10.67	Third Supplemental Indenture, dated as of May 18, 2016, by and among Time Warner Cable Inc., TWC NewCo LLC and The Bank of New York Mellon (formerly known as The Bank of New York), as trustee (incorporated by reference to Exhibit 4.5 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.68	Fourth Supplemental Indenture, dated as of May 18, 2016, by and among TWC NewCo LLC, the guarantors party thereto and The Bank of New York Mellon (formerly known as The Bank of New York), as trustee (incorporated by reference to Exhibit 4.6 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.69	Form of TWC 6.55% Exchange Debentures due 2037 (included as Exhibit C to the First Supplemental Indenture incorporated herein by reference to Exhibit 4.2 to the TWC April 4, 2007 Form 8-K).
10.70	Form of TWC 7.30% Debentures due 2038 (incorporated herein by reference to Exhibit 4.3 to the TWC June 16, 2008 Form 8-K).
10.71	Form of TWC 8.75% Notes due 2019 (incorporated herein by reference to Exhibit 4.2 to TWC's current report on Form 8-K dated November 13, 2008 and filed with the SEC on November 18, 2008) (File No. 1-33335).
10.72	Form of TWC 8.25% Notes due 2019 (incorporated herein by reference to Exhibit 4.2 to TWC's current report on Form 8-K dated March 23, 2009 and filed with the SEC on March 26, 2009 (File No. 1-33335)).
10.73	Form of TWC 6.75% Debentures due 2039 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated June 24, 2009 and filed with the SEC on June 29, 2009 (File No. 1-33335)).
10.74	Form of TWC 5.0% Notes due 2020 (incorporated herein by reference to Exhibit 4.2 to the TWC December 8, 2009 Form 8-K).
10.75	Form of TWC 4.125% Notes due 2021 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated November 9, 2010 and filed with the SEC on November 15, 2010 (File No. 1-33335) (the "TWC November 9, 2010 Form 8-K")).
10.76	Form of TWC 5.875% Debentures due 2040 (incorporated herein by reference to Exhibit 4.2 to the TWC November 9, 2010 Form 8-K).
10.77	Form of TWC 5.75% Note due 2031 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated and filed with the SEC on May 26, 2011 (File No. 1-33335)).
10.78	Form of TWC 4% Note due 2021 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated September 7, 2011 and filed with the SEC on September 12, 2011 (File No. 1-33335) (the "TWC September 7, 2011 Form 8-K")).
10.79	Form of TWC 5.5% Debenture due 2041 (incorporated herein by reference to Exhibit 4.2 to the TWC September 7, 2011 Form 8-K).
10.80	Form of TWC 4.5% Debenture due 2042 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated August 7, 2012 and filed with the SEC on August 10, 2012 (File No. 1-33335)).

10.81	Form of TWC 5.25% Note due 2042 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated and filed with the SEC on June 27, 2012 (File No. 1-33335)).
10.82	Form of 5.500% Senior Notes due 2026 (incorporated herein by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed April 27, 2016).
10.83	Amendment No. 5, dated as of August 24, 2015, to the Amended and Restated Credit Agreement dated as of April 11, 2012 between Charter Communications Operating, LLC, as borrower, CCO Holdings, LLC, as guarantor, and Bank of America, N.A., as administrative agent (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed on August 28, 2015 (File No. 001-33664)).
10.84	Incremental Activation Notice, dated as of August 24, 2015 delivered by Charter Communications Operating, LLC, CCO Holdings, LLC, the subsidiary guarantors party thereto, each Term H Lender party thereto to, each Term I Lender party thereto and Bank of America, N.A., as Administrative Agent under the Amended and Restated Credit Agreement, dated as of April 11, 2012 (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on August 28, 2015 (File No. 001-33664)).
10.85	Escrow Credit Agreement, dated as of August 24, 2015, between CCO Safari III, LLC, as borrower, and Bank of America, N.A., as administrative agent, and the lenders party thereto (incorporated by reference to Exhibit 10.3 to the current report on Form 8-K of Charter Communications, Inc. filed on August 28, 2015 (File No. 001-33664)).
10.86(a)	Restatement Agreement dated as of May 18, 2016, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, the subsidiary guarantors party thereto, Bank of America, N.A., as administrative agent and the lenders party thereto (incorporated by reference to Exhibit 10.5 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 (File No. 001-33664)).
10.86(b)	Amendment No. 1 dated as of December 23, 2016, to the Amended and Restated Credit Agreement dated as of March 18, 1999, as amended and restated on May 18, 2016, by and among Chart Communications Operating, LLC, CCO Holdings, LLC, the Lenders Party thereto and Bank of America, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on December 30, 2016 (File No. 001-33664)).
10.86(c)	Restatement Agreement dated as of December 21, 2017 to the Amended and Restated Credit Agreement dated as of March 18, 1999, as amended and restated on May 18, 2016, as amended by Amendment No. 1, dated as of December 23, 2016 and as further amended by that certain Incremental Activation Notice No. 1, dated as of January 19, 2017, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, the Lenders Party thereto and Bank of America, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on December 28, 2017 (File No. 001-33664)).
10.86(d)	Incremental Activation Notice, dated as of May 18, 2016, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, the subsidiary guarantors party thereto, Bank of America, N.A., as administrative agent and the lenders party thereto (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 (File No. 001-33664)).
10.87	Collateral Agreement, dated as of May 18, 2016, by Charter Communications Operating, LLC, Charter Communications Operating Capital Corp. and the other grantors party thereto in favor of The Bank of New York Mellon Trust Company, N.A., as collateral agent (incorporated by reference to Exhibit 10.6 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 (File No. 001-33664)).
10.88	First Lien Intercreditor Agreement, dated as of May 18, 2016, by and among Charter Communications Operating, LLC, the other grantors party thereto, Bank of America, N.A., as credit agreement collateral agent for the credit agreement secured parties, The Bank of New York Mellon Trust Company, N.A., as notes collateral agent for the indenture secured parties, and each additional agent from time to time party thereto (incorporated by reference to Exhibit 10.7 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 (File No. 001-33664)).
10.89	Joinder Agreement to Registration Rights Agreement, dated as of May 18, 2016, by and among CCO Safari II, LLC, CCH II, LLC, Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC and the other guarantors party thereto (incorporated herein by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed May 24, 2016).
10.90	Joinder Agreement to Registration Rights Agreement, dated as of May 18, 2016, by CCO Holdings, LLC and CCO Holdings Capital Corp (incorporated herein by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed May 24, 2016).
10.91	Escrow Assumption Agreement, dated as of May 18, 2016, by and among CCO Safari III, LLC, Charter Communications Operating, LLC, Bank of America, N.A., as escrow administrative agent and Bank of America, N.A., as administrative agent (incorporated herein by reference to Exhibit 10.3 to the current report on Form 8-K of Charter Communications, Inc. filed May 24, 2016).
10.92	Amended and Restated Limited Liability Company Agreement of Charter Communications Holdings, LLC, dated as of May 18, 2016, by and among Charter Holdings, Charter, CCH II, LLC, Advance/Newhouse Partnership and the other party or parties thereto (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).

10.93	Exchange Agreement, dated as of May 18, 2016, by and among Charter Holdings, Charter, Advance/Newhouse Partnership and the other party or parties thereto (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.94	Registration Rights Agreement, dated as of May 18, 2016, by and among Charter, Advance/Newhouse Partnership and Liberty Broadband (incorporated by reference to Exhibit 10.3 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.95	Tax Receivables Agreement, dated as of May 18, 2016, by and among Charter, Advance/Newhouse Partnership and the other party or parties thereto (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.96	Wireless Operational Cooperation Agreement dated as of May 5, 2017 between Charter Communications, Inc. and Comcast Corporation (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 8, 2017 (File No. 001-33664)).
10.97+	Charter Communications, Inc. Executive Bonus Plan (incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q of Charter Communications, Inc. filed on May 8, 2012 (File No. 001-33664)).
10.98+	Charter Communications, Inc. 2016 Executive Incentive Performance Plan (incorporated by reference to Appendix A to the proxy statement for the Charter Communications, Inc. 2016 Annual Meeting of Stockholders filed March 17, 2016 (File No. 001-33664)).
10.99+	Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan (incorporated by reference to Exhibit 10.6 to the Current Report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.100+	Amendment to the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan, dated as of October 25, 2016 (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K of Charter Communications, Inc. filed on October 28, 2016 (File No. 001-33664)).
10.101+	Charter Communications, Inc.'s Amended and Restated Supplemental Deferred Compensation Plan, dated as of September 1, 2011(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on September 2, 2011 (File No. 001-33664)).
10.102+	Form of Non-Qualified Time Vesting Stock Option Agreement dated April 26, 2011(incorporated by reference to Exhibit 10.3 to the quarterly report on Form 10-Q filed by Charter Communications, Inc. on August 2, 2011 (File No. 001-33664)).
10.103+	Form of Non-Qualified Price Vesting Stock Option Agreement dated April 26, 2011(incorporated by reference to Exhibit 10.2 to the quarterly report on Form 10-Q filed by Charter Communications, Inc. on August 2, 2011 (File No. 001-33664)).
10.104+	Form of Notice of LTIP Award Agreement Changes (RSU Awards) (incorporated by reference to Exhibit 10.3 to the current report on Form 8-K filed by Charter Communications, inc. on January 22, 2014 (File No. 001-33664)).
10.105+	Form of Notice of LTIP Award Agreement Changes (Time-Vesting Option Awards) (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
10.106+	Form of Notice of LTIP Award Agreement Changes (Restricted Stock Awards) (incorporated by reference to Exhibit 10.5 to the current report on Form 8-K filed by Charter Communications, inc. on January 22, 2014 (File No. 001-33664)).
10.107+	Form of Notice of LTIP Award Agreement Changes (Performance-Vesting Option Awards) (incorporated by reference to Exhibit 10.6 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
10.108+	Form of Stock Option Agreement dated January 15, 2014 (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
10.109+	Form of Restricted Stock Unit Agreement dated January 15, 2014 (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
10.110(a)+	Employment Agreement between Thomas Rutledge and Charter Communications, Inc., dated as of May 17, 2016 (incorporated by reference to Exhibit 10.5 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.110(b)+	Time-Vesting Stock Option Agreement dated as of December 19, 2011 by and between Charter Communications, Inc. and Thomas M. Rutledge (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on December 19, 2011 (File No. 001-33664)).
10.110(c)+	Performance-Vesting Stock Option Agreement dated as of December 19, 2011 by and between Charter Communications, Inc. and Thomas M. Rutledge (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K filed by Charter Communications, Inc. on December 19, 2011 (File No. 001-33664)).

10.111(a)+	Employment Agreement dated effective as of November 2, 2016 by and between Charter Communications, Inc. and John Bickham (incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q of Charter Communications, Inc. filed on November 3, 2016 (File No. 001-33664)).
10.111(b)+	Time-Vesting Stock Option Agreement dated as of April 30, 2012 by and between Charter Communications, Inc. and John Bickham (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on May 1, 2012 (File No. 001-33664)).
10.111(c)+	Performance-Vesting Stock Option Agreement dated as of April 30, 2012 by and between Charter Communications, Inc. and John Bickham (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K filed by Charter Communications, Inc. on May 1, 2012 (File No. 001-33664)).
10.112+	Form of First Amended and Restated Indemnification Agreement (incorporated by reference to Exhibit 10.3 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed on August 6, 2013 (File No. 001-33664)).
10.113+	Amendment to the Employment Agreement, dated as of February 11, 2016, by and between Charter Communications, Inc. and Thomas Rutledge (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 12, 2016 (File No. 001-33664)).
10.114+	Time Warner Cable Inc. 2006 Stock Incentive Plan (incorporated herein by reference to Exhibit 10.45 to TWC's current report on Form 8-K dated February 13, 2007 and filed with the SEC on February 13, 2007).
10.115+	Time Warner Cable Inc. 2006 Stock Incentive Plan, as amended, effective March 12, 2009 (incorporated herein by reference to Exhibit 10.1 to TWC's Quarterly Report on Form 10-Q for the quarter ended March 31, 2009).
10.116+	Time Warner Cable Inc. 2011 Stock Incentive Plan (incorporated herein by reference to Annex A to TWC's definitive Proxy Statement dated April 6, 2011 and filed with the SEC on April 6, 2011).
10.117+	Form of Amendment to Nonqualified Stock Option Agreements Granted Under the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan, dated as of October 25, 2016 (incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K of Charter Communications, Inc. filed on October 28, 2016 (File No. 001-33664)).
10.118+	Employment Agreement dated effective as of November 2, 2016 by and between Charter Communications, Inc. and Christopher L. Winfrey (incorporated by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q of Charter Communications, Inc. filed on November 3, 2016 (File No. 001-33664)).
10.119+	Employment Agreement dated as of November 10, 2016 by and between Charter Communications, Inc. and David Ellen (incorporated by reference to Exhibit 10.101 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on February 16, 2017 (File No. 001-33664)).
10.120+	Form of Performance-Vesting Stock Option Agreement granted to certain executive officers in 2016 under the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan (incorporated by reference to Exhibit 10.102 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on February 16, 2017 (File No. 001-33664)).
10.121+	Form of Performance-Vesting Restricted Stock Unit Agreement granted to certain executive officers in 2016 under the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan (incorporated by reference to Exhibit 10.103 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on February 16, 2017 (File No. 001-33664)).
10.122	Letter Agreement, dated as of December 23, 2016, between Charter Communications, Inc. and Advance/Newhouse Partnership (incorporated by reference to Exhibit 99.1 to the Current Report on Form 8-K of Charter Communications, Inc. filed on December 28, 2016 (File No. 001-33664)).
10.123	Amendment to Letter Agreement, dated as of December 21, 2017, between Charter Communications, Inc. and Advance/Newhouse Partnership (incorporated by reference to Exhibit 99.1 to the Current Report on Form 8-K of Charter Communications, Inc. filed on December 22, 2017 (File No. 001-33664)).
23.1*	Consent of KPMG LLP.
31.1*	Certificate of Chief Executive Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) under the Securities Exchange Act of 1934.
31.2*	Certificate of Chief Financial Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) under the Securities Exchange Act of 1934.
32.1*	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (Chief Executive Officer).
32.2*	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (Chief Financial Officer).
101	The following financial information from the Annual Report of CCO Holdings, LLC and CCO Holdings Capital Corp. on Form 10-K for the year ended December 31, 2018, filed with the SEC on February 8, 2019, formatted in eXtensible Business Reporting Language: (i) Consolidated Balance Sheets, (ii) Consolidated Statements of Operations, (iii) Consolidated Statements of Comprehensive Income, (iv) Consolidated Statements of Changes in Member's Equity, (v) Consolidated Statements of Cash Flows, and (vi) Notes to Consolidated Financial Statements.

* Filed herewith.
+ Management compensatory plan or arrangement

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Report of Independent Registered Public Accounting Firm

To the Manager and the Member of
CCO Holdings, LLC and CCO Holdings Capital Corp.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of CCO Holdings, LLC and CCO Holdings Capital Corp. and subsidiaries (the Company) as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive income, member's equity, and cash flows for each of the years in the three-year period ended December 31, 2018, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

(signed) KPMG LLP

We have served as the Company's auditor since 2003.

St. Louis, Missouri
February 8, 2019

CCO HOLDINGS, LLC AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(dollars in millions)

	December 31,	
	2018	2017
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$ 300	$ 330
Accounts receivable, less allowance for doubtful accounts of $129 and $113, respectively	1,699	1,611
Prepaid expenses and other current assets	400	243
Total current assets	2,399	2,184
INVESTMENT IN CABLE PROPERTIES:		
Property, plant and equipment, net of accumulated depreciation of $23,038 and $18,049, respectively	34,658	33,552
Customer relationships, net	9,565	11,951
Franchises	67,319	67,319
Goodwill	29,554	29,554
Total investment in cable properties, net	141,096	142,376
OTHER NONCURRENT ASSETS	1,403	1,133
Total assets	$ 144,898	$ 145,693
LIABILITIES AND MEMBER'S EQUITY		
CURRENT LIABILITIES:		
Accounts payable and accrued liabilities	$ 7,903	$ 8,141
Payables to related party	545	635
Current portion of long-term debt	3,290	2,045
Total current liabilities	11,738	10,821
LONG-TERM DEBT	69,537	68,186
LOANS PAYABLE - RELATED PARTY	925	888
DEFERRED INCOME TAXES	—	32
OTHER LONG-TERM LIABILITIES	2,144	2,184
MEMBER'S EQUITY:		
Member's equity	60,532	63,559
Accumulated other comprehensive loss	(2)	(1)
Total CCO Holdings member's equity	60,530	63,558
Noncontrolling interests	24	24
Total member's equity	60,554	63,582
Total liabilities and member's equity	$ 144,898	$ 145,693

The accompanying notes are an integral part of these consolidated financial statements.

CCO HOLDINGS, LLC AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(dollars in millions)

	Year Ended December 31,		
	2018	2017	2016
REVENUES	$ 43,620	$ 41,578	$ 29,003
COSTS AND EXPENSES:			
Operating costs and expenses (exclusive of items shown separately below)	27,891	26,560	18,670
Depreciation and amortization	10,307	10,579	6,902
Other operating expenses, net	230	444	722
	38,428	37,583	26,294
Income from operations	5,192	3,995	2,709
OTHER EXPENSES:			
Interest expense, net	(3,579)	(3,115)	(2,123)
Loss on extinguishment of debt	—	(40)	(111)
Gain (loss) on financial instruments, net	(110)	69	89
Other pension benefits	192	1	899
Other expense, net	(46)	(4)	(3)
	(3,543)	(3,089)	(1,249)
Income before income taxes	1,649	906	1,460
Income tax expense	(16)	(23)	(3)
Consolidated net income	1,633	883	1,457
Less: Net income attributable to noncontrolling interests	(1)	(1)	(1)
Net income attributable to CCO Holdings member	$ 1,632	$ 882	$ 1,456

The accompanying notes are an integral part of these consolidated financial statements.

CCO HOLDINGS, LLC AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(dollars in millions)

	Year Ended December 31,		
	2018	2017	2016
Consolidated net income	$ 1,633	$ 883	$ 1,457
Net impact of interest rate derivative instruments	—	5	8
Foreign currency translation adjustment	(1)	1	(2)
Consolidated comprehensive income	1,632	889	1,463
Less: Comprehensive income attributable to noncontrolling interests	(1)	(1)	(1)
Comprehensive income attributable to CCO Holdings member	$ 1,631	$ 888	$ 1,462

The accompanying notes are an integral part of these consolidated financial statements.

CCO HOLDINGS, LLC AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN MEMBER'S EQUITY
(dollars in millions)

	Member's Equity	Accumulated Other Comprehensive Loss	Total CCO Holdings Member's Equity	Non-controlling Interests	Total Member's Equity
BALANCE, December 31, 2015	$ 1,335	$ (13)	$ 1,322	$ —	$ 1,322
Consolidated net income	1,456	—	1,456	1	1,457
Stock compensation expense	244	—	244	—	244
Accelerated vesting of equity awards	248	—	248	—	248
Contributions from parent	478	—	478	—	478
Distributions to parent	(4,546)	—	(4,546)	—	(4,546)
Changes in accumulated other comprehensive loss, net	—	6	6	—	6
Contributions of net assets acquired in the TWC Transaction	87,676	—	87,676	—	87,676
Contributions of net assets acquired in the Bright House Transaction	12,156	—	12,156	—	12,156
Merger of parent companies and the Safari Escrow Entities	(23,202)	—	(23,202)	—	(23,202)
Contribution of noncontrolling interests	—	—	—	24	24
BALANCE, December 31, 2016	75,845	(7)	75,838	25	75,863
Consolidated net income	882	—	882	1	883
Stock compensation expense	261	—	261	—	261
Accelerated vesting of equity awards	49	—	49	—	49
Contributions from parent	10	—	10	—	10
Distributions to parent	(13,488)	—	(13,488)	—	(13,488)
Changes in accumulated other comprehensive loss, net	—	6	6	—	6
Distributions to noncontrolling interest	—	—	—	(2)	(2)
BALANCE, December 31, 2017	63,559	(1)	63,558	24	63,582
Consolidated net income	1,632	—	1,632	1	1,633
Stock compensation expense	285	—	285	—	285
Accelerated vesting of equity awards	5	—	5	—	5
Contributions from parent	142	—	142	—	142
Distributions to parent	(5,178)	—	(5,178)	—	(5,178)
Cumulative effect of accounting changes	87	—	87	—	87
Changes in accumulated other comprehensive loss, net	—	(1)	(1)	—	(1)
Distributions to noncontrolling interest	—	—	—	(1)	(1)
BALANCE, December 31, 2018	$ 60,532	$ (2)	$ 60,530	$ 24	$ 60,554

The accompanying notes are an integral part of these consolidated financial statements.

CCO HOLDINGS, LLC AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(dollars in millions)

	Year Ended December 31,		
	2018	**2017**	**2016**
CASH FLOWS FROM OPERATING ACTIVITIES:			
Consolidated net income	$ 1,633	$ 883	$ 1,457
Adjustments to reconcile consolidated net income to net cash flows from operating activities:			
Depreciation and amortization	10,307	10,579	6,902
Stock compensation expense	285	261	244
Accelerated vesting of equity awards	5	49	248
Noncash interest income, net	(308)	(371)	(256)
Other pension benefits	(192)	(1)	(899)
Loss on extinguishment of debt	—	40	111
(Gain) loss on financial instruments, net	110	(69)	(89)
Deferred income taxes	4	7	6
Other, net	144	105	(2)
Changes in operating assets and liabilities, net of effects from acquisitions and dispositions:			
Accounts receivable	(88)	(115)	(161)
Prepaid expenses and other assets	(274)	118	141
Accounts payable, accrued liabilities and other	98	77	940
Receivables from and payables to related party, including deferred management fees	(67)	45	123
Net cash flows from operating activities	11,657	11,608	8,765
CASH FLOWS FROM INVESTING ACTIVITIES:			
Purchases of property, plant and equipment	(9,109)	(8,681)	(5,325)
Change in accrued expenses related to capital expenditures	(470)	820	603
Purchases of cable systems, net	—	(9)	(7)
Other, net	(100)	(123)	(22)
Net cash flows from investing activities	(9,679)	(7,993)	(4,751)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Borrowings of long-term debt	13,820	25,276	12,344
Repayments of long-term debt	(10,769)	(16,507)	(10,521)
Borrowings (repayments) of loans payable - related parties	12	234	(253)
Payments for debt issuance costs	(29)	(111)	(284)
Contributions from parent	142	—	478
Distributions to parent	(5,178)	(13,488)	(4,546)
Proceeds from termination of interest rate derivatives	—	—	88
Distributions to noncontrolling interest	(1)	(2)	—
Other, net	(5)	(11)	(1)
Net cash flows from financing activities	(2,008)	(4,609)	(2,695)
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	(30)	(994)	1,319
CASH AND CASH EQUIVALENTS, beginning of period	330	1,324	5
CASH AND CASH EQUIVALENTS, end of period	$ 300	$ 330	$ 1,324
CASH PAID FOR INTEREST	$ 3,865	$ 3,421	$ 2,200
CASH PAID FOR TAXES	$ 19	$ 22	$ 3

The accompanying notes are an integral part of these consolidated financial statements.

1. Organization and Basis of Presentation

Organization

CCO Holdings, LLC (together with its subsidiaries, "CCO Holdings," or the "Company") is the second largest cable operator in the United States and a leading broadband communications company providing video, Internet and voice services to residential and small and medium business customers. The Company also recently launched its mobile service to residential customers. In addition, the Company sells video and online advertising inventory to local, regional and national advertising customers and fiber-delivered communications and managed information technology solutions to larger enterprise customers. The Company also owns and operates regional sports networks and local sports, news and lifestyle channels.

CCO Holdings is a holding company whose principal assets are the equity interests in its operating subsidiaries. CCO Holdings is a direct subsidiary of CCH I Holdings, LLC, which is an indirect subsidiary of Charter Communications, Inc. ("Charter"), Charter Communications Holdings, LLC ("Charter Holdings") and Spectrum Management Holding Company, LLC ("Spectrum Management"). The consolidated financial statements include the accounts of CCO Holdings and all of its subsidiaries where the underlying operations reside. All significant intercompany accounts and transactions among consolidated entities have been eliminated. Charter, Charter Holdings and Spectrum Management have performed financing, cash management, treasury and other services for CCO Holdings on a centralized basis. Changes in member's equity in the consolidated balance sheets related to these activities have been considered cash receipts (contributions) and payments (distributions) for purposes of the consolidated statements of cash flows and are reflected in financing activities.

The Transactions

On May 18, 2016, the transactions contemplated by the Agreement and Plan of Mergers dated as of May 23, 2015 (the "Merger Agreement"), by and among Time Warner Cable Inc. ("Legacy TWC"), Charter Communications, Inc. prior to the closing of the Merger Agreement ("Legacy Charter"), CCH I, LLC, previously a wholly owned subsidiary of Legacy Charter and certain other subsidiaries of CCH I, LLC were completed (the "TWC Transaction," and together with the Bright House Transaction described below, the "Transactions"). As a result of the TWC Transaction, CCH I, LLC became the new public parent company that holds the operations of the combined companies and was renamed Charter Communications, Inc.

Also, on May 18, 2016, Legacy Charter and Advance/Newhouse Partnership ("A/N"), the former parent of Bright House Networks, LLC ("Legacy Bright House"), completed their previously announced transaction, pursuant to a definitive Contribution Agreement (the "Contribution Agreement"), under which Charter acquired Legacy Bright House (the "Bright House Transaction"). Pursuant to the Bright House Transaction, Charter became the owner of the membership interests in Legacy Bright House and the other assets primarily related to Legacy Bright House (other than certain excluded assets and liabilities and non-operating cash).

To partially finance the Transactions, Liberty Broadband Corporation ("Liberty Broadband") purchased shares of Charter Class A common stock (the "Liberty Transaction").

The following unaudited pro forma financial information of the Company is based on the historical consolidated financial statements of Legacy Charter, Legacy TWC and Legacy Bright House and is intended to provide information about how the Transactions and related financing may have affected the Company's historical consolidated financial statements if they had closed as of January 1, 2015. The pro forma financial information below is based on available information and assumptions that the Company believes are reasonable. The pro forma financial information is for illustrative and informational purposes only and is not intended to represent or be indicative of what the Company's financial condition or results of operations would have been had the transactions described above occurred on the date indicated. The pro forma financial information also should not be considered representative of the Company's future financial condition or results of operations.

	Year Ended December 31, 2016
	(unaudited)
Revenues	$ 40,023
Net income attributable to CCO Holdings member	$ 1,890

Basis of Presentation

The accompanying consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles ("GAAP") and the rules and regulations of the Securities and Exchange Commission (the "SEC").

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Areas involving significant judgments and estimates include capitalization of labor and overhead costs; depreciation and amortization costs; impairments of property, plant and equipment, intangibles and goodwill; pension benefits; income taxes; contingencies and programming expense. Actual results could differ from those estimates.

Certain prior period amounts have been reclassified to conform with the 2018 presentation.

2. Summary of Significant Accounting Policies

Consolidation

The accompanying consolidated financial statements include the accounts of CCO Holdings and all entities in which CCO Holdings has a controlling interest. The noncontrolling interest on the Company's balance sheet represents the third-party interest in CV of Viera, LLP, the Company's consolidated joint venture in a small cable system in Florida. All significant inter-company accounts and transactions among consolidated entities have been eliminated in consolidation.

Cash and Cash Equivalents

The Company considers all highly liquid investments with original maturities of three months or less to be cash equivalents. These investments are carried at cost, which approximates market value.

Property, Plant and Equipment

Additions to property, plant and equipment are recorded at cost, including all material, labor and certain indirect costs associated with the construction of cable transmission and distribution facilities. While the Company's capitalization is based on specific activities, once capitalized, costs are tracked on a composite basis by fixed asset category at the cable system level and not on a specific asset basis. For assets that are sold or retired, the estimated historical cost and related accumulated depreciation is removed. Costs associated with the initial placement of the customer drop to the dwelling and the initial placement of outlets within a dwelling along with the costs associated with the initial deployment of customer premise equipment necessary to provide video, Internet or voice services are capitalized. Costs capitalized include materials, direct labor and certain indirect costs. Indirect costs are associated with the activities of the Company's personnel who assist in installation activities and consist of compensation and other costs associated with these support functions. Indirect costs primarily include employee benefits and payroll taxes, vehicle

and occupancy costs, and the costs of sales and dispatch personnel associated with capitalizable activities. The costs of disconnecting service and removing customer premise equipment from a dwelling and the costs to reconnect a customer drop or to redeploy previously installed customer premise equipment are charged to operating expense as incurred. Costs for repairs and maintenance are charged to operating expense as incurred, while plant and equipment replacement, including replacement of certain components, betterments, including replacement of cable drops and outlets, are capitalized.

Depreciation is recorded using the straight-line composite method over management's estimate of the useful lives of the related assets as follows:

Cable distribution systems	8-21 years
Customer premise equipment and installations	3-8 years
Vehicles and equipment	4-9 years
Buildings and improvements	15-40 years
Furniture, fixtures and equipment	2-10 years

Asset Retirement Obligations

Certain of the Company's franchise agreements and leases contain provisions requiring the Company to restore facilities or remove equipment in the event that the franchise or lease agreement is not renewed. The Company expects to continually renew its franchise agreements and therefore cannot reasonably estimate any liabilities associated with such agreements. A remote possibility exists that franchise agreements could be terminated unexpectedly, which could result in the Company incurring significant expense in complying with restoration or removal provisions. The Company does not have any significant liabilities related to asset retirements recorded in its consolidated financial statements.

Valuation of Long-Lived Assets

The Company evaluates the recoverability of long-lived assets (e.g., property, plant and equipment and finite-lived intangible assets) to be held and used when events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Such events or changes in circumstances could include such factors as impairment of the Company's indefinite life assets, changes in technological advances, fluctuations in the fair value of such assets, adverse changes in relationships with local franchise authorities, adverse changes in market conditions or a deterioration of current or expected future operating results. If a review indicates that the carrying value of such asset is not recoverable from estimated undiscounted cash flows, the carrying value of such asset is reduced to its estimated fair value. While the Company believes that its estimates of future cash flows are reasonable, different assumptions regarding such cash flows could materially affect its evaluations of asset recoverability. No impairments of long-lived assets held for use were recorded in 2018, 2017 and 2016.

Other Noncurrent Assets

Other noncurrent assets primarily include investments, right-of-entry costs and other intangible assets. The Company accounts for its investments in less than majority owned investees under either the equity or cost method. The Company applies the equity method to investments when it has the ability to exercise significant influence over the operating and financial policies of the investee. The Company's share of the investee's earnings (losses) is included in other expense, net in the consolidated statements of operations. The Company monitors its investments for indicators that a decrease in investment value has occurred that is other than temporary. If it has been determined that an investment has sustained an other than temporary decline in value, the investment is written down to fair value with a charge to earnings. Investments acquired are measured at fair value utilizing the acquisition method of accounting. The difference between the fair value and the amount of underlying equity in net assets for most equity method investments is due to previously unrecognized intangible assets at the investee. These amounts are amortized as a component of equity earnings (losses), recorded within other expense, net over the estimated useful life of the asset. Right-of-entry costs represent upfront costs incurred related to agreements entered into with multiple dwelling units ("MDUs") including landlords, real estate companies or owners to gain access to a building in order to market and service customers who reside in the building. Right-of-entry costs are deferred and amortized to regulatory, connectivity and produced content within operating costs and expenses over the term of the agreement. See Note 19.

Revenue Recognition

Nature of Services

Residential Services

Residential customers are offered video, Internet, and voice services primarily on a subscription basis. Residential customers may generally cancel their subscriptions at any time without penalty. Each subscription service provided is accounted for as a distinct performance obligation and revenue is recognized ratably over a one month service period as the subscription services are delivered. Each optional service purchased is generally accounted for as a distinct performance obligation when purchased and revenue is recognized when the service is provided.

Residential video customers have the option to purchase additional tiers of services, as well as video-on-demand (“VOD”) programming and pay-per-view programming on a per-event basis. Video revenues consist primarily of revenues from the selected programming service tier, as well as VOD fees, pay-per-view fees, retransmission fees, regulatory fees, equipment service fees and video installation fees.

Residential Internet customers receive data download and upload services with speeds dependent on the selected tier of service. Customers are also offered a security suite, an in-home WiFi product, and an out-of-home WiFi service. Internet revenues consist primarily of data services, WiFi service fees and Internet installation fees.

Residential voice customers receive unlimited local and long distance calling to United States, Canada, Mexico, and Puerto Rico, voicemail, call waiting, caller ID, call forward and other features. Customers may also purchase international calling either by the minute, or through packages of minutes per month. Voice revenues consist primarily of voice services and regulatory fees.

Small and Medium Business

Small and medium business customers are offered video, Internet and voice services similar to those provided to residential customers. Small and medium business customers may generally cancel their subscriptions at any time without penalty. Each subscription service provided is accounted for as a distinct performance obligation and revenue is recognized ratably over a one month service period as the subscription services are delivered.

Enterprise Solutions

Enterprise Solutions include fiber-delivered communications and managed information technology solutions to larger businesses, as well as high-capacity last-mile data connectivity services to mobile and wireline carriers, Internet service providers, and other competitive carriers on a wholesale basis. Services are primarily offered on a subscription basis with a contractually specified and non-cancelable service period. Each subscription service provided is accounted for as a distinct performance obligation and revenue is recognized ratably over the contract period as the subscription services are delivered. Enterprise subscription services are billed as monthly recurring charges to customers and related installation services, if applicable, are billed upon completion of the customer installation. Installation services are not accounted for as distinct performance obligations, but rather a component of the connectivity services, and therefore upfront installation fees are deferred and recognized as revenue over the related contract period.

Advertising Services

The Company offers local, regional and national businesses the opportunity to advertise in individual and multiple service areas on cable television networks and digital outlets. Placement of advertising is accounted for as a distinct performance obligation and revenue is recognized at the point in time when the advertising is distributed. In some service areas, the Company has formed advertising interconnects or entered into representation agreements with other video distributors, under which the Company sells advertising on behalf of those distributors. In other service areas, the Company has entered into representation agreements under which another operator in the area will sell advertising on the Company’s behalf. For representation arrangements in which the Company controls the sale of advertising and acts as the principal to the transaction, the Company recognizes revenue earned from the advertising customer on a gross basis and the amount remitted to the distributor as an operating expense. For other representation arrangements in which the Company does not control the sale of advertising and acts as an agent to the transaction, the Company recognizes revenue net of any fee remitted to the distributor.

Mobile

At the end of the second quarter of 2018, the Company launched its mobile product which is available to residential customers subscribing to its Internet service. Mobile services are sold under an unlimited data plan or a by-the-gig data usage plan and revenue is recognized as the services are provided. Customers can purchase mobile devices and accessory products and have the option to pay for devices under interest-free monthly installment plans. The sale of devices is a separate performance obligation. Revenue is recognized from the sale of devices at the time of shipment.

The Company's revenues by product line are as follows:

	Year Ended December 31,		
	2018	2017	2016
Video	$ 17,348	$ 16,621	$ 11,955
Internet	15,181	14,101	9,270
Voice	2,114	2,542	2,005
Residential revenue	34,643	33,264	23,230
Small and medium business	3,665	3,547	2,384
Enterprise	2,528	2,373	1,539
Commercial revenue	6,193	5,920	3,923
Advertising sales	1,785	1,510	1,235
Mobile	106	—	—
Other	893	884	615
	$ 43,620	$ 41,578	$ 29,003

Fees imposed on the Company by various governmental authorities are passed through on a monthly basis to the Company's customers and are periodically remitted to authorities. Fees of $1.0 billion, $961 million and $711 million for the years ended December 31, 2018, 2017 and 2016, respectively, are reported in video, voice, mobile and commercial revenues, on a gross basis with a corresponding operating expense because the Company is acting as a principal. Certain taxes, such as sales taxes imposed on the Company's customers, collected and remitted to state and local authorities, are recorded on a net basis because the Company is acting as an agent in such situation.

A significant portion of our revenue is derived from customers who may generally cancel their subscriptions at any time without penalty. As such, the amount of revenue related to unsatisfied performance obligations is not necessarily indicative of the future revenue to be recognized from our existing customer base. Revenue from customers with a contractually specified term and non-cancelable service period will be recognized over the term of such contracts, which is generally two to seven years for our enterprise contracts with a weighted average term of approximately three years.

Significant Judgments in Evaluating Revenue Recognition

The Company often provides multiple services to a customer. Provision of customer premise equipment, installation services, and additional service tiers may have a significant level of integration and interdependency with the subscription video, Internet, voice, or connectivity services provided. Judgment is required to determine whether provision of customer premise equipment, installation services, and additional service tiers are considered distinct and accounted for separately, or not distinct and accounted for together with the subscription services.

Allocation of the transaction price to the distinct performance obligations in bundled residential service subscriptions requires judgment. The transaction price for a bundle of residential services is frequently less than the sum of the standalone selling prices of each individual service. The Company allocates the residential services bundle discount among the services to which the

discount relates based on the relative standalone selling prices of those services. Standalone selling prices for the Company's residential video and Internet services are directly observable, while standalone selling price for the Company's residential voice service is estimated using the adjusted market assessment approach which relies upon information from peers and competitors who sell residential voice services individually.

The Company believes residential and small and medium business non-refundable upfront installation fees charged to customers result in a material right to renew the contract as such fees are not required to be paid upon subsequent renewals. The residential and small and medium business upfront fee is deferred over the period the fee remains material to the customer, which the Company has estimated to be approximately six months. Estimation of the period the fee remains material to the customer requires consideration of both quantitative and qualitative factors including average installation fee, average revenue per customer, and customer behavior, among others.

Deferred Revenue Contract Liabilities

Timing of revenue recognition may differ from the timing of invoicing to customers. Residential, small and medium business, and enterprise customers are invoiced for subscription services in advance of the service period. Deferred revenue liabilities, or contract liabilities, are recorded when the Company collects payments in advance of performing the services. Deferred revenue liabilities, or contract liabilities, are also recorded when the Company invoices customers upfront for installation services that are recognized as revenue over time. Residential and small and medium business installation revenues are deferred over the period the fee remains material to the customer. Enterprise installation revenues are deferred using a portfolio approach over the average contract life of each enterprise service category. As of December 31, 2018, current deferred revenue liabilities consisting of customer prepayments of$410 million and upfront installation fees of $84 million were included in accounts payable and accrued liabilities. As of December 31, 2018, long-term deferred revenue liabilities consisting of enterprise upfront installation fees of $34 million were included in other long-term liabilities.

Contract Costs

The Company recognizes an asset for incremental costs of obtaining a contract with a customer if the amortization period of those costs is expected to be longer than one year and the costs are expected to be recovered. Enterprise sales commission costs meet the requirements to be deferred and, as a result, are recognized using a portfolio approach over a commission expense weighted-average enterprise contract period. Deferred enterprise commission costs are included in other noncurrent assets in the consolidated balance sheet and totaled $142 million as of December 31, 2018. As the amortization period of residential and small and medium business commissions costs is less than one year, the Company applies the practical expedient that allows such costs to be expensed as incurred. The Company has determined that the amortization period associated with residential and small and medium business commission costs is less than one year based on qualitative and quantitative factors.

The Company recognizes an asset for costs incurred to fulfill a contract when those costs are directly related to services provided under the contract, generate or enhance resources of the entity that will be used in performing service obligations under the contract, and are expected to be recovered. Up-front fees paid to MDUs, such as apartment building owners, in order to gain access to market and serve tenants who reside within the MDU meet the requirements to be deferred and, as a result, are recognized over the term of the MDU contract. Deferred upfront MDU fees are amortized on a straight-line basis and are included in other noncurrent assets in the consolidated balance sheet and totaled $273 million as of December 31, 2018. Amortization expense of $62 million was included in regulatory, connectivity and produced content within operating costs and expenses in the consolidated statements of operations for the year ended December 31, 2018. Residential and small and medium business installation costs not capitalized into property, plant and equipment are expensed as incurred under cable industry-specific guidance.

Programming Costs

The Company has various contracts to obtain video programming from vendors whose compensation is typically based on a flat fee per customer. The cost of the right to exhibit network programming under such arrangements is recorded in operating expenses in the month the programming is available for exhibition. Programming costs are paid each month based on calculations performed by the Company and are subject to periodic audits performed by the programmers. Certain programming contracts contain cash and non-cash consideration from the programmers. If consideration received does not relate to a separate product or service, the Company recognizes the consideration on a straight-line basis over the life of the programming agreement as a reduction of

programming expense. Programming costs included in the statements of operations were $11.1 billion, $10.6 billion and $7.0 billion for the years ended December 31, 2018, 2017 and 2016, respectively.

Advertising Costs

Advertising costs associated with marketing the Company's products and services are generally expensed as costs are incurred.

Multiple-Element Transactions

In the normal course of business, the Company enters into multiple-element transactions where it is simultaneously both a customer and a vendor with the same counterparty or in which it purchases multiple products and/or services, or settles outstanding items contemporaneous with the purchase of a product or service from a single counterparty. Transactions, although negotiated contemporaneously, may be documented in one or more contracts. The Company's policy for accounting for each transaction negotiated contemporaneously is to record each element of the transaction based on the respective estimated fair values of the products or services purchased and the products or services sold. In determining the fair value of the respective elements, the Company refers to quoted market prices (where available), historical transactions or comparable cash transactions. Cash consideration received from a vendor is recorded as a reduction in the price of the vendor's product unless (i) the consideration is for the reimbursement of a specific, incremental, identifiable cost incurred, in which case the cash consideration received would be recorded as a reduction in such cost (e.g., marketing costs), or (ii) an identifiable benefit in exchange for the consideration is provided, in which case revenue would be recognized for this element.

Stock-Based Compensation

Restricted stock, restricted stock units, stock options as well as equity awards with market conditions are measured at the grant date fair value and amortized to stock compensation expense over the requisite service period. The fair value of options is estimated on the date of grant using the Black-Scholes option-pricing model and the fair value of equity awards with market conditions is estimated on the date of grant using Monte Carlo simulations. The grant date weighted average assumptions used during the years ended December 31, 2018, 2017 and 2016, respectively, were: risk-free interest rate of 2.4%, 1.8% and 1.7%; expected volatility of 25.0%, 25.0% and 25.4%; and expected lives of 5.1 years, 4.6 years and 1.3 years. Weighted average assumptions for 2016 include the assumptions used for the converted TWC awards (see Note 14). The Company's volatility assumptions represent management's best estimate and were based on historical volatility of Charter. Expected lives were estimated using historical exercise data. The valuations assume no dividends are paid.

Pension Plans

The Company sponsors the TWC Pension Plan, TWC Union Pension Plan and TWC Excess Pension Plan (as defined in Note 18). Pension benefits are based on formulas that reflect the employees' years of service and compensation during their employment period. Actuarial gains or losses are changes in the amount of either the benefit obligation or the fair value of plan assets resulting from experience different from that assumed or from changes in assumptions. The Company has elected to follow a mark-to-market pension accounting policy for recording the actuarial gains or losses annually during the fourth quarter, or earlier if a remeasurement event occurs during an interim period.

Income Taxes

CCO Holdings is a single member limited liability company not subject to income tax. CCO Holdings holds all operations through indirect subsidiaries. The majority of these indirect subsidiaries are limited liability companies that are not subject to income tax. Certain indirect subsidiaries that are required to file separate returns are subject to federal and state tax. CCO Holdings' tax provision reflects the tax provision of the entities required to file separate returns. The Company recognizes deferred tax assets and liabilities for temporary differences between the financial reporting basis and the tax basis of these indirect subsidiaries' assets and liabilities and expected benefits of utilizing loss carryforwards. The impact on deferred taxes of changes in tax rates and tax law, if any, applied to the years during which temporary differences are expected to be settled, are reflected in the consolidated financial statements in the period of enactment. See Note 15.

Charter is subject to income taxes. Accordingly, in addition to the Company's deferred tax liabilities, Charter has recorded net deferred tax liabilities of approximately $17.4 billion and $17.3 billion as December 31, 2018 and 2017, respectively, related to their investment in Charter Holdings, net of loss carryforwards, which is not reflected at the Company.

Segments

The Company's operations are managed and reported to its Chief Executive Officer ("CEO"), the Company's chief operating decision maker, on a consolidated basis. The CEO assesses performance and allocates resources based on the consolidated results of operations. Under this organizational and reporting structure, the Company has one reportable segment, cable services.

3. Allowance for Doubtful Accounts

Activity in the allowance for doubtful accounts is summarized as follows for the years presented:

	Year Ended December 31,		
	2018	2017	2016
Balance, beginning of period	$ 113	$ 124	$ 21
Charged to expense	570	469	328
Uncollected balances written off, net of recoveries	(554)	(480)	(225)
Balance, end of period	$ 129	$ 113	$ 124

4. Property, Plant and Equipment

Property, plant and equipment consists of the following as of December 31, 2018 and 2017:

	December 31,	
	2018	2017
Cable distribution systems	$ 29,573	$ 26,104
Customer premise equipment and installations	17,100	15,909
Vehicles and equipment	1,688	1,477
Buildings and improvements	3,894	3,564
Furniture, fixtures and equipment	5,441	4,547
	57,696	51,601
Less: accumulated depreciation	(23,038)	(18,049)
	$ 34,658	$ 33,552

The Company periodically evaluates the estimated useful lives used to depreciate its assets and the estimated amount of assets that will be abandoned or have minimal use in the future. A significant change in assumptions about the extent or timing of future asset retirements, or in the Company's use of new technology and upgrade programs, could materially affect future depreciation expense.

Depreciation expense for the years ended December 31, 2018, 2017 and 2016 was $7.9 billion, $7.8 billion, and $5.0 billion, respectively.

5. Franchises, Goodwill and Other Intangible Assets

Franchise rights represent the value attributed to agreements or authorizations with local and state authorities that allow access to homes in cable service areas. For valuation purposes, they are defined as the future economic benefits of the right to solicit and service potential customers (customer marketing rights), and the right to deploy and market new services to potential customers (service marketing rights).

Management estimates the fair value of franchise rights at the date of acquisition and determines if the franchise has a finite life or an indefinite life. The Company has concluded that all of its franchises qualify for indefinite life treatment given that there are no legal, regulatory, contractual, competitive, economic or other factors which limit the period over which these rights will contribute to the Company's cash flows. The Company reassesses this determination periodically or whenever events or substantive changes in circumstances occur.

All franchises are tested for impairment annually or more frequently as warranted by events or changes in circumstances. Franchise assets are aggregated into essentially inseparable units of accounting to conduct valuations. The units of accounting generally represent geographical clustering of the Company's cable systems into groups. The Company assesses qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not that an indefinite lived intangible asset has been impaired. If, after this optional qualitative assessment, the Company determines that it is not more likely than not that an indefinite lived intangible asset has been impaired, then no further quantitative testing is necessary. In completing the qualitative impairment testing, the Company evaluates a multitude of factors that affect the fair value of our franchise assets. Examples of such factors include environmental and competitive changes within our operating footprint, actual and projected operating performance, the consistency of our operating margins, equity and debt market trends, including changes in our market capitalization, and changes in our regulatory and political landscape, among other factors. The Company performed a qualitative assessment in 2018, which also included consideration of a fair value appraisal performed for tax purposes in the beginning of 2018 as of a December 31, 2017 valuation date (the "Appraisal"). After consideration of the qualitative factors in 2018, including the results of the Appraisal, the Company concluded that it is more likely than not that the fair value of the franchise assets in each unit of accounting exceeds the carrying value of such assets and therefore did not perform a quantitative analysis at the assessment date. Periodically, the Company will elect to perform a quantitative analysis for impairment testing. If the Company elects or is required to perform a quantitative analysis to test its franchise assets for impairment, the methodology described below is utilized.

If a quantitative analysis is performed, the estimated fair value of franchises is determined utilizing an income approach model based on the present value of the estimated discrete future cash flows attributable to each of the intangible assets identified assuming a discount rate. The fair value of franchises is determined based on estimated discrete discounted future cash flows using assumptions consistent with internal forecasts. The franchise after-tax cash flow is calculated as the after-tax cash flow generated by the potential customers obtained. The sum of the present value of the franchises' after-tax cash flow in years 1 through 10 and the continuing value of the after-tax cash flow beyond year 10 yields the fair value of the franchises.

This approach makes use of unobservable factors such as projected revenues, expenses, capital expenditures, customer trends, and a discount rate applied to the estimated cash flows. The determination of the franchise discount rate is derived from the Company's weighted average cost of capital, which uses a market participant's cost of equity and after-tax cost of debt and reflects the risks inherent in the cash flows. The Company estimates discounted future cash flows using reasonable and appropriate assumptions including among others, penetration rates for video, Internet, and voice; revenue growth rates; operating margins; and capital expenditures. The assumptions are based on the Company's and its peers' historical operating performance adjusted for current and expected competitive and economic factors surrounding the cable industry. The estimates and assumptions made in the Company's valuations are inherently subject to significant uncertainties, many of which are beyond its control, and there is no assurance that these results can be achieved. The primary assumptions for which there is a reasonable possibility of the occurrence of a variation that would significantly affect the measurement value include the assumptions regarding revenue growth, programming expense growth rates, the amount and timing of capital expenditures, actual customer trends and the discount rate utilized.

The fair value of goodwill is determined using both an income approach and market approach. The Company's income approach model used for its goodwill valuation is consistent with that used for its franchise valuation noted above except that cash flows from the entire business enterprise are used for the goodwill valuation. The Company's market approach model estimates the fair value of the reporting unit based on market prices in actual precedent transactions of similar businesses and market valuations of guideline public companies. Goodwill is tested for impairment as of November 30 of each year, or more frequently as warranted by events or changes in circumstances. Accounting guidance also permits an optional qualitative assessment for goodwill to determine whether it is more likely than not that the carrying value of a reporting unit exceeds its fair value. If, after this qualitative assessment, the Company determines that it is not more likely than not that the fair value of a reporting unit is less than its carrying amount then no further quantitative testing would be necessary. If the Company elects or is required to perform the two-step test under the accounting guidance, the first step involves a comparison of the estimated fair value of the reporting unit to its carrying amount. If the estimated fair value of the reporting unit exceeds its carrying amount, goodwill of the reporting unit is not considered impaired and the second step of the goodwill impairment is not necessary. If the carrying amount of a reporting unit exceeds its

estimated fair value, then the second step of the goodwill impairment test must be performed, and a comparison of the implied fair value of the reporting unit's goodwill is compared to its carrying amount to determine the amount of impairment, if any. As with the Company's franchise impairment testing, in 2018 the Company elected to perform a qualitative goodwill impairment assessment, which incorporated the results of the Appraisal and consideration of the same qualitative factors relevant to the Company's franchise impairment testing. As a result of that assessment, the Company concluded that goodwill is not impaired.

Customer relationships are recorded at fair value as of the date acquired less accumulated amortization. Customer relationships, for valuation purposes, represent the value of the business relationship with existing customers, and are calculated by projecting the discrete future after-tax cash flows from these customers, including the right to deploy and market additional services to these customers. The present value of these after-tax cash flows yields the fair value of the customer relationships. The use of different valuation assumptions or definitions of franchises or customer relationships, such as our inclusion of the value of selling additional services to our current customers within customer relationships versus franchises, could significantly impact our valuations and any resulting impairment. Customer relationships are amortized on an accelerated sum of years' digits method over useful lives of 8-15 years based on the period over which current customers are expected to generate cash flows. The Company periodically evaluates the remaining useful lives of its customer relationships to determine whether events or circumstances warrant revision to the remaining periods of amortization. Customer relationships are evaluated for impairment upon the occurrence of events or changes in circumstances indicating that the carrying amount of an asset may not be recoverable. Customer relationships are deemed impaired when the carrying value exceeds the projected undiscounted future cash flows associated with the customer relationships. No impairment of customer relationships was recorded in the years ended December 31, 2018, 2017 or 2016.

As of December 31, 2018 and 2017, indefinite-lived and finite-lived intangible assets are presented in the following table:

	December 31,					
	2018			2017		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Indefinite-lived intangible assets:						
Franchises	$ 67,319	$ —	$ 67,319	$ 67,319	$ —	$ 67,319
Goodwill	29,554	—	29,554	29,554	—	29,554
	$ 96,873	$ —	$ 96,873	$ 96,873	$ —	$ 96,873
Finite-lived intangible assets:						
Customer relationships	$ 18,229	$ (8,664)	$ 9,565	$ 18,229	$ (6,278)	$ 11,951
Other intangible assets	409	(92)	317	731	(201)	530
	$ 18,638	$ (8,756)	$ 9,882	$ 18,960	$ (6,479)	$ 12,481

Amortization expense related to customer relationships and other intangible assets for the years ended December 31, 2018, 2017 and 2016 was $2.4 billion, $2.7 billion and $1.9 billion, respectively. Effective January 1, 2018 with the adoption of ASU 2014-09, up-front fees paid to market and serve customers who reside in residential MDUs are no longer recorded as intangibles and amortized to depreciation and amortization expense, but are now being recorded as noncurrent assets and are amortized to regulatory, connectivity and produced content within operating costs and expenses. See Notes 2 and 19.

The Company expects amortization expense on its finite-lived intangible assets will be as follows.

2019	$ 2,152
2020	1,875
2021	1,597
2022	1,327
2023	1,070
Thereafter	1,861
	$ 9,882

Actual amortization expense in future periods could differ from these estimates as a result of new intangible asset acquisitions or divestitures, changes in useful lives, impairments, adoption of new accounting standards and other relevant factors.

6. Investments

Investments consisted of the following as of December 31, 2018 and 2017:

	December 31,	
	2018	2017
Equity-method investments	436	447
Other investments	6	9
Total investments	$ 442	$ 456

The Company's investments include C&C Wireless Operations, LLC ("C&C" -50% owned), Sterling Entertainment Enterprises, LLC (“Sterling” - d/b/a SportsNet New York - 26.8% owned), MLB Network, LLC (“MLB Network” -6.4% owned), iN Demand L.L.C. (“iN Demand” -39.4% owned) and National Cable Communications LLC (“NCC” - 20.0% owned), among other less significant equity-method and cost-method investments. C&C is the Company’s mobile operating partnership with Comcast Corporation providing software development and related services for the mobile back office platform. Sterling and MLB Network are primarily engaged in the development of sports programming services. iN Demand provides programming on a video on demand, pay-per-view and subscription basis. NCC represents multi-video program distributors to advertisers.

The Company's equity-method investments balances reflected in the table above includes differences between the acquisition date fair value of certain investments acquired and the underlying equity in the net assets of the investee, referred to as a basis difference. This basis difference is amortized as a component of equity earnings. The remaining unamortized basis difference was $387 million and $407 million as of December 31, 2018 and 2017, respectively.

The Company applies the equity method of accounting to these and other less significant equity-method investments, all of which are recorded in other noncurrent assets in the consolidated balance sheets as of December 31, 2018 and 2017. For the years ended December 31, 2018, 2017 and 2016, net losses from equity-method investments were $46 million, $4 million and $3 million, respectively, which were recorded in other expense, net in the consolidated statements of operations.

7. Accounts Payable and Accrued Liabilities

Accounts payable and accrued liabilities consist of the following as ofDecember 31, 2018 and 2017:

	December 31,	
	2018	2017
Accounts payable – trade	$ 702	$ 673
Deferred revenue	494	395
Accrued liabilities:		
Programming costs	2,044	1,907
Labor	705	747
Capital expenditures	1,472	1,935
Interest	1,045	1,054
Taxes and regulatory fees	508	548
Other	933	882
	$ 7,903	$ 8,141

8. Long-Term Debt

Long-term debt consists of the following as of December 31, 2018 and 2017:

	December 31,			
	2018		2017	
	Principal Amount	Accreted Value	Principal Amount	Accreted Value
CCO Holdings, LLC:				
5.250% senior notes due March 15, 2021	$ 500	$ 498	$ 500	$ 497
5.250% senior notes due September 30, 2022	1,250	1,238	1,250	1,235
5.125% senior notes due February 15, 2023	1,000	994	1,000	993
4.000% senior notes due March 1, 2023	500	496	500	495
5.125% senior notes due May 1, 2023	1,150	1,144	1,150	1,143
5.750% senior notes due September 1, 2023	500	497	500	496
5.750% senior notes due January 15, 2024	1,000	993	1,000	992
5.875% senior notes due April 1, 2024	1,700	1,688	1,700	1,687
5.375% senior notes due May 1, 2025	750	745	750	745
5.750% senior notes due February 15, 2026	2,500	2,467	2,500	2,464
5.500% senior notes due May 1, 2026	1,500	1,490	1,500	1,489
5.875% senior notes due May 1, 2027	800	795	800	794
5.125% senior notes due May 1, 2027	3,250	3,219	3,250	3,216
5.000% senior notes due February 1, 2028	2,500	2,466	2,500	2,462
Charter Communications Operating, LLC:				
3.579% senior notes due July 23, 2020	2,000	1,992	2,000	1,988
4.464% senior notes due July 23, 2022	3,000	2,982	3,000	2,977
Senior floating rate notes due February 1, 2024	900	903	—	—
4.500% senior notes due February 1, 2024	1,100	1,091	—	—
4.908% senior notes due July 23, 2025	4,500	4,466	4,500	4,462
3.750% senior notes due February 15, 2028	1,000	986	1,000	985

4.200% senior notes due March 15, 2028	1,250	1,240	1,250	1,238
6.384% senior notes due October 23, 2035	2,000	1,982	2,000	1,981
5.375% senior notes due April 1, 2038	800	785	—	—
6.484% senior notes due October 23, 2045	3,500	3,467	3,500	3,466
5.375% senior notes due May 1, 2047	2,500	2,506	2,500	2,506
5.750% senior notes due April 1, 2048	1,700	1,683	—	—
6.834% senior notes due October 23, 2055	500	495	500	495
Credit facilities	10,038	9,959	9,479	9,387
Time Warner Cable, LLC:				
6.750% senior notes due July 1, 2018	—	—	2,000	2,045
8.750% senior notes due February 14, 2019	1,250	1,260	1,250	1,337
8.250% senior notes due April 1, 2019	2,000	2,030	2,000	2,148
5.000% senior notes due February 1, 2020	1,500	1,541	1,500	1,579
4.125% senior notes due February 15, 2021	700	721	700	730
4.000% senior notes due September 1, 2021	1,000	1,033	1,000	1,045
5.750% sterling senior notes due June 2, 2031 [(a)]	796	855	845	912
6.550% senior debentures due May 1, 2037	1,500	1,680	1,500	1,686
7.300% senior debentures due July 1, 2038	1,500	1,780	1,500	1,788
6.750% senior debentures due June 15, 2039	1,500	1,719	1,500	1,724
5.875% senior debentures due November 15, 2040	1,200	1,256	1,200	1,258
5.500% senior debentures due September 1, 2041	1,250	1,258	1,250	1,258
5.250% sterling senior notes due July 15, 2042 [(b)]	827	798	879	847
4.500% senior debentures due September 15, 2042	1,250	1,140	1,250	1,137
Time Warner Cable Enterprises LLC:				
8.375% senior debentures due March 15, 2023	1,000	1,191	1,000	1,232
8.375% senior debentures due July 15, 2033	1,000	1,298	1,000	1,312
Total debt	71,961	72,827	69,003	70,231
Less current portion:				
6.750% senior notes due July 1, 2018	—	—	(2,000)	(2,045)
8.750% senior notes due February 14, 2019	(1,250)	(1,260)	—	—
8.250% senior notes due April 1, 2019	(2,000)	(2,030)	—	—
Long-term debt	$ 68,711	$ 69,537	$ 67,003	$ 68,186

(a) Principal amount includes £625 million valued at $796 million and $845 million as of December 31, 2018 and December 31, 2017, respectively, using the exchange rate at that date.

(b) Principal amount includes £650 million valued at $827 million and $879 million as of December 31, 2018 and December 31, 2017, respectively, using the exchange rate at that date.

The accreted values presented in the table above represent the principal amount of the debt adjusted for original issue discount or premium at the time of sale, deferred financing costs, and, in regards to the Legacy TWC debt assumed, fair value premium adjustments as a result of applying acquisition accounting plus the accretion of those amounts to the balance sheet date. However, the amount that is currently payable if the debt becomes immediately due is equal to the principal amount of the debt. In regards to the fixed-rate British pound sterling denominated notes (the “Sterling Notes”), the principal amount of the debt and any premium or discount is remeasured into US dollars as of each balance sheet date. See Note 10. The Company has availability under the Charter Operating credit facilities of approximately $2.8 billion as of December 31, 2018.

In April 2018, Charter Operating and Charter Communications Operating Capital Corp. jointly issued $800 million aggregate principal amount of 5.375% senior notes due April 1, 2038 at a price of 98.846% of the aggregate principal amount and $1.7 billion aggregate principal amount of 5.750% senior notes due April 1, 2048 at a price of 99.706% of the aggregate principal amount.

The net proceeds, together with cash on hand, were used to repay certain existing indebtedness, including the redemption of all of the outstanding $2.0 billion in aggregate principal amount of Time Warner Cable, LLC's 6.750% notes due July 1, 2018, to pay related fees and expenses and for general corporate purposes, including distributions to the Company's parent companies to fund buybacks of Charter Class A common stock and Charter Holdings common units.

In July 2018, Charter Operating and Charter Communications Operating Capital Corp. jointly issued $400 million aggregate principal amount of senior floating rate notes due February 1, 2024 at par and $1.1 billion aggregate principal amount of 4.500% senior notes due February 1, 2024 at a price of 99.893% of the aggregate principal amount. In August 2018, Charter Operating and Charter Communications Operating Capital Corp. jointly issued an additional $500 million aggregate principal amount of senior floating rate notes due February 1, 2024 at a price of 101.479% of the aggregate principal amount. Interest on the floating rate notes accrues at LIBOR plus 1.650%. The net proceeds were used to pay related fees and expenses and for general corporate purposes, including distributions to the Company's parent companies to fund buybacks of Charter Class A common stock and Charter Holdings common units.

In January 2019, Charter Operating and Charter Communications Operating Capital Corp. jointly issued $1.25 billion aggregate principal amount of 5.050% senior notes due 2029 at a price of 99.935% of the aggregate principal amount and an additional $750 million aggregate principal amount of 5.75% senior notes due 2048 at a price of 94.970% of the aggregate principal amount. The net proceeds will be used to pay related fees and expenses and for general corporate purposes, including distributions to the Company's parent companies to fund buybacks of Charter Class A common stock and Charter Holdings common units as well as to repay certain indebtedness, including to repay at maturity Time Warner Cable, LLC's 8.75% senior notes due 2019.

During the years ended December 31, 2017 and 2016, the Company repurchased $2.8 billion and $2.9 billion, respectively, of various series of senior secured notes. Loss on extinguishment of debt consisted of the following for the years ended December 31, 2017 and 2016.

	Year Ended December 31,	
	2017	**2016**
CCO Holdings notes redemption	$ (33)	$ (110)
Time Warner Cable, LLC notes redemption	(1)	—
Charter Operating credit facility refinancing	(6)	(1)
	$ (40)	$ (111)

CCO Holdings Notes

The CCO Holdings notes are senior debt obligations of CCO Holdings and CCO Holdings Capital and rank equally with all other current and future unsecured, unsubordinated obligations of CCO Holdings and CCO Holdings Capital. They are structurally subordinated to all obligations of subsidiaries of CCO Holdings.

CCO Holdings may redeem some or all of the CCO Holdings notes at any time at a premium. The optional redemption price declines to 100% of the respective series' principal amount, plus accrued and unpaid interest, if any, on or after varying dates in 2019 through 2025.

In addition, at any time prior to varying dates in 2019 through 2020, CCO Holdings may redeem up to 40% of the aggregate principal amount of certain notes at a premium plus accrued and unpaid interest to the redemption date, with the net cash proceeds of one or more equity offerings (as defined in the indenture); provided that certain conditions are met. In the event of specified change of control events, CCO Holdings must offer to purchase the outstanding CCO Holdings notes from the holders at a purchase price equal to 101% of the total principal amount of the notes, plus any accrued and unpaid interest.

High-Yield Restrictive Covenants; Limitation on Indebtedness.

The indentures governing the CCO Holdings notes contain certain covenants that restrict the ability of CCO Holdings, CCO Holdings Capital and all of their restricted subsidiaries to:

- incur additional debt;
- pay dividends on equity or repurchase equity;
- make investments;
- sell all or substantially all of their assets or merge with or into other companies;
- sell assets;
- in the case of restricted subsidiaries, create or permit to exist dividend or payment restrictions with respect to CCO Holdings, guarantee their parent companies debt, or issue specified equity interests;
- engage in certain transactions with affiliates; and
- grant liens.

The above limitations in certain circumstances regarding incurrence of debt, payment of dividends and making investments contained in the indentures of CCO Holdings permit CCO Holdings and its restricted subsidiaries to perform the above, so long as, after giving pro forma effect to the above, the leverage ratio would be below a specified level for the issuer. The leverage ratio under the indentures is 6.0 to 1.0. The leverage ratio was 4.2 as of December 31, 2018.

Charter Operating Notes

The Charter Operating notes are guaranteed by CCO Holdings and substantially all of the operating subsidiaries of Charter Operating. In addition, the Charter Operating notes are secured by a perfected first priority security interest in substantially all of the assets of Charter Operating to the extent such liens can be perfected under the Uniform Commercial Code by the filing of a financing statement and the liens rank equally with the liens on the collateral securing obligations under the Charter Operating credit facilities. Charter Operating may redeem some or all of the Charter Operating notes at any time at a premium.

The Charter Operating notes are subject to the terms and conditions of the indenture governing the Charter Operating notes. The Charter Operating notes contain customary representations and warranties and affirmative covenants with limited negative covenants. The Charter Operating indenture also contains customary events of default.

Charter Operating Credit Facilities

The Charter Operating credit facilities have an outstanding principal amount of $10.0 billion at December 31, 2018 as follows:

- term loan A-2 with a remaining principal amount of $2.7 billion, which is repayable in quarterly installments and aggregating $144 million in each loan year, with the remaining balance due at final maturity on March 31, 2023. Pricing on term loan A-2 is LIBOR plus 1.50%;
- term loan B with a remaining principal amount of approximately $6.3 billion, which is repayable in equal quarterly installments and aggregating $64 million in each loan year, with the remaining balance due at final maturity on April 30, 2025. Pricing on term loan B is LIBOR plus 2.00%; and
- revolving loan with an outstanding balance of $1.0 billion at December 31, 2018 and allowing for borrowings of up to $4.0 billion, maturing on March 31, 2023. Pricing on the revolving loan is LIBOR plus 1.50% with a commitment fee of 0.30%. As of December 31, 2018, $138 million of the revolving loan was utilized to collateralize a like principal amount of letters of credit out of $358 million of letters of credit issued on the Company's behalf.

Amounts outstanding under the Charter Operating credit facilities bear interest, at Charter Operating's election, at a base rate or LIBOR (2.50% and 1.56% as of December 31, 2018 and December 31, 2017, respectively), as defined, plus an applicable margin.

In January 2019, Charter Operating entered into an amendment to its Credit Agreement raising an additional $1.7 billion term loan A-3 and increasing revolving loan capacity to $4.75 billion as well as extending the maturities on a portion of the term loan A-2 and a portion of the revolving loan to 2024. Pricing on the new term loan A-3 is LIBOR plus 1.50%.

The Charter Operating credit facilities also allow us to enter into incremental term loans in the future, with amortization as set forth in the notices establishing such term loans. Although the Charter Operating credit facilities allow for the incurrence of a certain amount of incremental term loans subject to pro forma compliance with its financial maintenance covenants, no assurance can be given that the Company could obtain additional incremental term loans in the future if Charter Operating sought to do so or what amount of incremental term loans would be allowable at any given time under the terms of the Charter Operating credit facilities.

The obligations of Charter Operating under the Charter Operating credit facilities are guaranteed by CCO Holdings and substantially all of the operating subsidiaries of Charter Operating. The obligations are also secured by (i) a lien on substantially all of the assets of Charter Operating and its subsidiaries, to the extent such lien can be perfected under the Uniform Commercial Code by the filing of a financing statement, and (ii) a pledge by CCO Holdings of the equity interests owned by it in any of Charter Operating's subsidiaries, as well as intercompany obligations owing to it by any of such entities.

Restrictive Covenants

The Charter Operating credit facilities contain representations and warranties, and affirmative and negative covenants customary for financings of this type. The financial covenants measure performance against standards set for leverage to be tested as of the end of each quarter. The Charter Operating credit facilities contain provisions requiring mandatory loan prepayments under specific circumstances, including in connection with certain sales of assets, so long as the proceeds have not been reinvested in the business. Additionally, the Charter Operating credit facilities provisions contain an allowance for restricted payments with certain limitations. The Charter Operating credit facilities permit Charter Operating and its subsidiaries to make distributions to pay interest on the currently outstanding subordinated and parent company indebtedness, provided that, among other things, no default has occurred and is continuing under the Charter Operating credit facilities. The Charter Operating credit facilities also contain customary events of default.

Time Warner Cable, LLC Notes and Debentures

The Time Warner Cable, LLC ("TWC, LLC") senior notes and debentures are guaranteed by CCO Holdings and substantially all of the operating subsidiaries of Charter Operating and rank equally with the liens on the collateral securing obligations under the Charter Operating notes and credit facilities. Interest on each series of TWC, LLC senior notes and debentures is payable semi-annually (with the exception of the Sterling Notes, which is payable annually) in arrears.

The TWC, LLC indenture contains customary covenants relating to restrictions on the ability of TWC, LLC or any material subsidiary to create liens and on the ability of TWC, LLC and Time Warner Cable Enterprises LLC ("TWCE") to consolidate, merge or convey or transfer substantially all of their assets. The TWC, LLC indenture also contains customary events of default.

The TWC, LLC senior notes and debentures may be redeemed in whole or in part at any time at TWC, LLC's option at a redemption price equal to the greater of (i) all of the applicable principal amount being redeemed and (ii) the sum of the present values of the remaining scheduled payments on the applicable TWC, LLC senior notes and debentures discounted to the redemption date on a semi-annual basis (with the exception of the Sterling Notes, which are on an annual basis), at a comparable government bond rate plus a designated number of basis points as further described in the indenture and the applicable note or debenture, plus, in each case, accrued but unpaid interest to, but not including, the redemption date.

The Company may offer to redeem all, but not less than all, of the Sterling Notes in the event of certain changes in the tax laws of the U.S. (or any taxing authority in the U.S.). This redemption would be at a redemption price equal to 100% of the principal amount, together with accrued and unpaid interest on the Sterling Notes to, but not including, the redemption date.

TWCE Debentures

The TWCE senior debentures are guaranteed by CCO Holdings, substantially all of the operating subsidiaries of Charter Operating and TWC, LLC and rank equally with the liens on the collateral securing obligations under the Charter Operating notes and credit facilities. Interest on each series of TWCE senior debentures is payable semi-annually in arrears. The TWCE senior debentures are not redeemable before maturity.

The TWCE indenture contains customary covenants relating to restrictions on the ability of TWCE or any material subsidiary to create liens and on the ability of TWC, LLC and TWCE to consolidate, merge or convey or transfer substantially all of their assets. The TWCE indenture also contains customary events of default.

Limitations on Distributions

Distributions by the Company's subsidiaries to a parent company for payment of principal on parent company notes are restricted under the indentures and credit facilities discussed above, unless there is no default under the applicable indenture and credit facilities, and unless each applicable subsidiary's leverage ratio test is met at the time of such distribution. As of December 31, 2018, there was no default under any of these indentures or credit facilities and each subsidiary met its applicable leverage ratio tests based on December 31, 2018 financial results. There can be no assurance that they will satisfy these tests at the time of the contemplated distribution. Distributions by Charter Operating for payment of principal on parent company notes are further restricted by the covenants in its credit facilities.

However, without regard to leverage, during any calendar year or any portion thereof during which the borrower is a flow-through entity for tax purposes, and so long as no event of default exists, the borrower may make distributions to the equity interests of the borrower in an amount sufficient to make permitted tax payments.

In addition to the limitation on distributions under the various indentures, distributions by the Company's subsidiaries may be limited by applicable law, including the Delaware Limited Liability Company Act, under which the Company's subsidiaries may make distributions if they have "surplus" as defined in the act.

Liquidity and Future Principal Payments

The Company continues to have significant amounts of debt, and its business requires significant cash to fund principal and interest payments on its debt, capital expenditures and ongoing operations. As set forth below, the Company has significant future principal payments. The Company continues to monitor the capital markets, and it expects to undertake refinancing transactions and utilize free cash flow and cash on hand to further extend or reduce the maturities of its principal obligations. The timing and terms of any refinancing transactions will be subject to market conditions.

Based upon outstanding indebtedness as of December 31, 2018, the amortization of term loans, and the maturity dates for all senior and subordinated notes, total future principal payments on the total borrowings under all debt agreements are as follows:

Year	Amount
2019	$ 3,457
2020	3,707
2021	2,407
2022	4,457
2023	7,390
Thereafter	50,543
	$ 71,961

9. Loans Payable - Related Party

Loans payable - related party as of December 31, 2018 and 2017 consists of loans from Charter Communications Holdings Company, LLC ("Charter Holdco") to the Company of $674 million and $655 million, respectively, and loans from Charter to the Company of $251 million and $233 million, respectively. Interest accrued on loans payable - related party at LIBOR plus 1.50% and 1.75% during the periods ending December 31, 2018 and 2017, respectively.

10. Accounting for Derivative Instruments and Hedging Activities

The Company uses derivative instruments to manage foreign exchange risk on the Sterling Notes, and does not hold or issue derivative instruments for speculative trading purposes.

Cross-currency derivative instruments are used to effectively convert £1.275 billion aggregate principal amount of fixed-rate British pound sterling denominated debt, including annual interest payments and the payment of principal at maturity, to fixed-

rate U.S. dollar denominated debt. The cross-currency swaps have maturities of June 2031 and July 2042. The Company is required to post collateral on the cross-currency derivative instruments when the derivative contracts are in a liability position. In May 2016, the Company entered into a collateral holiday agreement for 80% of both the 2031 and 2042 cross-currency swaps, which eliminates the requirement to post collateral forthree years. The fair value of the Company's cross-currency derivatives included in other long-term liabilities on the Company's consolidated balance sheets was $237 million and $25 million as of December 31, 2018 and 2017, respectively.

The Company's derivative instruments are not designated as hedges and are marked to fair value each period, with the impact recorded as a gain or loss on financial instruments, net in the consolidated statements of operations. While these derivative instruments are not designated as hedges for accounting purposes, management continues to believe such instruments are closely correlated with the respective debt, thus managing associated risk.

The effect of financial instruments on the consolidated statements of operations is presented in the table below.

	Year Ended December 31,		
	2018	2017	2016
Gain (Loss) on Financial Instruments, Net:			
Change in fair value of cross-currency derivative instruments	$ (212)	$ 226	$ (179)
Foreign currency remeasurement of Sterling Notes to U.S. dollars	102	(157)	279
Loss on termination of interest rate derivative instruments	—	—	(11)
	$ (110)	$ 69	$ 89

Upon closing of the TWC Transaction, the Company acquired interest rate derivative instrument assets which were terminated and settled with their respective counterparties in the second quarter of 2016 with an $88 million cash payment to the Company. The termination resulted in an $11 million loss for the year ended December 31, 2016 which was recorded in gain (loss) on financial instruments, net in the consolidated statements of operations. All of the Company's interest rate derivatives were expired as of December 31, 2018 and 2017.

11. Fair Value Measurements

The accounting guidance establishes a three-level hierarchy for disclosure of fair value measurements, based upon the transparency of inputs to the valuation of an asset or liability as of the measurement date, as follows:

- Level 1 – inputs to the valuation methodology are quoted prices (unadjusted) for identical assets or liabilities in active markets.
- Level 2 – inputs to the valuation methodology include quoted prices for similar assets and liabilities in active markets, and inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the financial instrument.
- Level 3 – inputs to the valuation methodology are unobservable and significant to the fair value measurement.

Financial Assets and Liabilities

The Company has estimated the fair value of its financial instruments as ofDecember 31, 2018 and 2017 using available market information or other appropriate valuation methodologies. Considerable judgment, however, is required in interpreting market data to develop the estimates of fair value. Accordingly, the estimates presented in the accompanying consolidated financial statements are not necessarily indicative of the amounts the Company would realize in a current market exchange.

The carrying amounts of cash and cash equivalents, receivables, payables and other current assets and liabilities approximate fair value because of the short maturity of those instruments. As of December 31, 2017, there were no significant concentrations of financial instruments in a single investee, industry or geographic location.

The Company's financial instruments that are accounted for at fair value on a recurring basis as ofDecember 31, 2018 and 2017 are presented in the table below.

	December 31, 2018	December 31, 2017
	Level 2	
Liabilities		
Cross-currency derivative instruments	$ 237	$ 25

A summary of the carrying value and fair value of the Company's debt atDecember 31, 2018 and 2017 is as follows:

	December 31, 2018		December 31, 2017	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Debt				
Senior notes and debentures	$ 62,868	$ 61,087	$ 60,844	$ 63,443
Credit facilities	$ 9,959	$ 9,608	$ 9,387	$ 9,440

The estimated fair value of the Company's senior notes and debentures as ofDecember 31, 2018 and 2017 is based on quoted market prices in active markets and is classified within Level 1 of the valuation hierarchy, while the estimated fair value of the Company's credit facilities is based on quoted market prices in inactive markets and is classified within Level 2.

Non-financial Assets and Liabilities

The Company's nonfinancial assets such as equity-method investments, franchises, property, plant, and equipment, and other intangible assets are not measured at fair value on a recurring basis; however, they are subject to fair value adjustments in certain circumstances, such as upon a business combination and when there is evidence that an impairment may exist. No significant impairments were recorded in2018, 2017 and 2016.

12. Operating Costs and Expenses

Operating costs and expenses, exclusive of items shown separately in the consolidated statements of operations, consist of the following for the periods presented:

	Year Ended December 31, 2018	2017	2016
Programming	$ 11,124	$ 10,596	$ 7,034
Regulatory, connectivity and produced content	2,210	2,064	1,467
Costs to service customers	7,327	7,235	5,307
Marketing	3,042	3,036	2,136
Mobile	346	—	—
Other	3,842	3,629	2,726
	$ 27,891	$ 26,560	$ 18,670

Programming costs consist primarily of costs paid to programmers for basic, premium, digital, video on demand and pay-per-view programming. Regulatory, connectivity and produced content costs represent payments to franchise and regulatory authorities, costs directly related to providing video, Internet and voice services as well as payments for sports, local and news content produced by the Company. Included in regulatory, connectivity and produced content costs is content acquisition costs for the Los Angeles Lakers' basketball games and Los Angeles Dodgers' baseball games, which are recorded as games are exhibited over the applicable

season. Costs to service customers include costs related to field operations, network operations and customer care for the Company's residential and small and medium business customers, including internal and third-party labor for the non-capitalizable portion of installations, service and repairs, maintenance, bad debt expense, billing and collection, occupancy and vehicle costs. Marketing costs represent the costs of marketing to current and potential commercial and residential customers including labor costs. Mobile costs represent costs associated with the Company's mobile service such as device and service costs, marketing, sales and commissions, retail stores, personnel costs, taxes, among others. Other includes corporate overhead, advertising sales expenses, indirect costs associated with the Company's enterprise business customers and regional sports and news networks, property tax and insurance expense and stock compensation expense, among others.

13. Other Operating Expenses, Net

Other operating expenses, net consist of the following for the years presented:

	Year Ended December 31,		
	2018	2017	2016
Merger and restructuring costs	$ 97	$ 351	$ 708
Special charges, net	48	77	17
(Gain) loss on sale of assets, net	85	16	(3)
	$ 230	$ 444	$ 722

Merger and restructuring costs

Merger and restructuring costs represent costs incurred in connection with merger and acquisition transactions and related restructuring, such as advisory, legal and accounting fees, employee retention costs, employee termination costs related to the Transactions and other exit costs. Changes in accruals for merger and restructuring costs from January 1, 2016 through December 31, 2018 are presented below:

	Employee Retention Costs	Employee Termination Costs	Transaction and Advisory Costs	Other Costs	Total
Liability, December 31, 2015	$ —	$ —	$ 33	$ —	$ 33
Liability assumed in the Transactions	80	9	3	—	92
Costs incurred	26	337	66	31	460
Cash paid	(99)	(102)	(77)	(31)	(309)
Liability, December 31, 2016	7	244	25	—	276
Costs incurred	4	226	4	68	302
Cash paid	(10)	(298)	(12)	(60)	(380)
Liability, December 31, 2017	1	172	17	8	198
Costs incurred	1	64	2	25	92
Cash paid	(1)	(179)	(8)	(27)	(215)
Remaining liability, December 31, 2018	$ 1	$ 57	$ 11	$ 6	$ 75

In addition to the costs indicated above, the Company recorded $5 million, $49 million and $248 million of expense related to accelerated vesting of equity awards of terminated employees for the years ended December 31, 2018, 2017 and 2016, respectively.

Special charges, net

Special charges, net primarily includes employee termination costs not related to the Transactions and net amounts of litigation settlements. During 2018 and 2017, special charges, net also includes a $22 million and $83 million charge related to the Company's withdrawal liability from a multiemployer pension plan, respectively.

(Gain) loss on sale of assets, net

(Gain) loss on sale of assets, net represents the net (gain) loss recognized on the sales and disposals of fixed assets including a $75 million impairment of non-strategic assets during the year ended December 31, 2018.

14. Stock Compensation Plans

Charter's 2009 Stock Incentive Plan provides for grants of nonqualified stock options, incentive stock options, stock appreciation rights, dividend equivalent rights, performance units and performance shares, share awards, phantom stock, restricted stock units and restricted stock. Directors, officers and other employees of the Company and its subsidiaries, as well as others performing consulting services for the Company, are eligible for grants under the 2009 Stock Incentive Plan. The 2009 Stock Incentive Plan allows for the issuance of up to 21 million shares of Charter Class A common stock (or units convertible into Charter Class A common stock).

At the closing of the TWC Transaction, Legacy TWC employee equity awards were converted into Charter Class A common stock equity awards on the same terms and conditions as were applicable under the Legacy TWC equity awards, except that the number of shares covered by each award and the option exercise prices were adjusted for the Stock Award Exchange Ratio (as defined in the Merger Agreement) such that the intrinsic value of the converted TWC awards was approximately equal to that of the original awards at the closing of the Transactions. The converted TWC awards continue to be subject to the terms of the Legacy TWC equity plans. The Parent Merger Exchange Ratio was also applied to outstanding Legacy Charter equity awards and option exercise prices; however, the terms of the equity awards did not change as a result of the Transactions.

Charter Stock options and restricted stock units generally cliff vest upon the three year anniversary of each grant. Certain stock options and restricted stock units vest based on achievement of stock price hurdles. Stock options generally expire ten years from the grant date and restricted stock units have no voting rights. Restricted stock generally vests one year from the date of grant. Legacy TWC restricted stock units that were converted into Charter restricted stock units generally vest 50% on each of the third and fourth anniversary of the grant date.

As of December 31, 2018, total unrecognized compensation remaining to be recognized in future periods totaled $199 million for stock options, $0.9 million for restricted stock and $187 million for restricted stock units and the weighted average period over which they are expected to be recognized is 2 years for stock options, 4 months for restricted stock and 2 years for restricted stock units. The Company recorded $285 million, $261 million and $244 million of stock compensation expense for the years ended December 31, 2018, 2017 and 2016, respectively, which is included in operating costs and expenses. The Company also recorded $5 million, $49 million and $248 million of expense for the years ended December 31, 2018, 2017 and 2016, respectively, related to accelerated vesting of equity awards of terminated employees which is recorded in merger and restructuring costs in other operating expenses, net in the consolidated statements of operations.

A summary of the activity for Charter's stock options (after applying the Parent Merger Exchange Ratio) for the years ended December 31, 2018, 2017 and 2016, is as follows (shares in thousands, except per share data):

	Year Ended December 31,								
	2018			2017			2016		
	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value
Outstanding, beginning of period	9,649	$ 201.83		9,592	$ 181.39		3,923	$ 122.03	
Granted	1,507	$ 350.40		1,175	$ 302.87		5,999	$ 218.91	
Converted TWC awards	—	$ —		—	$ —		839	$ 86.46	
Exercised	(577)	$ 133.35	$ 114	(1,044)	$ 124.32	$ 219	(1,015)	$ 96.33	$ 146
Canceled	(169)	$ 300.46		(74)	$ 251.63		(154)	$ 173.98	
Outstanding, end of period	10,410	$ 225.53	$ 732	9,649	$ 201.83		9,592	$ 181.39	
Weighted average remaining contractual life	7 years			8 years			8 years		
Options exercisable, end of period	2,194	$ 122.19	$ 358	1,734	$ 90.56		1,665	$ 71.71	
Options expected to vest, end of period	8,216	$ 253.12	$ 374						
Weighted average fair value of options granted	$ 94.70			$ 73.67			$ 47.42		

A summary of the activity for Charter's restricted stock (after applying the Parent Merger Exchange Ratio) for the years ended December 31, 2018, 2017 and 2016, is as follows (shares in thousands, except per share data):

	Year Ended December 31,					
	2018		2017		2016	
	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price
Outstanding, beginning of period	10	$ 343.10	10	$ 231.81	197	$ 65.79
Granted	10	$ 297.86	10	$ 343.10	10	$ 231.83
Vested	(10)	$ 343.10	(10)	$ 231.81	(197)	$ 65.79
Canceled	—	$ —	—	$ —	—	$ —
Outstanding, end of period	10	$ 297.86	10	$ 343.10	10	$ 231.81

A summary of the activity for Charter's restricted stock units (after applying the Parent Merger Exchange Ratio) for the years ended December 31, 2018, 2017 and 2016, is as follows (shares in thousands, except per share data):

	Year Ended December 31,					
	2018		2017		2016	
	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price
Outstanding, beginning of period	2,391	$ 192.96	3,313	$ 192.41	337	$ 150.96
Granted	526	$ 348.75	285	$ 302.76	895	$ 213.09
Converted TWC awards	—	$ —	—	$ —	4,162	$ 224.90
Vested	(619)	$ 216.27	(1,159)	$ 216.21	(1,739)	$ 219.60
Canceled	(87)	$ 286.41	(48)	$ 234.99	(342)	$ 219.91
Outstanding, end of period	2,211	$ 219.61	2,391	$ 192.96	3,313	$ 192.41

15. Income Taxes

CCO Holdings is a single member limited liability company not subject to income tax. CCO Holdings holds all operations through indirect subsidiaries. The majority of these indirect subsidiaries are limited liability companies that are not subject to income tax. Certain indirect subsidiaries that are required to file separate returns are subject to federal and state tax. CCO Holdings' tax provision reflects the tax provision of the entities required to file separate returns.

Generally, the taxable income, gains, losses, deductions and credits of CCO Holdings are passed through to its indirect members, Charter and A/N. Charter is responsible for its share of taxable income or loss of CCO Holdings allocated to it in accordance with the Charter Holdings Limited Liability Company Agreement ("LLC Agreement") and partnership tax rules and regulations. Charter also records financial statement deferred tax assets and liabilities related to its investment, and its underlying net assets, in CCO Holdings.

Income Tax Expense

For the years ended December 31, 2018, 2017, and 2016, the Company recorded deferred income tax expense as shown below. The tax provision in future periods will vary based on current and future temporary differences, as well as future operating results.

	Year Ended December 31,		
	2018	2017	2016
Current benefit (expense):			
Federal income taxes	$ —	$ (1)	$ —
State income taxes	(12)	(15)	3
Current income tax benefit (expense)	(12)	(16)	3
Deferred expense:			
State income taxes	(4)	(7)	(6)
Deferred income tax expense	(4)	(7)	(6)
Income tax expense	$ (16)	$ (23)	$ (3)

Income tax is recognized primarily through decreases (increases) in deferred tax liabilities, as well as through current state income tax expense. The tax provision in future periods will vary based on future operating results, as well as future book versus tax differences.

The Company's effective tax rate differs from that derived by applying the applicable federal income tax rate of 21% for the year ended December 31, 2018 and 35% for the years ended December 31, 2017 and 2016, respectively, as follows:

	Year Ended December 31,		
	2018	2017	2016
Statutory federal income taxes	$ (346)	$ (317)	$ (511)
Statutory state income taxes, net	(16)	(23)	(3)
Income allocated to limited liability companies not subject to income taxes	346	317	511
Income tax expense	$ (16)	$ (23)	$ (3)

Deferred Tax Assets (Liabilities)

The tax effects of these temporary differences that give rise to significant portions of the deferred tax assets and deferred tax liabilities at December 31, 2018 and 2017 are presented below.

	December 31,	
	2018	2017
Deferred tax assets:		
Loss carryforwards	$ 7	$ 7
Indefinite-lived intangibles	3	—
Accrued and other	5	5
Deferred tax assets	$ 15	$ 12
Deferred tax liabilities:		
Indefinite-lived intangibles	$ —	$ (25)
Property, plant and equipment	(11)	(17)
Other intangibles	(1)	(2)
Deferred tax liabilities	(12)	(44)
Net deferred tax assets (liabilities)	$ 3	$ (32)

The change in the net deferred tax assets (liabilities) above differs from deferred income tax expense primarily as a result of the adoption of ASU 2016-16 resulting in a $38 million additional tax basis recorded to total member's equity (see Note 19).

Uncertain Tax Positions

The net amount of the unrecognized tax benefits recorded as of December 31, 2018 that could impact the effective tax rate is $134 million. The Company has determined that it is reasonably possible that its existing reserve for uncertain tax positions as of December 31, 2018 could decrease by approximately $27 million during the year ended December 31, 2019 related to various ongoing audits, settlement discussions and expiration of statute of limitations with various state and local agencies; however, various events could cause the Company's current expectations to change in the future. These uncertain tax positions, if ever recognized in the financial statements, would be recorded in the consolidated statements of operations as part of the income tax provision. A reconciliation of the beginning and ending amount of unrecognized tax benefits, exclusive of interest and penalties, included in other long-term liabilities on the accompanying consolidated balance sheets of the Company is as follows:

BALANCE, December 31, 2016	$ 159
Reductions on settlements and expirations with taxing authorities	(25)
BALANCE, December 31, 2017	$ 134
Reductions on settlements and expirations with taxing authorities	(15)
BALANCE, December 31, 2018	$ 119

The Company recognizes interest and penalties accrued on uncertain income tax positions as part of the income tax provision. Interest and penalties included in other long-term liabilities on the accompanying consolidated balance sheets of the Company were $43 million and $38 million as of December 31, 2018 and 2017, respectively.

No tax years for Charter or Charter Holdco, the Company's indirect parent companies, are currently under examination by the Internal Revenue Service ("IRS"). Charter's 2016 through 2018 tax years remain open for examination and assessment. Legacy Charter's tax years ending 2015 through the short period return dated May 17, 2016 (prior to the acquisition of Legacy TWC and Legacy Bright House) remain subject to examination and assessment. Years prior to 2015 remain open solely for purposes of examination of Legacy Charter's loss and credit carryforwards. The IRS is currently examining Charter Holdings' income tax return for 2016. Charter Holdings' 2017 and 2018 tax years remain open for examination and assessment. The IRS is currently examining Legacy TWC's income tax returns for 2011 through 2014. Legacy TWC's tax year 2015 remains subject to examination and assessment. Prior to Legacy TWC's separation from Time Warner Inc. ("Time Warner") in March 2009 (the "Separation"), Legacy TWC was included in the consolidated U.S. federal and certain state income tax returns of Time Warner. The IRS is currently examining Time Warner's 2008 through 2010 income tax returns. The Company does not anticipate that these examinations will have a material impact on the Company's consolidated financial position or results of operations. In addition, the Company is also subject to ongoing examinations of the Company's tax returns by state and local tax authorities for various periods. Activity related to these state and local examinations did not have a material impact on the Company's consolidated financial position or results of operations during the year ended December 31, 2018, nor does the Company anticipate a material impact in the future.

16. Related Party Transactions

The following sets forth certain transactions in which the Company and the directors, executive officers, and affiliates of the Company are involved or, in the case of the management arrangements, subsidiaries that are debt issuers that pay certain of their parent companies for services.

Charter is a party to management arrangements with Spectrum Management and certain of their subsidiaries. Under these agreements, Charter, Spectrum Management and Charter Holdco provide management services for the cable systems owned or operated by their subsidiaries. Costs associated with providing these services are charged directly to the Company's operating subsidiaries. All other costs incurred on behalf of Charter's operating subsidiaries are considered a part of the management fee. These costs are recorded as a component of operating costs and expenses, in the accompanying consolidated financial statements. The management fee charged to the Company's operating subsidiaries approximated the expenses incurred by Spectrum Management, Charter Holdco and Charter on behalf of the Company's operating subsidiaries in 2018, 2017 and 2016.

Liberty Broadband and A/N

Under the terms of the Amended and Restated Stockholders Agreement with Liberty Broadband, A/N and Legacy Charter, dated May 23, 2015, (the "Stockholders Agreement"), the number of Charter's directors is fixed at 13, and includes its CEO. Two designees selected by A/N are members of the board of directors of Charter and three designees selected by Liberty Broadband are members of the board of directors of Charter. The remaining eight directors are not affiliated with either A/N or Liberty Broadband. Each of A/N and Liberty Broadband is entitled to nominate at least one director to each of the committees of Charter's board of directors, subject to applicable stock exchange listing rules and certain specified voting or equity ownership thresholds for each of A/N and Liberty Broadband, and provided that the Nominating and Corporate Governance Committee and the Compensation and Benefit Committee each have at least a majority of directors independent from A/N, Liberty Broadband and Charter (referred to as the "unaffiliated directors"). Each of the Nominating and Corporate Governance Committee and the Compensation and Benefits Committee is currently comprised of three unaffiliated directors and one designee of each of A/N and Liberty Broadband. A/N and Liberty Broadband also have certain other committee designation and other governance rights. Mr. Thomas Rutledge, the Company's CEO, is the chairman of the board of Charter.

In December 2017, Charter and A/N entered into an amendment to the letter agreement (the "Letter Agreement") that requires A/N to sell to Charter or to Charter Holdings, on a monthly basis, a number of shares of Charter Class A common stock or Charter Holdings common units that represents a pro rata participation by A/N and its affiliates in any repurchases of shares of Charter Class A common stock from persons other than A/N effected by Charter during the immediately preceding calendar month, at a purchase price equal to the average price paid by Charter for the shares repurchased from persons other than A/N during such

immediately preceding calendar month. A/N and Charter both have the right to terminate or suspend the pro rata repurchase arrangement on a prospective basis once Charter or Charter Holdings have repurchased shares of Class A common stock or Charter Holdings common units from A/N and its affiliates for an aggregate purchase price of $400 million, which threshold has been reached. Pursuant to the TRA between Charter and A/N, Charter must pay to A/N 50% of the tax benefit when realized by Charter from the step-up in tax basis resulting from any future exchange or sale of the preferred and common units.

The Company is aware that Dr. John Malone, a director emeritus of Charter and Chairman of the board of directors and holder of 47.1% of voting interest in Liberty Broadband, may be deemed to have a 37.5% voting interest in Qurate Retail, Inc. ("Qurate," formerly known as Liberty Interactive Corporation) and is on the board of directors of Qurate. Qurate wholly owns HSN, Inc. (“HSN”) and QVC, Inc. (“QVC”). The Company has programming relationships with HSN and QVC. For the years ended December 31, 2018, 2017 and 2016, the Company recorded revenue in aggregate of approximately $73 million, $77 million and $53 million, respectively, from HSN and QVC as part of channel carriage fees and revenue sharing arrangements for home shopping sales made to customers in the Company’s footprint.

Dr. Malone and Mr. Steven Miron, a member of Charter’s board of directors, also serve on the board of directors of Discovery Communications, Inc., (“Discovery”). The Company is aware that Dr. Malone owns 93.6% of the series B common stock of Discovery, 6% of the series C common stock of Discovery and has a 28% voting interest in Discovery for the election of directors. The Company is aware that Advance/Newhouse Programming Partnership (“A/N PP”), an affiliate of A/N and in which Mr. Miron is the CEO, owns 100% of the Series A-1 preferred stock of Discovery and 100% of the Series C-1 preferred stock of Discovery and has a 24.2% voting interest for the election of directors. A/N PP has the right to appoint three directors out of a total of eleven directors to Discovery’s board to be elected by the holders of Discovery’s Series A-1 preferred stock. The Company purchases programming from Discovery pursuant to agreements entered into prior to Dr. Malone and Mr. Miron joining Charter’s board of directors. Based on publicly available information, the Company does not believe that Discovery would currently be considered a related party. The amount paid to Discovery represents less than 3% of total operating costs and expenses for the years ended December 31, 2018, 2017 and 2016.

Equity Investments

The Company and its parent companies have agreements with certain equity-method investees (see Note 6) pursuant to which the Company has made or received related party transaction payments. The Company and its parent companies recorded payments to equity-method investees totaling $361 million, $317 million and $171 million during the years ended December 31, 2018, 2017 and 2016, respectively.

17. Commitments and Contingencies

Commitments

The following table summarizes the Company’s and its parent companies' payment obligations as of December 31, 2018 for its contractual obligations.

	Total	2019	2020	2021	2022	2023	Thereafter
Capital and Operating Lease Obligations [a]	$ 1,611	$ 296	$ 263	$ 216	$ 179	$ 153	$ 504
Programming Minimum Commitments [b]	191	124	41	26	—	—	—
Other [c]	16,278	2,209	2,085	2,608	525	522	8,329
	$ 18,080	$ 2,629	$ 2,389	$ 2,850	$ 704	$ 675	$ 8,833

(a) The Company leases certain facilities and equipment under non-cancelable capital and operating leases. Capital lease obligations represented $111 million of total capital and operating lease obligations as of December 31, 2018. Lease and rental costs charged to expense for the years ended December 31, 2018, 2017 and 2016 were $382 million, $321 million, $215 million, respectively.

(b) The Company pays programming fees under multi-year contracts ranging from three to ten years, typically based on a flat fee per customer, which may be fixed for the term, or may in some cases escalate over the term. Programming costs included in the statement of operations were $11.1 billion, $10.6 billion and $7.0 billion for the years ended December 31, 2018, 2017 and 2016 respectively. Certain of the Company’s programming agreements are based on a flat fee per month or have guaranteed

minimum payments. The table sets forth the aggregate guaranteed minimum commitments under the Company's programming contracts.

(c) "Other" represents other guaranteed minimum commitments, including rights negotiated directly with content owners for distribution on company-owned channels or networks, commitments related to our role as an advertising and distribution sales agent for third party-owned channels or networks, commitments to our customer premise equipment and device vendors and contractual obligations related to third-party network augmentation.

The following items are not included in the contractual obligation table due to various factors discussed below. However, the Company incurs these costs as part of its operations:

- The Company rents utility poles used in its operations. Generally, pole rentals are cancelable on short notice, but the Company anticipates that such rentals will recur. Rent expense incurred for pole rental attachments for the years ended December 31, 2018, 2017 and 2016 was $171 million, $167 million and $115 million, respectively.
- The Company pays franchise fees under multi-year franchise agreements based on a percentage of revenues generated from video service per year. The Company also pays other franchise related costs, such as public education grants, under multi-year agreements. Franchise fees and other franchise-related costs included in the accompanying statement of operations were $747 million, $705 million and $534 million for the years ended December 31, 2018, 2017 and 2016 respectively.
- The Company has $358 million in letters of credit, of which $138 million is secured under the Charter Operating credit facility, primarily to its various casualty carriers as collateral for reimbursement of workers' compensation, auto liability and general liability claims.
- Minimum pension funding requirements have not been presented in the table above as such amounts have not been determined beyond2018. The Company made no cash contributions to the qualified pension plans in 2018; however, the Company is permitted to make discretionary cash contributions to the qualified pension plans in 2019. For the nonqualified pension plan, the Company contributed $6 million during 2018 and will continue to make contributions in 2019 to the extent benefits are paid.

Legal Proceedings

In August 2015, a purported stockholder of Charter, Matthew Sciabacucchi, filed a lawsuit in the Delaware Court of Chancery, on behalf of a putative class of Charter stockholders, challenging the transactions involving Charter, TWC, A/N, and Liberty Broadband announced by Charter on May 26, 2015. The lawsuit, which named as defendants Charter and its board of directors, alleged that the transactions resulted from breaches of fiduciary duty by Charter's directors and that Liberty Broadband improperly benefited from the challenged transactions at the expense of other Charter stockholders. The lawsuit has proceeded to the discovery phase. Charter denies any liability, believes that it has substantial defenses, and intends to vigorously defend this lawsuit. Although Charter is unable to predict the outcome of this lawsuit, it does not expect the outcome will have a material effect on its operations, financial condition or cash flows.

The California Attorney General and the Alameda County, California District Attorney are investigating whether certain of Charter's waste disposal policies, procedures and practices are in violation of the California Business and Professions Code and the California Health and Safety Code. That investigation was commenced in January 2014. A similar investigation involving TWC was initiated in February 2012. Charter is cooperating with these investigations. While the Company is unable to predict the outcome of these investigations, it does not expect that the outcome will have a material effect on its operations, financial condition, or cash flows.

On December 19, 2011, Sprint Communications Company L.P. ("Sprint") filed a complaint in the U.S. District Court for the District of Kansas alleging that TWC infringed certain U.S. patents purportedly relating to Voice over Internet Protocol ("VoIP") services. A trial began on February 13, 2017. On March 3, 2017 the jury returned a verdict of $140 million against TWC and further concluded that TWC had willfully infringed Sprint's patents. The court subsequently declined to enhance the damage award as a result of the purported willful infringement and awarded Sprint an additional $6 million, representing pre-judgment interest on the damages award. The Company appealed the case to the United States Court of Appeals for the Federal Circuit where the Company lost the appeal. The Company expects to petition the court of appeals for rehearing and continue to pursue its appeal rights. In addition to its appeal, the Company continues to pursue indemnity from one of its vendors and has brought a patent suit against Sprint (TC Tech, LLC v. Sprint) in the U.S. District Court for the District of Delaware implicating Sprint's LTE technology. The impact of the Sprint verdict was reflected in the measurement period adjustments to net current liabilities. The Company does not expect that the outcome of this litigation will have a material adverse effect on its operations or financial

condition. The ultimate outcomes of the appeal of the Sprint Kansas case, the pursuit of indemnity against the Company's vendor and the TC Tech litigation cannot be predicted.

Sprint filed a second suit against Charter on December 2, 2017 in the United States District Court for the District of Delaware. This suit alleges infringement of 15 patents related to the Company's provision of VoIP services (ten of which were already asserted against Legacy TWC in the matter described above). Charter will vigorously defend this case. While the Company is unable to predict the outcome of this Sprint suit, it does not expect that this litigation will have a material effect on its operations, financial condition, or cash flows.

Sprint filed a third suit against Charter on May 17, 2018 in the United States District Court for the Eastern District of Virginia. This suit alleges infringement of three patents related to the Company's video on demand services. The Company will vigorously defend this case. The parties recently agreed to transfer this case to the United States District Court for the District of Delaware. While the Company is unable to predict the outcome of this litigation, it does not expect that this litigation will have a material effect on its operations, financial condition, or cash flows.

The New York Public Service Commission (the "PSC") issued multiple orders against Charter including two orders on July 27, 2018 relating to the agreement by which the PSC approved Charter's merger with TWC. One order determined that Charter had failed to satisfy one of its merger conditions by not extending its high speed broadband network according to the PSC's recent interpretation of which homes and businesses Charter built to should count. The order further directed the initiation of a court action to impose financial and other penalties on Charter. The second order purported to rescind the PSC's January 2016 approval of Charter's acquisition of TWC's New York operations and directs Charter to submit a plan to effect an orderly transition to a successor provider or providers for Charter to cease operations in New York within six months of the order. On July 30, 2018, the PSC filed a petition for penalties and injunctive relief in the Supreme Court of the State of New York seeking penalties of $100,000 per day from June 18, 2018 and until Charter complies with the PSC order and also seeks injunctive relief from the court to enjoin failure to comply with the New York Public Service Laws or any regulation or order of the PSC. The PSC and Charter have entered into discussions with the possibility of resolving these matters and so have extended the deadline several times regarding the submission of an exit plan and the deadline by when Charter would have to file formal oppositions to the PSC orders. While the Company believes the actions by the PSC are without merit and intends to defend the actions vigorously and does not believe the results of the proceedings will have a material adverse effect on Charter, no assurance can be given that, should an adverse outcome result, it would not be material to its consolidated financial condition, results of operations or liquidity. The Company cannot predict the outcome of the PSC claims, including any negotiations, nor can it reasonably estimate a range of possible loss in the event of an adverse result.

On October 23, 2015, the New York Office of the Attorney General (the "NY AG") began an investigation of TWC's advertised Internet speeds and other Internet product advertising. On February 1, 2017, the NY AG filed suit in the Supreme Court for the State of New York alleging that TWC's advertising of Internet speeds was false and misleading. The case settled in December 2018.

In addition to the Sprint litigation described above, the Company and its parent companies are defendants or co-defendants in several additional lawsuits involving alleged infringement of various patents relating to various aspects of their businesses. Other industry participants are also defendants in certain of these cases. In the event that a court ultimately determines that the Company infringes on any intellectual property rights, the Company may be subject to substantial damages and/or an injunction that could require the Company or its vendors to modify certain products and services the Company offers to its subscribers, as well as negotiate royalty or license agreements with respect to the patents at issue. While the Company believes the lawsuits are without merit and intends to defend the actions vigorously, no assurance can be given that any adverse outcome would not be material to the Company's consolidated financial condition, results of operations, or liquidity. The Company cannot predict the outcome of any such claims nor can it reasonably estimate a range of possible loss.

The Company and its parent companies are party to other lawsuits, claims and regulatory inquiries that arise in the ordinary course of conducting their business. The ultimate outcome of these other legal matters pending against the Company cannot be predicted, and although such lawsuits and claims are not expected individually to have a material adverse effect on the Company's consolidated financial condition, results of operations or liquidity, such lawsuits could have, in the aggregate, a material adverse effect on the Company's consolidated financial condition, results of operations or liquidity. Whether or not the Company ultimately prevails in any particular lawsuit or claim, litigation can be time consuming and costly and injure the Company's reputation.

18. Employee Benefit Plans

Pension Plans

The Company sponsors two qualified defined benefit pension plans, the TWC Pension Plan and the TWC Union Pension Plan, that provide pension benefits to a majority of Legacy TWC employees who were employed by TWC before the Transactions. The Company also provides a nonqualified defined benefit pension plan for certain employees under the TWC Excess Pension Plan.

Changes in the projected benefit obligation, fair value of plan assets and funded status of the pension plans from January 1 through December 31 are presented below:

	2018	2017
Projected benefit obligation at beginning of year	$ 3,569	$ 3,260
Interest cost	128	133
Actuarial (gain) loss	(438)	406
Settlement	(169)	(185)
Benefits paid	(49)	(45)
Projected benefit obligation at end of year	$ 3,041	$ 3,569
Accumulated benefit obligation at end of year	$ 3,041	$ 3,569
Fair value of plan assets at beginning of year	$ 3,273	$ 2,946
Actual return on plan assets	(118)	539
Employer contributions	6	18
Settlement	(169)	(185)
Benefits paid	(49)	(45)
Fair value of plan assets at end of year	$ 2,943	$ 3,273
Funded status	$ (98)	$ (296)

The projected benefit obligation, accumulated benefit obligation and fair value of plan assets for the qualified pension plans and the nonqualified pension plan as of December 31, 2018 and 2017 consisted of the following:

	Qualified Pension Plans		Nonqualified Pension Plan	
	December 31,		December 31,	
	2018	2017	2018	2017
Projected benefit obligation	$ 3,007	$ 3,528	$ 34	$ 41
Accumulated benefit obligation	$ 3,007	$ 3,528	$ 34	$ 41
Fair value of plan assets	$ 2,943	$ 3,273	$ —	$ —

Pretax amounts recognized in the consolidated balance sheet as of December 31, 2018 and 2017 consisted of the following:

	December 31,	
	2018	2017
Noncurrent asset	$ 1	$ 1
Current liability	(4)	(5)
Long-term liability	(95)	(292)
Net amounts recognized in consolidated balance sheet	$ (98)	$ (296)

The components of net periodic benefit for the years ended December 31, 2018, 2017 and 2016 consisted of the following:

	Year Ended December 31,		
	2018	2017	2016
Service cost	$ —	$ —	$ (86)
Interest cost	(128)	(133)	(87)
Expected return on plan assets	198	189	116
Pension curtailment gain	—	—	675
Remeasurement gain (loss)	122	(55)	195
Net periodic pension benefit	$ 192	$ 1	$ 813

During the years ended December 31, 2018 and 2017, settlements for lump-sum distributions to qualified and nonqualified pension plan participants exceeded the estimated annual interest cost of the plans. As a result, the pension liability and pension asset values were reassessed as of September 30, 2018 and 2017 utilizing remeasurement date assumptions in accordance with the Company's mark-to-market pension accounting policy to record gains and losses in the period in which a remeasurement event occurs.

The $122 million remeasurement gain recorded during the year ended December 31, 2018 was primarily driven by the effects of an increase of the discount rate from 3.68% at December 31, 2017 to 4.37% at December 31, 2018. This was partially offset by a loss to record pension assets to fair value at December 31, 2018. Approximately $187 million of the remeasurement gain was recorded for the interim remeasurement event as of September 30, 2018 and was offset by a $65 million loss recorded for the annual remeasurement as of December 31, 2018.

The $55 million remeasurement loss recorded during the year ended December 31, 2017 was primarily driven by the adoption of the revised lump sum conversion mortality tables published by the IRS effective January 1, 2018, and the effects of a decrease of the discount rate from 4.20% at December 31, 2016 to 3.68% at December 31, 2017, partially offset by a gain to record pension assets to fair value. Approximately $30 million of the remeasurement loss was recorded for the interim remeasurement event as of September 30, 2017 and $25 million was recorded for the annual remeasurement as of December 31, 2017.

The $195 million remeasurement gain recorded during the year ended December 31, 2016 was primarily driven by the effects of an increase of the discount rate from 3.99% at the closing date of the TWC Transaction to 4.20% at December 31, 2016 and a gain to record pension assets at December 31, 2016 fair values.

The discount rates used to determine benefit obligations as of December 31, 2018 and 2017 were 4.37% and 3.68%, respectively. The Company utilized the RP 2015/MP2015 mortality tables published by the Society of Actuaries to measure the benefit obligations as of December 31, 2018 and 2017.

Weighted average assumptions used to determine net periodic benefit costs for the years endedDecember 31, 2018, 2017 and 2016 consisted of the following:

	Year ended December 31,		
	2018	**2017**	**2016**
Expected long-term rate of return on plan assets[a]	5.75%	6.50%	6.50%
Discount rate [b]	4.24%	3.88%	3.72%
Rate of compensation increase [c]	—%	—%	—%

[a] The expected long-term rate of return on plan assets decreased in 2018 consistent with the derisking shift to increase the fixed income, liability-matching investment allocation.

[b] The discount rate used to determine net periodic pension benefit was3.68% from January 1, 2018 through remeasurement date (September 30, 2018), and was 4.24% from remeasurement date through December 31, 2018. The discount rate used to determine net periodic pension benefit was 4.20% from January 1, 2017 through remeasurement date (September 30, 2017), and was 3.88% from remeasurement date through December 31, 2017. The discount rate used to determine net periodic pension benefit was 3.99% from the closing date of the TWC Transaction through remeasurement date (June 30, 2016), and was3.72% from remeasurement date through December 31, 2016.

[c] The rate of compensation increase used to determine net periodic pension benefit was4.25% from the closing date of the TWC Transaction through remeasurement date (June 30, 2016), and 0% thereafter. See "Pension Plan Curtailment Amendment" below for further discussion.

In developing the expected long-term rate of return on plan assets, the Company considered the pension portfolio's composition, past average rate of earnings and the Company's future asset allocation targets. The weighted average expected long-term rate of return on plan assets and discount rate used to determine net periodic pension benefit for the year ended December 31, 2019 are expected to be 5.75% and 4.37%, respectively. The Company determined the discount rates used to determine benefit obligations and net periodic pension benefit based on the yield of a large population of high quality corporate bonds with cash flows sufficient in timing and amount to settle projected future defined benefit payments.

Pension Plan Curtailment Amendment

Following the closing of the TWC Transaction, Charter amended the pension plans to freeze future benefit accruals to current active plan participants as of August 31, 2016. Effective September 1, 2016, no future compensation increases or future service will be credited to participants of the pension plans and new hires are not eligible to participate in the plans. Upon announcement and approval of the plan amendment, the assumptions underlying the pension liability and pension asset values were reassessed utilizing remeasurement date assumptions in accordance with Charter's mark-to-market pension accounting policy to record gains and losses in the period in which a remeasurement event occurs. The $675 million curtailment gain recorded during the year ended December 31, 2016 was primarily driven by the reduction of the compensation rate assumption to 0% in accordance with the terms of the plan amendment, reflecting the pension liability at its accumulated benefit obligation instead of its projected benefit obligation at the remeasurement date.

Pension Plan Assets

The assets of the qualified pension plans are held in a master trust in which the qualified pension plans are the only participating plans (the "Master Trust"). The investment policy for the qualified pension plans is to manage the assets of the Master Trust with the objective to provide for pension liabilities to be met, maintaining retirement income security for the participants of the plans and their beneficiaries. The investment portfolio is a mix of pooled funds invested in fixed income securities, equity securities and certain alternative investments with the objective of matching plan liability performance, diversifying risk and achieving a target investment return.

The pension plan's Investment Committee establishes risk mitigation policies and regularly monitors investment performance, investment allocation policies, and the execution of these strategies. The Investment Committee engages a third-party investment firm with responsibility of executing the directives of the Investment Committee, monitoring the performance of individual investment managers of the Master Trust, and making adjustments and changes within defined parameters when necessary. On

a periodic basis, the Investment Committee conducts a broad strategic review of its portfolio construction and investment allocation policies. Neither the Company, the Investment Committee, nor the third-party investment firm manages any assets internally.

Pension assets are managed in a balanced portfolio comprised of two major components: a return-seeking portion and a liability-matching portion. The expected role of return-seeking investments is to achieve a reasonable long-term growth of pension assets with a prudent level of risk using asset diversity in order to balance return and volatility, while the role of liability-matching investments is to provide a partial economic hedge against liability performance associated with changes in interest rates.

The Company uses an investment strategy referred to as a de-risking glide path to increase the fixed income allocation as the funded status of the qualified pension plans improves. As the qualified pension plans reach set funded status milestones, the assets will be rebalanced to shift more assets from equity to fixed income. Based on the progress with this strategy, the target investment allocation for pension fund assets is permitted to vary within specified ranges subject to Investment Committee approval for return-seeking securities and liability-matching securities. The target and actual investment allocation of the qualified pension plans by asset category consisted of the following:

	December 31, 2018		December 31, 2017	
	Target Allocation	Actual Allocation	Target Allocation	Actual Allocation
Return-seeking securities	60.0%	54.6%	75.0%	73.1%
Liability-matching securities	40.0%	45.1%	25.0%	26.7%
Other investments	—%	0.3%	—%	0.2%

The following tables set forth the investment assets of the qualified pension plans by level within the fair value hierarchy as of December 31, 2018 and 2017:

	December 31, 2018		
	Fair Value	Level 1	Level 2
Cash	$ 4	$ 4	$ —
Commingled bond funds[(a)]	1,270	—	1,270
Commingled equity funds[(a)]	952	—	952
Collective trust funds[(b)]	113	—	113
Total investment assets	2,339	$ 4	$ 2,335
Accrued investment income and other receivables	11		
Investments measured at net asset value[(c)]	593		
Fair value of plan assets	$ 2,943		

	December 31, 2017		
	Fair Value	Level 1	Level 2
Cash	$ 3	$ 3	$ —
Commingled bond funds[a]	796	—	796
Commingled equity funds[a]	2,368	—	2,368
Collective trust funds[b]	68	—	68
Total investment assets	3,235	$ 3	$ 3,232
Accrued investment income and other receivables	34		
Investments measured at net asset value[c]	4		
Fair value of plan assets	$ 3,273		

(a) Commingled funds include bond funds with corporate and U.S. treasury debt securities and equity funds with global equity index, infrastructure and real estate securities that have a readily determinable fair value and are valued using the net assets provided by the administrator of the fund. The value of each fund is based on the fair value of underlying securities in the portfolio, which represents the amount that the fund might reasonably expect to receive for the securities upon a sale, less liabilities, and then divided by the number of units outstanding. Equity securities within the funds are valued using observable inputs on either a daily or weekly basis and the resulting per share value serves as a basis for current redemption value. Debt securities within the funds are valued based on observable prices from the new issue market, benchmark quotes, secondary trading and dealer quotes.

(b) Collective trust funds consist of short-term investment strategies comprised of instruments issued or fully guaranteed by the U.S. government and/or its agencies and multi-strategy funds, which are valued using the net assets provided by the administrator of the fund. The value of each fund is based on the readily determinable fair value of the underlying assets owned by the fund, less liabilities, and then divided by the number of units outstanding.

(c) As a practical expedient, certain investment classes which hold securities that are not readily available for redemption and are measured at fair value using the net asset value ("NAV") per share (or its equivalent) have not been classified in the fair value hierarchy.

Investments Measured at Net Asset Value per Share Practical Expedient

The following table summarizes the investment classes for which fair value is measured using the NAV per share (or its equivalent) practical expedient as of December 31, 2018. These investment classes are not readily available for redemption. The NAV of each fund is based on the fair value of underlying assets in the portfolio. Certain investments report NAV per share on a month or quarter lag. There are no material unfunded commitments with respect to these investment classes.

	December 31, 2018		
	Fair Value	Redemption Frequency (if currently eligible)	Redemption Notice Period
Alternative funds[a]	$ 301	weekly, monthly	1-180 days
Fixed income funds[b]	164	daily, monthly	10-40 days
Real estate funds[c]	128	quarterly	45-90 days
Investments measured at NAV	$ 593		

(a) The alternative fund investment class includes funds with various securities selected to provide complimentary sources of return with our equity and bond portfolios that better manage risk. The Company's alternative fund investments include holdings such as public equities, exchange traded derivatives, and corporate bonds, among others. A portion of the alternative funds cannot be redeemed until the one year anniversary of the purchase date.

(b) This investment class includes funds that invest in residential and commercial mortgages, as well as global sovereign securities.

(c) This investment class includes real estate funds that are not publicly traded and invest primarily in unlisted direct core real estate, including super-regional malls, shopping centers, and commercial real estate (e.g. education, healthcare and storage).

Pension Plan Contributions

The Company made no cash contributions to the qualified pension plans during the years ended December 31, 2018, 2017 and 2016; however, the Company may make discretionary cash contributions to the qualified pension plans in the future. Such contributions will be dependent on a variety of factors, including current and expected interest rates, asset performance, the funded status of the qualified pension plans and management's judgment. For the nonqualified unfunded pension plan, the Company will continue to make contributions during 2019 to the extent benefits are paid.

Benefit payments for the pension plans are expected to be $161 million in 2019, $166 million in 2020, $170 million in 2021, $172 million in 2022, $174 million in 2023 and $866 million in 2024 to 2028.

Multiemployer Plans

The Company contributes to multiemployer plans under the terms of collective-bargaining agreements that cover its union-represented employees. Such multiemployer plans provide medical, pension and retirement savings benefits to active employees and retirees. The Company made contributions to multiemployer plans of $9 million, $18 million and $31 million for the years ended December 31, 2018, 2017 and 2016, respectively.

The risks of participating in multiemployer pension plans are different from single-employer pension plans in the following aspects: (a) assets contributed to a multiemployer pension plan by one employer may be used to provide benefits to employees of other participating employers, (b) if a participating employer stops contributing to the multiemployer pension plan, the unfunded obligations of the plan may be borne by the remaining participating employers and (c) if the Company chooses to stop participating in any of the multiemployer pension plans, it may be required to pay those plans an amount based on the underfunded status of the plan, referred to as a withdrawal liability. The Company records withdrawal liabilities as other long-term liabilities in the consolidated balance sheets. As of December 31, 2018 and 2017, other long-term liabilities includes approximately $104 million and $83 million, respectively, related to the Company's withdrawal from a multiemployer pension plan.

The multiemployer pension plan to which the Company has contributed received a Pension Protection Act "green" zone status in 2017. The zone status is based on the most recent information the Company received from the plan and is certified by the plan's actuary. Among other factors, plans in the green zone are at least 80% funded.

Defined Contribution Benefit Plans

The Company's employees may participate in the Charter Communications, Inc. 401(k) Savings Plan (the "401(k) Plan"). Employees that qualify for participation can contribute up to 50% of their salary, on a pre-tax basis, subject to a maximum contribution limit as determined by the Internal Revenue Service. The Company's matching contribution is discretionary and is equal to 100% of the amount of the salary reduction the participant elects to defer (up to 6% of the participant's eligible compensation), excluding any catch-up contributions and is paid by the Company on a per pay period basis. The Company made contributions to the 401(k) plan totaling $290 million, $274 million and $147 million for the years ended December 31, 2018, 2017 and 2016, respectively.

For employees who are not eligible to participate in the Company's long-term incentive plan and who are not covered by a collective bargaining agreement, the Company offers a contribution to the Retirement Accumulation Plan ("RAP"), equal to 3% of eligible pay. The Company made contributions to the RAP totaling $151 million, $139 million and $48 million for the years ended December 31, 2018, 2017 and 2016, respectively.

19. Recently Issued Accounting Standards

Accounting Standards Adopted January 1, 2018

ASU No. 2014-09, Revenue from Contracts with Customers ("ASU 2014-09")

In May 2014, the Financial Accounting Standards Board ("FASB") issued ASU 2014-09 which is a comprehensive revenue recognition standard that superseded nearly all revenue recognition guidance under U.S. GAAP. ASU 2014-09 provides a single principles-based, five step model to be applied to all contracts with customers, which steps are to (1) identify the contract(s) with

the customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price to the performance obligations in the contract and (5) recognize revenue when each performance obligation is satisfied.

The Company adopted ASU 2014-09 as of January 1, 2018 using the modified retrospective transition method with a cumulative-effect adjustment to equity. The adoption of ASU 2014-09 did not have a material impact on the Company's financial position or results of operation. Previously reported results will not be restated under this transition method. The adoption results in the deferral of residential and small and medium business installation revenues and enterprise commission expenses over a period of time instead of recognized immediately. The adoption also results in the reclassification of the amortization of up-front fees paid to market and serve customers who reside in residential MDUs to regulatory, connectivity and produced content within operating costs and expenses instead of amortized as an intangible to depreciation and amortization expense.

The January 1, 2018 adoption cumulative-effect adjustment consisted of an increase to other noncurrent assets of $120 million, an increase to accounts payable and accrued liabilities of $71 million and an increase to total member's equity of $49 million. The Company applied the cumulative-effect adjustment to all contracts as of January 1, 2018. Operating results for the year ended December 31, 2018 are not materially different than results that would have been reported under guidance in effect before application of ASU 2014-09.

ASU No. 2016-15, Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments ("ASU 2016-15")

In August 2016, the FASB issued ASU 2016-15 which clarifies how entities should classify cash receipts and cash payments related to eight specific cash flow matters on the statement of cash flows, with the objective of reducing existing diversity in practice. The Company adopted ASU 2016-15 on January 1, 2018. The adoption of ASU 2016-15 did not have a material impact to the Company's consolidated financial statements.

ASU No. 2016-16, Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory ("ASU 2016-16")

In October 2016, the FASB issued ASU 2016-16 which requires both the selling entity and the buying entity in an intra-entity asset transfer (other than the transfer of inventory) to immediately recognize the current and deferred income tax consequences of the transaction. Income tax effects of intra-entity transfers of inventory will continue to be deferred until the inventory has been sold to a third party. The Company adopted the standard on January 1, 2018, using a modified retrospective approach, with the cumulative-effect adjustment recognized directly to shareholders equity for the income tax effects of intra-entity asset transfers (other than transfers of inventory) that happened before the adoption date. The Company identified a $38 million increase to total member's equity and corresponding increase to deferred tax assets related to the adoption, which was recorded during the year ended December 31, 2018.

ASU No. 2016-18, Statement of Cash Flows (Topic 230): Restricted Cash ("ASU 2016-18")

In November 2016, the FASB issued ASU 2016-18 which requires that amounts generally described as restricted cash to be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. ASU 2016-18 does not provide a definition of restricted cash or restricted cash equivalents. The Company adopted ASU 2016-18 on January 1, 2018. The new guidance will only be applicable to amounts described by the Company as restricted cash. The adoption of ASU 2016-15 did not have a material impact to the Company's consolidated financial statements.

ASU No. 2017-09, Scope of Modification Accounting ("ASU 2017-09")

In May 2017, the FASB issued ASU 2017-09 which amends the scope of modification accounting for share-based payment arrangements. The ASU provides guidance on the types of changes to the terms or conditions of share-based payment awards to which an entity would be required to apply modification accounting. ASU 2017-09 is applied prospectively to awards modified on or after the effective date. The Company adopted ASU 2017-09 on January 1, 2018. The adoption of ASU 2017-09 did not have a material impact to the Company's consolidated financial statements.

Accounting Standards Adopted January 1, 2019

ASU No. 2016-02, Leases ("ASU 2016-02")

In February 2016, the FASB issued ASU 2016-02 which requires lessees to recognize almost all leases on their balance sheet as a lease asset and a lease liability. Lessees are allowed to account for short-term leases (i.e., leases with a term of 12 months or less) off-balance sheet, consistent with current operating lease accounting. For income statement purposes, the FASB retained a dual model, requiring leases to be classified as either operating or finance. Classification will be based on criteria that are largely similar to those applied in current lease accounting, but without explicit bright lines.

The Company adopted ASU 2016-02 using the modified retrospective approach with a cumulative-effect adjustment recorded at the beginning of the period of adoption (January 1, 2019). Therefore, the Company will recognize and measure operating leases on the consolidated balance sheet without revising comparative period information or disclosure. The Company elected the package of practical expedients permitted under the transition guidance within the standard, which eliminates the reassessment of past leases, classification and initial direct costs. The Company also elected the land easements practical expedient which allows the Company not to retrospectively treat land easements as leases; however, must apply lease accounting prospectively to land easements if they meet the definition of a lease.

The Company elected the available practical expedients and implemented internal controls and key system functionality to enable the preparation of financial information on adoption. The new standard is anticipated to result in the recording of leased assets and lease liabilities for the Company's operating leases of approximately $0.9 billion to $1.1 billion as of January 1, 2019. The adoption of the standard did not have an impact on the Company's member's equity and is not anticipated to have an impact on the Company's results from operations and cash flows. The adoption of the new standard will result in additional disclosures around amount, timing and uncertainty of cash flows arising from leases including quantitative and qualitative information including significant judgments in applying the new standard.

ASU No. 2018-13, Changes to the Disclosure Requirements for Fair Value Measurement ("ASU 2018-13")

In August 2018, the FASB issued ASU 2018-13 which amends fair value measurement disclosure requirements to eliminate, add and modify certain disclosures to improve the effectiveness of such disclosure in the notes to the financial statements. ASU 2018-13 will be effective for interim and annual periods beginning after December 15, 2019. Early adoption is permitted. The Company early adopted ASU 2018-13 on January 1, 2019. The adoption of ASU 2018-13 did not have a material impact to the Company's consolidated financial statements.

ASU No. 2018-14, Changes to the Disclosure Requirements for Defined Benefit Plans ("ASU 2018-14")

In August 2018, the FASB issued ASU 2018-14 which amends defined benefit plan disclosure requirements to eliminate, add and modify certain disclosures to improve the effectiveness of such disclosure in the notes to the financial statements. ASU 2018-14 will be effective for interim and annual periods beginning after December 15, 2021. Early adoption is permitted. The Company early adopted ASU 2018-14 on January 1, 2019. The adoption of ASU 2018-14 did not have a material impact to the Company's consolidated financial statements.

Accounting Standards Not Yet Adopted

ASU No. 2016-13, Measurement of Credit Losses on Financial Instruments ("ASU 2016-13")

In June 2016, the FASB issued ASU 2016-13, which requires a financial asset (or a group of financial assets) measured at amortized cost basis to be assessed for impairment under the current expected credit loss model rather than an incurred loss model. The measurement of expected credit losses is based on relevant information about past events, including historical experience, current conditions and reasonable and supportable forecasts that affect the collectability of the reported amount. ASU 2016-13 will be effective for interim and annual periods beginning after December 15, 2019 (January 1, 2020 for the Company). Early adoption is permitted. The Company is currently evaluating the impact the adoption of ASU 2016-13 will have on its consolidated financial statements.

ASU No. 2017-04, Simplifying the Test for Goodwill Impairment ("ASU 2017-04")

In January 2017, the FASB issued ASU 2017-04 which eliminates step two from the goodwill impairment test. Under the new standard, to the extent the carrying amount of a reporting unit exceeds the fair value, the Company will record an impairment charge equal to the difference. The impairment charge recognized should not exceed the total amount of goodwill allocated to the reporting unit. ASU 2017-04 will be effective for interim and annual periods beginning after December 15, 2019 (January 1, 2020 for the Company). Early adoption is permitted. The Company does not expect the adoption of ASU 2017-04 to have a material impact on its consolidated financial statements.

ASU No. 2018-15, Customer's Accounting for Implementation Costs in a Cloud Computing Arrangement That Is a Service Contract ("ASU 2018-15")

In August 2018, the FASB issued ASU 2018-15 which requires upfront implementation costs incurred in a cloud computing arrangement (or hosting arrangement) that is a service contract to be amortized to hosting expense over the term of the arrangement, beginning when the module or component of the hosting arrangement is ready for its intended use. ASU 2018-15 will be effective for annual and interim periods beginning after December 15, 2019 (January 1, 2020 for the Company). Early adoption is permitted. The Company is currently in the process of evaluating the impact that the adoption of ASU 2018-15 will have on its consolidated financial statements.

20. Consolidating Schedules

Each of Charter Operating, TWC, LLC, TWCE, CCO Holdings and certain subsidiaries jointly, severally, fully and unconditionally guarantee the outstanding debt securities of the others (other than the CCO Holdings notes) on an unsecured senior basis and the condensed consolidating financial information has been prepared and presented pursuant to SEC Regulation S-X Rule 3-10, *Financial Statements of Guarantors and Issuers of Guaranteed Securities Registered or Being Registered.* Certain Charter Operating subsidiaries that are regulated telephone entities only become guarantor subsidiaries upon approval by regulators. This information is not intended to present the financial position, results of operations and cash flows of the individual companies or groups of companies in accordance with generally accepted accounting principles. The "Charter Operating and Restricted Subsidiaries" column is presented to comply with the terms of the Credit Agreement.

Condensed consolidating financial statements as of December 31, 2018 and 2017 and for the years ended December 31, 2018, 2017 and 2016 follow.

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2018, 2017 AND 2016
(dollars in millions, except where indicated)

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Balance Sheet

As of December 31, 2018

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
ASSETS				
CURRENT ASSETS:				
Cash and cash equivalents	$ —	$ 300	$ —	$ 300
Accounts receivable, net	—	1,699	—	1,699
Receivables from related party	57	—	(57)	—
Prepaid expenses and other current assets	—	400	—	400
Total current assets	57	2,399	(57)	2,399
INVESTMENT IN CABLE PROPERTIES:				
Property, plant and equipment, net	—	34,658	—	34,658
Customer relationships, net	—	9,565	—	9,565
Franchises	—	67,319	—	67,319
Goodwill	—	29,554	—	29,554
Total investment in cable properties, net	—	141,096	—	141,096
INVESTMENT IN SUBSIDIARIES	78,960	—	(78,960)	—
LOANS RECEIVABLE – RELATED PARTY	526	—	(526)	—
OTHER NONCURRENT ASSETS	—	1,403	—	1,403
Total assets	$ 79,543	$ 144,898	$ (79,543)	$ 144,898
LIABILITIES AND MEMBER'S EQUITY				
CURRENT LIABILITIES:				
Accounts payable and accrued liabilities	$ 283	$ 7,620	$ —	$ 7,903
Payables to related party	—	602	(57)	545
Current portion of long-term debt	—	3,290	—	3,290
Total current liabilities	283	11,512	(57)	11,738
LONG-TERM DEBT	18,730	50,807	—	69,537
LOANS PAYABLE – RELATED PARTY	—	1,451	(526)	925
DEFERRED INCOME TAXES	—	—	—	—
OTHER LONG-TERM LIABILITIES	—	2,144	—	2,144
MEMBER'S EQUITY				
Controlling interest	60,530	78,960	(78,960)	60,530
Noncontrolling interests	—	24	—	24
Total member's equity	60,530	78,984	(78,960)	60,554
Total liabilities and member's equity	$ 79,543	$ 144,898	$ (79,543)	$ 144,898

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Balance Sheet

As of December 31, 2017

		Guarantor Subsidiaries		
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
ASSETS				
CURRENT ASSETS:				
Cash and cash equivalents	$ —	$ 330	$ —	$ 330
Accounts receivable, net	—	1,611	—	1,611
Receivables from related party	55	—	(55)	—
Prepaid expenses and other current assets	—	243	—	243
Total current assets	55	2,184	(55)	2,184
INVESTMENT IN CABLE PROPERTIES:				
Property, plant and equipment, net	—	33,552	—	33,552
Customer relationships, net	—	11,951	—	11,951
Franchises	—	67,319	—	67,319
Goodwill	—	29,554	—	29,554
Total investment in cable properties, net	—	142,376	—	142,376
INVESTMENT IN SUBSIDIARIES	81,980	—	(81,980)	—
LOANS RECEIVABLE – RELATED PARTY	511	—	(511)	—
OTHER NONCURRENT ASSETS	—	1,133	—	1,133
Total assets	$ 82,546	$ 145,693	$ (82,546)	$ 145,693
LIABILITIES AND MEMBER'S EQUITY				
CURRENT LIABILITIES:				
Accounts payable and accrued liabilities	$ 280	$ 7,861	$ —	$ 8,141
Payables to related party	—	690	(55)	635
Current portion of long-term debt	—	2,045	—	2,045
Total current liabilities	280	10,596	(55)	10,821
LONG-TERM DEBT	18,708	49,478	—	68,186
LOANS PAYABLE – RELATED PARTY	—	1,399	(511)	888
DEFERRED INCOME TAXES	—	32	—	32
OTHER LONG-TERM LIABILITIES	—	2,184	—	2,184
MEMBER'S EQUITY				
Controlling interest	63,558	81,980	(81,980)	63,558
Noncontrolling interests	—	24	—	24
Total member's equity	63,558	82,004	(81,980)	63,582
Total liabilities and member's equity	$ 82,546	$ 145,693	$ (82,546)	$ 145,693

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Operations

For the year ended December 31, 2018

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
REVENUES	$ —	$ 43,620	$ —	$ 43,620
COSTS AND EXPENSES:				
Operating costs and expenses (exclusive of items shown separately below)	—	27,891	—	27,891
Depreciation and amortization	—	10,307	—	10,307
Other operating expenses, net	—	230	—	230
	—	38,428	—	38,428
Income from operations	—	5,192	—	5,192
OTHER INCOME (EXPENSES):				
Interest expense, net	(1,016)	(2,563)	—	(3,579)
Loss on financial instruments, net	—	(110)	—	(110)
Other pension benefits	—	192	—	192
Other expense, net	—	(46)	—	(46)
Equity in income of subsidiaries	2,648	—	(2,648)	—
	1,632	(2,527)	(2,648)	(3,543)
Income before income taxes	1,632	2,665	(2,648)	1,649
Income tax expense	—	(16)	—	(16)
Consolidated net income	1,632	2,649	(2,648)	1,633
Less: Net income attributable to noncontrolling interests	—	(1)	—	(1)
Net income	$ 1,632	$ 2,648	$ (2,648)	$ 1,632

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Operations

For the year ended December 31, 2017

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
REVENUES	$ —	$ 41,578	$ —	$ 41,578
COSTS AND EXPENSES:				
Operating costs and expenses (exclusive of items shown separately below)	—	26,560	—	26,560
Depreciation and amortization	—	10,579	—	10,579
Other operating expenses, net	—	444	—	444
	—	37,583	—	37,583
Income from operations	—	3,995	—	3,995
OTHER INCOME (EXPENSES):				
Interest expense, net	(883)	(2,232)	—	(3,115)
Loss on extinguishment of debt	(34)	(6)	—	(40)
Gain on financial instruments, net	—	69	—	69
Other pension benefits	—	1	—	1
Other expense, net	—	(4)	—	(4)
Equity in income of subsidiaries	1,799	—	(1,799)	—
	882	(2,172)	(1,799)	(3,089)
Income before income taxes	882	1,823	(1,799)	906
Income tax expense	—	(23)	—	(23)
Consolidated net income	882	1,800	(1,799)	883
Less: Net income attributable to noncontrolling interests	—	(1)	—	(1)
Net income	$ 882	$ 1,799	$ (1,799)	$ 882

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Operations

For the year ended December 31, 2016

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
REVENUES	$ —	$ 29,003	$ —	$ 29,003
COSTS AND EXPENSES:				
Operating costs and expenses (exclusive of items shown separately below)	—	18,670	—	18,670
Depreciation and amortization	—	6,902	—	6,902
Other operating expenses, net	—	722	—	722
	—	26,294	—	26,294
Income from operations	—	2,709	—	2,709
OTHER INCOME (EXPENSES):				
Interest expense, net	(727)	(1,396)	—	(2,123)
Loss on extinguishment of debt	(110)	(1)	—	(111)
Gain on financial instruments, net	—	89	—	89
Other pension benefits	—	899	—	899
Other expense, net	—	(3)	—	(3)
Equity in income of subsidiaries	2,293	—	(2,293)	—
	1,456	(412)	(2,293)	(1,249)
Income before income taxes	1,456	2,297	(2,293)	1,460
Income tax expense	—	(3)	—	(3)
Consolidated net income	1,456	2,294	(2,293)	1,457
Less: Net income attributable to noncontrolling interests	—	(1)	—	(1)
Net income	$ 1,456	$ 2,293	$ (2,293)	$ 1,456

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Comprehensive Income

For the year ended December 31, 2018

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
Consolidated net income	$ 1,632	$ 2,649	$ (2,648)	$ 1,633
Foreign currency translation adjustment	(1)	(1)	1	(1)
Consolidated comprehensive income	1,631	2,648	(2,647)	1,632
Less: Comprehensive income attributable to noncontrolling interests	—	(1)	—	(1)
Comprehensive income	$ 1,631	$ 2,647	$ (2,647)	$ 1,631

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Comprehensive Income

For the year ended December 31, 2017

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
Consolidated net income	$ 882	$ 1,800	$ (1,799)	$ 883
Net impact of interest rate derivative instruments	5	5	(5)	5
Foreign currency translation adjustment	1	1	(1)	1
Consolidated comprehensive income	888	1,806	(1,805)	889
Less: Comprehensive income attributable to noncontrolling interests	—	(1)	—	(1)
Comprehensive income	$ 888	$ 1,805	$ (1,805)	$ 888

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Comprehensive Income

For the year ended December 31, 2016

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
Consolidated net income	$ 1,456	$ 2,294	$ (2,293)	$ 1,457
Net impact of interest rate derivative instruments	8	8	(8)	8
Foreign currency translation adjustment	(2)	(2)	2	(2)
Consolidated comprehensive income (loss)	1,462	2,300	(2,299)	1,463
Less: Comprehensive income attributable to noncontrolling interests	—	(1)	—	(1)
Comprehensive income	$ 1,462	$ 2,299	$ (2,299)	$ 1,462

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Cash Flows

For the year ended December 31, 2018

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	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
NET CASH FLOWS FROM OPERATING ACTIVITIES	$ (1,009)	$ 12,666	$ —	$ 11,657
CASH FLOWS FROM INVESTING ACTIVITIES:				
Purchases of property, plant and equipment	—	(9,109)	—	(9,109)
Change in accrued expenses related to capital expenditures	—	(470)	—	(470)
Contribution to subsidiaries	(142)	—	142	—
Distributions from subsidiaries	6,187	—	(6,187)	—
Other, net	—	(100)	—	(100)
Net cash flows from investing activities	6,045	(9,679)	(6,045)	(9,679)
CASH FLOWS FROM FINANCING ACTIVITIES:				
Borrowings of long-term debt	—	13,820	—	13,820
Repayments of long-term debt	—	(10,769)	—	(10,769)
Borrowings of loans payable - related parties	—	12	—	12
Payment for debt issuance costs	—	(29)	—	(29)
Distributions to noncontrolling interest	—	(1)	—	(1)
Contributions from parent	142	142	(142)	142
Distributions to parent	(5,178)	(6,187)	6,187	(5,178)
Other, net	—	(5)	—	(5)
Net cash flows from financing activities	(5,036)	(3,017)	6,045	(2,008)
NET DECREASE IN CASH AND CASH EQUIVALENTS	—	(30)	—	(30)
CASH AND CASH EQUIVALENTS, beginning of period	—	330	—	330
CASH AND CASH EQUIVALENTS, end of period	$ —	$ 300	$ —	$ 300

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Statement of Cash Flows
For the year ended December 31, 2017

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
NET CASH FLOWS FROM OPERATING ACTIVITIES	$ (814)	$ 12,422	$ —	$ 11,608
CASH FLOWS FROM INVESTING ACTIVITIES:				
Purchases of property, plant and equipment	—	(8,681)	—	(8,681)
Change in accrued expenses related to capital expenditures	—	820	—	820
Purchases of cable systems, net	—	(9)	—	(9)
Contribution to subsidiaries	(693)	—	693	—
Distributions from subsidiaries	9,598	—	(9,598)	—
Other, net	—	(123)	—	(123)
Net cash flows from investing activities	8,905	(7,993)	(8,905)	(7,993)
CASH FLOWS FROM FINANCING ACTIVITIES:				
Borrowings of long-term debt	6,231	19,045	—	25,276
Repayments of long-term debt	(775)	(15,732)	—	(16,507)
Borrowings (repayments) loans payable - related parties	—	234	—	234
Payment for debt issuance costs	(59)	(52)	—	(111)
Distributions to noncontrolling interest	—	(2)	—	(2)
Contributions from parent	—	693	(693)	—
Distributions to parent	(13,488)	(9,598)	9,598	(13,488)
Other, net	—	(11)	—	(11)
Net cash flows from financing activities	(8,091)	(5,423)	8,905	(4,609)
NET DECREASE IN CASH AND CASH EQUIVALENTS	—	(994)	—	(994)
CASH AND CASH EQUIVALENTS, beginning of period	—	1,324	—	1,324
CASH AND CASH EQUIVALENTS, end of period	$ —	$ 330	$ —	$ 330

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Cash Flows

For the year ended December 31, 2016

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
NET CASH FLOWS FROM OPERATING ACTIVITIES:	$ (711)	$ 9,476	$ —	$ 8,765
CASH FLOWS FROM INVESTING ACTIVITIES:				
Purchases of property, plant and equipment	—	(5,325)	—	(5,325)
Change in accrued expenses related to capital expenditures	—	603	—	603
Purchase of cable systems, net	—	(7)	—	(7)
Contribution to subsidiaries	(437)	—	437	—
Distributions from subsidiaries	5,096	—	(5,096)	—
Other, net	—	(22)	—	(22)
Net cash flows from investing activities	4,659	(4,751)	(4,659)	(4,751)
CASH FLOWS FROM FINANCING ACTIVITIES:				
Borrowings of long-term debt	3,201	9,143	—	12,344
Repayments of long-term debt	(2,937)	(7,584)	—	(10,521)
Repayments of loans payable - related parties	(71)	(182)	—	(253)
Payment for debt issuance costs	(73)	(211)	—	(284)
Proceeds from termination of interest rate derivatives	—	88	—	88
Contributions from parent	478	437	(437)	478
Distributions to parent	(4,546)	(5,096)	5,096	(4,546)
Other, net	—	(1)	—	(1)
Net cash flows from financing activities	(3,948)	(3,406)	4,659	(2,695)
NET INCREASE IN CASH AND CASH EQUIVALENTS	—	1,319	—	1,319
CASH AND CASH EQUIVALENTS, beginning of period	—	5	—	5
CASH AND CASH EQUIVALENTS, end of period	$ —	$ 1,324	$ —	$ 1,324

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

The Manager and the Member of
CCO Holdings, LLC and CCO Holdings Capital Corp.:

We consent to the incorporation by reference in the registration statement No. 333-222241 on Form S-3 of CCO Holdings, LLC and CCO Holdings Capital Corp. and subsidiaries (the Company) of our report dated February 8, 2019, with respect to the consolidated balance sheets of the Company as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive income, member's equity, and cash flows for each of the years in the three-year period ended December 31, 2018, and the related notes (collectively, the consolidated financial statements) which report appears in the December 31, 2018 annual report on Form 10-K of the Company.

(signed) KPMG LLP

St. Louis, Missouri
February 8, 2019

Exhibit 31.1

I, Thomas M. Rutledge, certify that:

1. I have reviewed this Annual Report on Form 10-K of CCO Holdings, LLC and CCO Holdings Capital Corp.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 8, 2019

/s/ Thomas M. Rutledge

Thomas M. Rutledge
Chairman and Chief Executive Officer

Exhibit 31.2

I, Christopher L. Winfrey, certify that:

1. I have reviewed this Annual Report on Form 10-K of CCO Holdings, LLC and CCO Holdings Capital Corp.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 8, 2019

/s/ Christopher L. Winfrey

Christopher L. Winfrey
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER REGARDING PERIODIC REPORT CONTAINING FINANCIAL STATEMENTS

I, Thomas M. Rutledge, the Chairman and Chief Executive Officer of CCO Holdings, LLC and CCO Holdings Capital Corp. (the "Company") in compliance with 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, hereby certify that, the Company's Annual Report on Form 10-K for the year ended December 31, 2018 (the "Report") filed with the Securities and Exchange Commission:

- fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934; and
- the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Thomas M. Rutledge
Thomas M. Rutledge
Chairman and Chief Executive Officer
February 8, 2019

Exhibit 32.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER REGARDING PERIODIC REPORT CONTAINING FINANCIAL STATEMENTS

I, Christopher L. Winfrey, the Chief Financial Officer of CCO Holdings, LLC and CCO Holdings Capital Corp. (the "Company"), in compliance with 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, hereby certify that, the Company's Annual Report on Form 10-K for the year ended December 31, 2018 (the "Report") filed with the Securities and Exchange Commission:

- fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934; and
- the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Christopher L. Winfrey
Christopher L. Winfrey
Chief Financial Officer
(Principal Financial Officer)
February 8, 2019

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2019

or

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the Transition Period From to

Commission File Number: 001-37789

333-112593-01

CCO Holdings, LLC
CCO Holdings Capital Corp.

(Exact name of registrant as specified in its charter)

Delaware	**86-1067239**
Delaware	**20-0257904**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

400 Atlantic Street	**Stamford**	**Connecticut**	**06901**
(Address of Principal Executive Offices)			(Zip Code)

(203) 905-7801

(Registrant's telephone number, including area code)

Securities registered pursuant to section 12(b) of the Act: None
Securities registered pursuant to section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrants have submitted electronically and posted on their corporate website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrants were required to submit and post such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See definition of “large accelerated filer,” “accelerated filer,” and “smaller reporting company” in Rule 12b-2 of the Exchange Act.:

Large accelerated filer ☐ Accelerated filer ☐ Non-accelerated filer ☒ Smaller reporting company ☐ Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

All of the issued and outstanding shares of capital stock of CCO Holdings Capital Corp. are held by CCO Holdings, LLC. All of the limited liability company membership interests of CCO Holdings, LLC are held by CCH I Holdings, LLC (a subsidiary of Charter Communications, Inc., a reporting company under the Exchange Act). There is no public trading market for any of the aforementioned limited liability company membership interests or shares of capital stock.

CCO Holdings, LLC and CCO Holdings Capital Corp. meet the conditions set forth in General Instruction I(1)(a) and (b) to Form 10-K and are therefore filing with the reduced disclosure format.

Number of shares of common stock of CCO Holdings Capital Corporation outstanding as of December 31, 2019: 1

Documents Incorporated By Reference: None

CCO HOLDINGS, LLC
CCO HOLDINGS CAPITAL CORP.
FORM 10-K — FOR THE YEAR ENDEDDECEMBER 31, 2019

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This annual report on Form 10-K is for the year endedDecember 31, 2019. The United States Securities and Exchange Commission ("SEC") allows us to "incorporate by reference" information that we file with the SEC, which means that we can disclose important information to you by referring you directly to those documents. Information incorporated by reference is considered to be part of this annual report. In addition, information that we file with the SEC in the future will automatically update and supersede information contained in this annual report. In this annual report, "CCO Holdings," "we," "us" and "our" refer to CCO Holdings, LLC and its subsidiaries.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS:

This annual report includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), regarding, among other things, our plans, strategies and prospects, both business and financial including, without limitation, the forward-looking statements set forth in Part I. Item 1. under the heading "Business" and in Part II. Item 7. under the heading "Management's Discussion and Analysis of Financial Condition and Results of Operations" in this annual report. Although we believe that our plans, intentions and expectations reflected in or suggested by these forward-looking statements are reasonable, we cannot assure you that we will achieve or realize these plans, intentions or expectations. Forward-looking statements are inherently subject to risks, uncertainties and assumptions, including, without limitation, the factors described in Part I. Item 1A. under "Risk Factors" and in Part II. Item 7. under the heading, "Management's Discussion and Analysis of Financial Condition and Results of Operations" in this annual report. Many of the forward-looking statements contained in this annual report may be identified by the use of forward-looking words such as "believe," "expect," "anticipate," "should," "planned," "will," "may," "intend," "estimated," "aim," "on track," "target," "opportunity," "tentative," "positioning," "designed," "create," "predict," "project," "initiatives," "seek," "would," "could," "continue," "ongoing," "upside," "increases," "focused on" and "potential," among others. Important factors that could cause actual results to differ materially from the forward-looking statements we make in this annual report are set forth in this annual report and in other reports or documents that we file from time to time with the SEC, and include, but are not limited to:

- our ability to sustain and grow revenues and cash flow from operations by offering video, Internet, voice, mobile, advertising and other services to residential and commercial customers, to adequately meet the customer experience demands in our service areas and to maintain and grow our customer base, particularly in the face of increasingly aggressive competition, the need for innovation and the related capital expenditures;
- the impact of competition from other market participants, including but not limited to incumbent telephone companies, direct broadcast satellite ("DBS") operators, wireless broadband and telephone providers, digital subscriber line ("DSL") providers, fiber to the home providers and providers of video content over broadband Internet connections;
- our ability to obtain programming at reasonable prices or to raise prices to offset, in whole or in part, the effects of higher programming costs (including retransmission consents);
- our ability to develop and deploy new products and technologies including mobile products and any other consumer services and service platforms;
- any events that disrupt our networks, information systems or properties and impair our operating activities or our reputation;
- the effects of governmental regulation on our business including costs, disruptions and possible limitations on operating flexibility related to, and our ability to comply with, regulatory conditions applicable to us as a result of the Time Warner Cable Inc. and Bright House Networks, LLC transactions;
- general business conditions, economic uncertainty or downturn, unemployment levels and the level of activity in the housing sector;
- the ability to retain and hire key personnel;
- the availability and access, in general, of funds to meet our debt obligations prior to or when they become due and to fund our operations and necessary capital expenditures, either through (i) cash on hand, (ii) free cash flow, or (iii) access to the capital or credit markets; and
- our ability to comply with all covenants in our indentures and credit facilities, any violation of which, if not cured in a timely manner, could trigger a default of our other obligations under cross-default provisions.

All forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by this cautionary statement. We are under no duty or obligation to update any of the forward-looking statements after the date of this annual report.

PART I

Item 1. *Business.*

Introduction

We are the second largest cable operator in the United States and a leading broadband communications services company providing video, Internet and voice services to approximately 29.2 million residential and small and medium business customers at December 31, 2019. We also offer mobile service to residential customers and recently launched mobile service to small and medium business customers. In addition, we sell video and online advertising inventory to local, regional and national advertising customers and tailored communications and managed solutions to larger enterprise customers. We also own and operate regional sports networks and local sports, news and community channels.

CCO Holdings is a holding company whose principal assets are the equity interests in its operating subsidiaries. CCO Holdings is a direct subsidiary of CCH I Holdings, LLC, which is an indirect subsidiary of Charter Communications, Inc. ("Charter"), Charter Communications Holdings, LLC ("Charter Holdings") and Spectrum Management Holding Company, LLC.

We own and operate a high-capacity, two-way telecommunications network which passes over 52 million households and small and medium businesses across the United States. Our core strategy is to use our network to deliver high quality products at competitive prices, combined with outstanding service. This strategy, combined with simple, easy to understand pricing and packaging, is central to our goal of growing our customer base while selling more of our core connectivity services, which include both fixed and mobile Internet, video and voice services, to each individual customer. We execute this strategy by managing our operations in a consumer-friendly, efficient and cost-effective manner. Our operating strategy includes insourcing nearly all of our customer care and field operations workforces, which results in higher quality service delivery. While an insourced operating model can increase the field operations and customer care costs associated with individual service transactions, the higher quality nature of insourced labor service transactions significantly reduces the volume of service transactions per customer, more than offsetting the higher investment made in each insourced service transaction. As we reduce the number of service transactions and recurring costs per customer relationship, we continue to provide our customers with products and prices that we believe provide more value than what our competitors offer. The combination of offering high quality, competitively priced products and outstanding service, allows us to both increase the number of customers we serve over our fully deployed network, and to increase the number of products we sell to each customer. This combination also reduces the number of service transactions we perform per relationship, yielding higher customer satisfaction and lower customer churn, resulting in lower costs to acquire and serve customers.

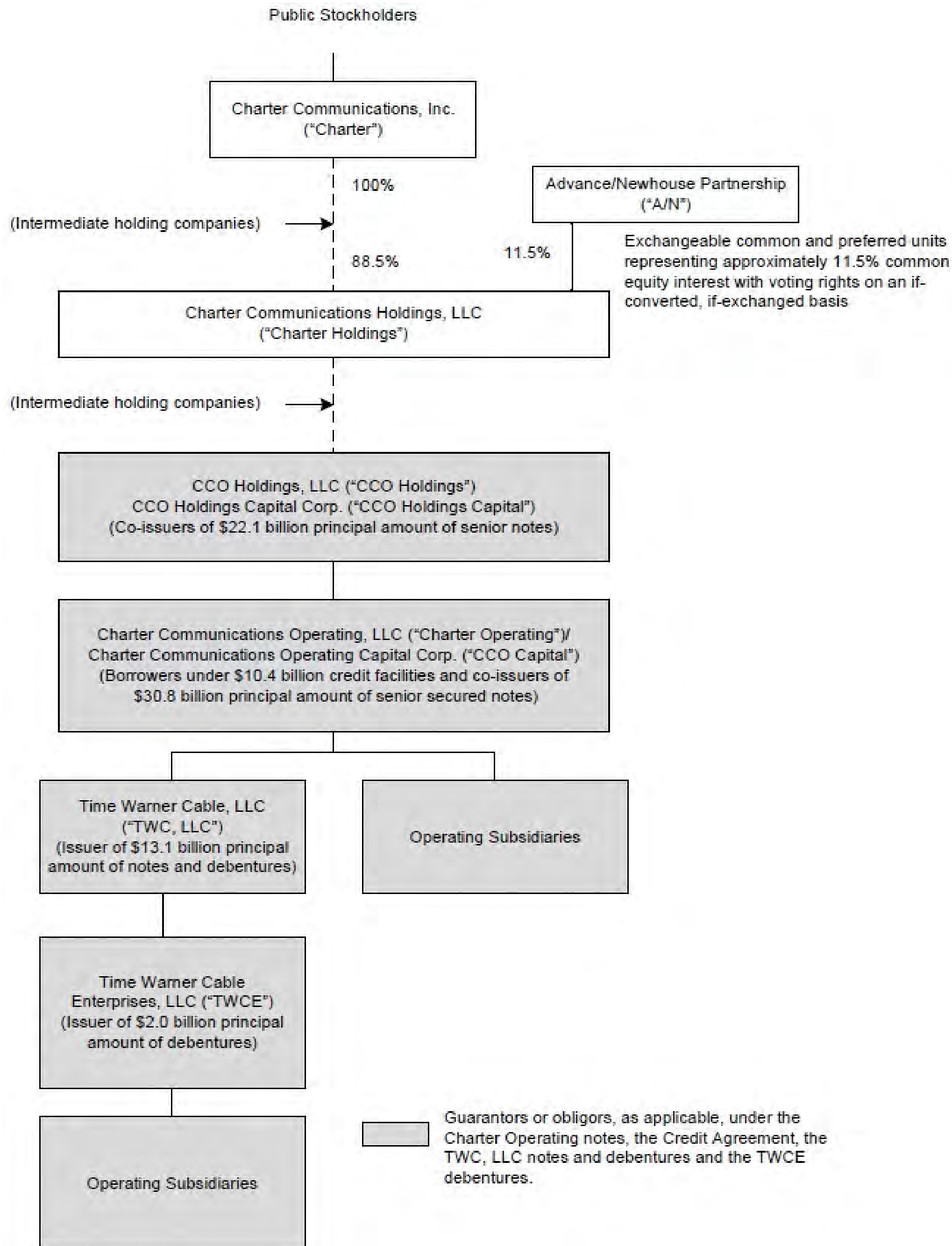
We have enhanced our service operations to allow our customers to (1) more frequently interact with us through our customer website and Spectrum TV application, online chat and social media, (2) have their services installed at the time and in the manner of their own choosing, including self-installation, and (3) receive a variety of video packages on an increasing number of connected devices including those owned by us and those owned by the customer. By offering our customers growing levels of choices in how they receive and install their services and how they interact with us, we are driving higher overall levels of customer satisfaction and reducing our operating costs and capital expenditures per customer relationship. Ultimately, our operating strategy enables us to offer high quality, competitively priced services profitably, while continuing to invest in new products and services.

The capability and functionality of our two-way network continues to grow in a number of areas, especially with respect to wireless connectivity. Our Internet service offers consumers the ability to wirelessly connect to our network using WiFi technology. We estimate that over 300 million devices are wirelessly connected to our network through WiFi. Initially, our wireless strategy focused on offering wireless connectivity solutions inside the home and business using WiFi. Through our mobile virtual network operator ("MVNO") reseller agreement with Verizon Communications Inc. ("Verizon"), we are now able to offer Internet connectivity to our customers beyond the home via our Spectrum Mobile product. We are also actively testing and evaluating opportunities for our customers to wirelessly connect to our network using a combination of licensed and unlicensed radio spectrum to deliver fixed and mobile service directly from our distributed, high capacity network.

Our principal executive offices are located at 400 Atlantic Street, Stamford, Connecticut 06901. Our telephone number is (203) 905-7801, and Charter has a website accessible at www.charter.com. Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, and all amendments thereto, are available on Charter's website free of charge as soon as reasonably practicable after they have been filed. The information posted on Charter's website is not incorporated into this annual report.

Corporate Entity Structure

The chart below sets forth our entity structure and that of our direct and indirect parents and subsidiaries. The chart does not include all of our affiliates and subsidiaries and, in some cases, we have combined separate entities for presentation purposes. The equity ownership percentages shown below are approximations. Indebtedness amounts shown below are principal amounts as of December 31, 2019. See Note 9 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data," which also includes the accreted values of the indebtedness described below.



Products and Services

We offer our customers subscription-based video services, Internet services, and voice and mobile services. Our services are offered to residential and commercial customers on a subscription basis, with prices and related charges based on the types of service selected, whether the services are sold as a "bundle" or on an individual basis, and based on the equipment necessary to receive our services. Bundled services are available to substantially all of our passings, and approximately 57% of our residential customers subscribe to a bundle of services including some combination of our video, Internet and/or voice products.

The following table summarizes our customer statistics for video, Internet, mobile and voice as ofDecember 31, 2019 and 2018 (in thousands except per customer data and footnotes).

	Approximate as of December 31,	
	2019 [(a)]	2018 [(a)]
Customer Relationships [(b)]		
Residential	27,277	26,270
Small and Medium Business	1,958	1,833
Total Customer Relationships	29,235	28,103
Residential Primary Service Units ("PSUs")		
Video	15,620	16,104
Internet	24,908	23,625
Voice	9,443	10,135
Monthly Residential Revenue per Residential Customer[(c)]	$ 112.63	$ 111.56
Small and Medium Business PSUs		
Video	524	502
Internet	1,756	1,634
Voice	1,144	1,051
Monthly Small and Medium Business Revenue per Customer[(d)]	$ 169.90	$ 174.88
Mobile Lines	1,082	134
Enterprise PSUs [(e)]	267	248

(a) We calculate the aging of customer accounts based on the monthly billing cycle for each account. On that basis, as of December 31, 2019 and 2018, customers include approximately 154,200 and 217,600 customers, respectively, whose accounts were over 60 days past due, approximately13,500 and 24,000 customers, respectively, whose accounts were over 90 days past due, and approximately10,000 and 19,200 customers, respectively, whose accounts were over 120 days past due.

(b) Customer relationships include the number of customers that receive one or more levels of service, encompassing video, Internet and voice services, without regard to which service(s) such customers receive. Customers who reside in residential multiple dwelling units ("MDUs") and that are billed under bulk contracts are counted based on the number of billed units within each bulk MDU. Total customer relationships exclude enterprise and mobile-only customer relationships.

(c) Monthly residential revenue per residential customer is calculated as total residential video, Internet and voice annual revenue divided by twelve divided by average residential customer relationships during the respective year. Monthly residential revenue per residential customers excludes mobile revenue and customers.

(d) Monthly small and medium business revenue per customer is calculated as total small and medium business annual revenue divided by twelve divided by average small and medium business customer relationships during the respective year. Monthly small and medium business revenue per small and medium customer excludes mobile revenue and customers.

(e) Enterprise PSUs represent the aggregate number of fiber service offerings counting each separate service offering at each customer location as an individual PSU.

Residential Services

Video Services

Our video customers receive a package of programming which generally includes a digital set-top box that provides an interactive electronic programming guide with parental controls, access to pay-per-view services, including video on demand ("VOD") (available to nearly all of our passings) and the ability to view certain video services on third-party devices inside and outside the residence. Customers have the option to purchase additional tiers of services including premium channels which provide original programming, commercial-free movies, sports, and other special event entertainment programming. Substantially all of our video programming is available in high definition. We also offer certain video packages containing a limited number of channels via our cable television systems.

In the vast majority of our footprint, we offer VOD service which allows customers to select from over 60,000 titles at any time. VOD programming options may be accessed for free if the content is associated with a customer's linear subscription, or for a fee on a transactional basis. VOD services are also offered on a subscription basis included in a digital tier premium channel subscription or for a monthly fee. Pay-per-view channels allow customers to pay on a per-event basis to view a single showing of a one-time special sporting event, music concert, or similar event on a commercial-free basis.

Our goal is to provide our video customers with the programming they want, when they want it, on any device. Digital video recorder ("DVR") service enables customers to digitally record programming and to pause and rewind live programming. Customers can also use our Spectrum TV application on Internet Protocol ("IP") devices to watch over 375 channels of cable TV in home and approximately 275 channels out of home and view VOD programming. Customers are increasingly accessing their subscription video content through connected IP devices via our IP network. In 2019, we launched cloud DVR service which allows customers to schedule, record and watch their favorite programming anytime from connected IP devices as well as SpectrumTV.com. Our video customers also have access to programmer authenticated applications and websites (known as TV Everywhere services) such as HBO Go, Fox Now, Discovery Go and ESPN. We deploy Spectrum Guide®, our network or "cloud-based" user interface, to new video customers in the majority of our service areas. Spectrum Guide runs on traditional set-top boxes but offers a look and feel similar to that of our Spectrum TV application. Spectrum Guide also provides access to third-party video applications such as Netflix.

Internet Services

Our Spectrum pricing and packaging ("SPP") offers an entry level Internet download speed of at least 200 megabits per second ("Mbps") in approximately 60% of our footprint and 100 Mbps across approximately 40% of our footprint, which among other things, allows several people within a single household to stream high definition ("HD") television video content while simultaneously using our Internet service for other purposes. Additionally, leveraging DOCSIS 3.1 technology, we offer 940 Mbps speed service ("Spectrum Internet Gig") in nearly all of our footprint. Finally, we offer a security suite with our Internet services which, upon installation by customers, provides protection against computer viruses and spyware and includes parental control features.

We offer an in-home WiFi product that provides customers with high performance wireless routers to maximize their in-home wireless Internet experience. At the end of 2019, we launched our advanced in-home WiFi product in select service areas and we plan to continue to roll this product out to our entire footprint throughout 2020 and 2021. Advanced in-home WiFi provides connected device visibility, management and control to customers in a single application and to customer service agents to help support our customers. Advanced in-home WiFi is built on a software platform that will allow us to integrate and launch additional network based security and control features.

Voice Services

We provide voice communications services using voice over Internet protocol ("VoIP") technology to transmit digital voice signals over our network. Our voice services include unlimited local and long distance calling to the United States, Canada, Mexico and Puerto Rico, voicemail, call waiting, caller ID, call forwarding and other features and offers international calling either by the minute, or through packages of minutes per month. For customers that subscribe to both our voice and video offerings, caller ID on TV is also available in most areas.

Mobile Services

At the end of the second quarter of 2018, we launched our mobile product, Spectrum Mobile, to residential customers under our MVNO reseller agreement with Verizon. We currently offer our Spectrum Mobile service to residential customers subscribing to

our Internet service and recently launched mobile service to small and medium business customers. In the second quarter of 2019, we expanded our Spectrum Mobile bring-your-own-device ("BYOD") program across all sales channels to include a broader set of devices which we believe lowers the cost for consumers of switching mobile carriers, and reduces the short-term working capital impact of selling new mobile devices on installment plans. We believe Spectrum-branded mobile services will drive more sales of our core products, create longer customer lives and increase profitability and cash flow over time. As we continue to grow our mobile services, including 5G in 2020, we expect that Spectrum Mobile will require an initial funding period to grow the product as well as negative working capital impacts from the timing of device-related cash flows when we sell the handset or tablet to customers pursuant to equipment installment plans.

We plan to use our WiFi network in conjunction with additional unlicensed, and potentially licensed, spectrum to improve network performance and expand capacity to offer consumers a superior mobile service at a lower total cost to us. Further, we have experimental wireless licenses from the Federal Communications Commission ("FCC") that we are utilizing to test next generation mobile services in several service areas around the country. We intend to consider and pursue opportunities in the mobile space which may include the acquisition of licensed spectrum and may include entering into or expanding joint ventures or partnerships with wireless or cable providers which may require significant investment.

Commercial Services

We offer scalable broadband communications solutions for businesses and carrier organizations of all sizes, selling Internet access, data networking, fiber connectivity to cellular towers and office buildings, video entertainment services and business telephone services.

Small and Medium Business

Spectrum Business® offers Internet, voice and video services to small and medium businesses over our hybrid fiber coaxial network. In addition, in 2019, we began offering our Spectrum Mobile service to small and medium business customers. Spectrum Business includes a full range of video programming and entry-level Internet speeds of 200 Mbps downstream and 10 Mbps upstream in virtually all of our markets. Additionally, customers can upgrade their Internet speeds by purchasing Internet Ultra (400 Mbps downstream) or Internet Gig (940 Mbps downstream). Spectrum Business also includes a set of business services including static IP and business WiFi, e-mail and security, and multi-line telephone services with more than 30 business features including web-based service management, that are generally not available to residential customers.

Enterprise

Spectrum Enterprise offers more tailored communications products and managed service solutions to larger businesses, as well as high-capacity last-mile data connectivity services to mobile and wireline carriers on a wholesale basis. Spectrum Enterprise's product portfolio includes fiber Internet access, voice trunking services, unified messaging/unified communications (“UM/UC”), Ethernet services that privately and securely connect geographically dispersed client locations, and video solutions designed to meet the needs of hospitality, education, and healthcare clients. In addition, in 2019, Spectrum Enterprise launched an innovative Hybrid Software-Defined Wide Area Network ("SD-WAN") that enables businesses to leverage the performance of Ethernet, the ubiquity of Internet connectivity and the flexibility of a software-defined solution to solve a wide array of business communications and networking challenges. Spectrum Enterprise combines its large, serviceable footprint and robust portfolio of fiber lit buildings with a sizeable partner network to effectively serve enterprise customers nationally. These customers can benefit from obtaining advanced services from a single provider, receiving a consistent solution while simplifying procurement and potentially reducing their costs.

Advertising Services

Our advertising sales division, Spectrum Reach®, offers local, regional and national businesses the opportunity to advertise in individual and multiple service areas on cable television networks and digital outlets. We receive revenues from the sale of local advertising across various platforms for networks such as MTV, CNN and ESPN. In any particular service area, we typically insert local advertising on 40 to 90 channels. Our large footprint provides opportunities for advertising customers to address broader regional audiences from a single provider and thus reach more customers with a single transaction. Our size also provides scale to invest in new technology to create more targeted and addressable advertising capabilities.

Available advertising time is generally sold by our advertising sales force. In some service areas, we have formed advertising interconnects or entered into representation agreements with other video distributors, including, among others, Verizon, AT&T Inc. (“AT&T”) and Comcast Corporation, under which we sell advertising on behalf of those operators. In other service areas, we enter into representation agreements under which another operator in the area will sell advertising on our behalf. These

arrangements enable us and our partners to deliver linear commercials across wider geographic areas, replicating the reach of local broadcast television stations to the extent possible. In addition, we enter into interconnect agreements from time to time with other cable operators, which, on behalf of a number of video operators, sells advertising time to national and regional advertisers in individual or multiple service areas.

Additionally, we sell the advertising inventory of our owned and operated local sports and news channels, of our regional sports networks that carry Los Angeles Lakers' basketball games and other sports programming and of SportsNet LA, a regional sports network that carries Los Angeles Dodgers' baseball games and other sports programming.

In 2019, we began expanding our deployment of household addressability, which allows for more precise targeting within various parts of our footprint. We also began the roll-out of our Ad Portal, which allows small businesses to purchase local cable advertising and/or creative services via our web portal with no sales personnel interaction at a fee within their budgets. Both products will be more widely deployed in 2020. They join our fully deployed Audience App, which uses our proprietary set-top box viewership data (all anonymized and aggregated) to optimize linear inventory, in our suite of advanced advertising products available to the marketplace.

Other Services

Regional Sports and News Networks

We have an agreement with the Los Angeles Lakers for rights to distribute all locally available Los Angeles Lakers' games through 2033. We broadcast those games on our regional sports network, Spectrum SportsNet. American Media Productions, LLC ("American Media Productions"), an unaffiliated third party, owns SportsNet LA, a regional sports network carrying the Los Angeles Dodgers' baseball games and other sports programming. In accordance with agreements with American Media Productions, we act as the network's exclusive affiliate and advertising sales representative and have certain branding and programming rights with respect to the network. In addition, we provide certain production and technical services to American Media Productions. The affiliate, advertising, production and programming agreements continue through 2038. We also own 26.8% of Sterling Entertainment Enterprises, LLC (doing business as SportsNet New York), a New York City-based regional sports network that carries New York Mets' baseball games as well as other regional sports programming.

We manage 28 local news channels, including Spectrum News NY1® and LA1, 24-hour news channels focused on New York City and Los Angeles. Our local news channels provide 24/7 hyperlocal content, focusing on news, programming and storytelling that addresses the deeper needs and interests of the diverse communities and neighborhoods we serve.

Pricing of Our Products and Services

Our revenues are principally derived from the monthly fees customers pay for the services we provide. We typically charge a one-time installation fee which is sometimes waived or discounted in certain sales channels during certain promotional periods.

Our Spectrum pricing and packaging ("SPP") generally offers a standardized price for each tier of service, bundle of services, and add-on service in a service area. We believe SPP:

- offers a higher quality and more value-based set of services relative to our competitors, including faster Internet speeds, more HD channels, lower equipment fees and a more transparent pricing structure;
- offers simplicity for customers to understand our offers, and for our employees in service delivery;
- drives our ability to package more services at the time of sale, thus increasing revenue per customer;
- drives higher customer satisfaction, lower service calls and churn; and
- allows for gradual price increases at the end of promotional periods.

We sell video and Internet packages with the option to add on voice and mobile services at attractive pricing. Our mobile customers can choose one of two simple ways to pay for data. Customers can choose an unlimited data plan or a by-the-gig data usage plan. Both plans include free nationwide talk and text and customers can easily switch between mobile data plans during the month. Customers can also purchase mobile devices and accessory products and have the option to pay for devices under interest-free monthly installment plans.

Our Network Technology

Our network includes three key components: a national backbone, regional/metro networks and a "last-mile" network. Both our national backbone and regional/metro network components utilize a redundant IP ring/mesh architecture. The national backbone

component provides connectivity from regional demarcation points to nationally centralized content, connectivity and services. The regional/metro network components provide connectivity between the regional demarcation points and headends within a specific geographic area and enable the delivery of content and services between these network components.

Our last-mile network utilizes a hybrid fiber coaxial cable ("HFC") architecture, which combines the use of fiber optic cable with coaxial cable. In most systems, we deliver our signals via fiber optic cable from the headend to a group of nodes, and use coaxial cable to deliver the signal from individual nodes to the homes served by that node. For our fiber Internet, Ethernet, carrier wholesale, Session Initiation Protocol ("SIP") and Primary Rate Interface ("PRI") Spectrum Enterprise customers, fiber optic cable is extended from individual nodes to the customer's site. For certain new build and MDU sites, we increasingly bring fiber to the customer site. Our design standard allows spare fiber strands to each node to be utilized for additional residential traffic capacity, and enterprise customer needs as they arise. We believe that this hybrid network design provides high capacity and signal quality.

HFC architecture benefits include:

- bandwidth capacity to enable traditional and two-way video and broadband services;
- dedicated bandwidth for two-way services; and
- signal quality and high service reliability.

Our systems provide an all-digital platform, leveraging DOCSIS 3.1 technology and bandwidth of 750 megahertz or greater to approximately 100% of our estimated passings. This bandwidth capacity enables us to offer two-way signal capabilities necessary to provide HD television, interactive video services such as VOD, high-speed Internet and voice services. An all-digital platform leveraging DOCSIS 3.1 technology enables us to offer a larger selection of HD channels, Spectrum Internet Gig and better picture quality while providing greater plant security and enabling lower installation and disconnect service truck rolls. We believe this architecture also allows us to continue to enhance our network to enable multi-gigabit services with low latency at a lower incremental capital cost relative to our competitors.

Management, Customer Operations and Marketing

Our operations are centralized, with senior executives located at several key corporate offices, responsible for coordinating and overseeing operations, including establishing company-wide strategies, policies and procedures. Sales and marketing, network operations, field operations, customer operations, engineering, advertising sales, human resources, legal, government relations, information technology and finance are all directed at the corporate level. Regional and local field operations are responsible for customer premise service transactions and maintaining and constructing that portion of our network which is located outdoors.

We continue to focus on improving the customer experience through enhanced product offerings, reliability of services, and delivery of quality customer service. As part of our operating strategy, we insource most of our customer operations workload. Our in-house call centers handle over 90% of our total customer service calls. We manage our customer service call centers centrally to ensure a consistent, high quality customer experience. In addition, we route calls by call type to specific agents that only handle such call types, enabling agents to become experts in addressing specific customer needs, creating a better customer experience. We implemented a new call center agent desktop interface tool in 2019 which enables virtualization of all call centers thereby better serving our customers. Virtualization allows calls to be routed across our call centers regardless of the location origin of the call, reducing call wait times, and saving costs. We continue to migrate our call centers to full virtualization and expect all our call centers to be fully virtualized by 2020.

We also provide customers with the opportunity to interact with us through a variety of forums in addition to telephonic communications, including through our customer website, mobile device applications, online chat and social media. Our customer websites and mobile applications enable customers to pay their bills, manage their accounts, order new services and utilize self-service help and support.

We sell our residential and commercial services using a national brand platform known as Spectrum, Spectrum Business and Spectrum Enterprise. These brands reflect our comprehensive approach to industry-leading products, driven by speed, performance and innovation. Our marketing strategy emphasizes the sale of our bundled services through targeted direct response marketing programs to existing and potential customers, and increases awareness and the value of the Spectrum brand. Our marketing organization creates and executes marketing programs intended to grow customer relationships, increase the number of services we sell per relationship, retain existing customers and cross-sell additional products to current customers. We monitor the effectiveness of our marketing efforts, customer perception, competition, pricing, and service preferences, among other factors, in order to increase our responsiveness to our customers and to improve our sales and customer retention. The marketing organization manages all sales channels including inbound, direct sales, on-line, outbound telemarketing and stores.

Programming

We believe that offering a wide variety of video programming choices influences a customer's decision to subscribe and retain our cable video services. We obtain basic and premium programming, usually pursuant to written contracts from a number of suppliers. Media corporation consolidation has, however, resulted in fewer suppliers and additional selling power on the part of programming suppliers. Although an insignificant amount of our programming budget, recently we have begun entering into agreements to co-produce or exclusively license original content which give us the right to provide our customers with certain exclusive content for a period of time.

Programming is usually made available to us for a license fee, which is generally paid based on the number of customers to whom we make that programming available. Programming license fees may include "volume" discounts and financial incentives to support the launch of a channel and/or ongoing marketing support, as well as discounts for channel placement or service penetration. For home shopping channels, we typically receive a percentage of the revenue attributable to our customers' purchases. We also offer VOD and pay-per-view channels of movies and events that are subject to a revenue split with the content provider.

Our programming costs have increased in excess of customary inflationary and cost-of-living type increases. We expect programming costs per customer to continue to increase due to a variety of factors including, annual increases pursuant to our programming contracts, contract renewals with programmers and the carriage of incremental programming, including new services and VOD programming. Increases in the cost of sports programming and the amounts paid for broadcast station retransmission consent have been the largest contributors to the growth in our programming costs over the last few years. Additionally, the demands of large media companies who link carriage of their most popular networks to carriage and cost increases of their less popular networks and who require us to carry their most popular networks to a large percentage of our video subscribers, has limited our flexibility in creating more tailored and cost-sensitive programming packages for consumers.

Federal law allows commercial television broadcast stations to make an election between "must-carry" rights and an alternative "retransmission-consent" regime. When a station opts for retransmission-consent, we are not allowed to carry the station's signal without that station's permission. Continuing demands by owners of broadcast stations for cash payments at substantial increases over amounts paid in prior years in exchange for retransmission consent will increase our programming costs or require us to cease carriage of popular programming, potentially leading to a loss of customers in affected service areas.

Over the past several years, increases in our video service rates have not fully offset the increases in our programming costs, and with the impact of increasing competition and other marketplace factors, we do not expect the increases in our video service rates to fully offset the increase in our programming costs for the foreseeable future. Although we pass along a portion of amounts paid for retransmission consent to the majority of our customers, our inability to fully pass programming cost increases on to our video customers has had, and is expected in the future to have, an adverse impact on our cash flow and operating margins associated with our video product. In order to mitigate reductions of our operating margins due to rapidly increasing programming costs, we continue to review our pricing and programming packaging strategies.

Our programming contracts are generally for a fixed period of time, usually for multiple years, and are subject to negotiated renewal. The contracts set to expire in any particular year vary. We will seek to renew these agreements on terms that we believe are favorable. There can be no assurance, however, that these agreements will be renewed on favorable or comparable terms. To the extent that we are unable to reach agreements with certain programmers on terms that we believe are reasonable, we have been, and may in the future be, forced to remove such programming channels from our line-up, which may result in a loss of customers.

Regions

We operate in geographically diverse areas which are organized in regional clusters. These regions are managed centrally on a consolidated level. Our eleven regions and the customer relationships within each region as of December 31, 2019 are as follows (in thousands):

Regions	Total Customer Relationships
Carolinas	3,020
Central	3,058
Florida	2,619
Great Lakes	2,270
Northeast	3,068
Northwest	1,626
New York City	1,381
South	2,094
Southern Ohio	2,313
Texas	3,070
West	4,716

Competition

Residential Services

We face intense competition for residential customers, both from existing competitors and, as a result of the rapid development of new technologies, services and products, from new entrants. We face triple play competition, consisting of wireline multichannel video, wireline Internet, and wireline voice service, from three primary competitors, AT&T, Frontier Communications Corporation ("Frontier") and Verizon. As of December 31, 2019, AT&T, Frontier and Verizon offered these triple play packages in approximately 33%, 7% and 5% of our operating areas, respectively. AT&T also owns DIRECTV, and as a combined company provides video service (via IP or satellite) and voice service (via fixed or wireless) across our entire footprint.

Video Competition

Our residential video service faces competition from DBS service providers, which have a national footprint and compete in all of our operating areas. DBS providers offer satellite-delivered pre-packaged programming services that can be received by relatively small and inexpensive receiving dishes. DBS providers offer aggressive promotional pricing, exclusive programming (e.g., NFL Sunday Ticket) and video services that are comparable in many respects to our residential video service. Our residential video service also faces competition from large telecommunications companies, primarily AT&T U-verse, Frontier fiber optic service ("FiOS" or "Fios") and Verizon Fios, which offer wireline video services in significant portions of our operating areas.

Our residential video service also faces growing competition from a number of other sources, including companies that deliver linear network programming, movies and television shows on demand and other video content over broadband Internet connections to televisions, computers, tablets and mobile devices. These competitors include virtual multichannel video programming distributors ("V-MVPDs") such as AT&T TV NOW, Sling TV, YouTube TV and Hulu Live. Other online video business models and products have also developed, some offered by programmers that have not traditionally sold programming directly to consumers, including, (i) subscription video on demand ("SVOD") services such as Netflix, Apple TV+, Amazon Prime, Hulu Plus, Disney+, HBO Now, CBS All Access, Starz and Showtime Anytime, (ii) ad-supported free online video products, including YouTube and Pluto TV, some of which offer programming for free to consumers that we currently purchase for a fee, (iii) pay-per-view products, such as iTunes and Amazon Instant, and (iv) additional offerings from mobile providers which continue to integrate and bundle video services and mobile products. Historically, we have generally viewed SVOD online video services as complementary to our own video offering, and we have developed a cloud-based guide that is capable of incorporating video from online video services currently offered in the marketplace. As the proliferation of online video services grows, however, services from V-MVPDs and new direct to consumer offerings, as well as piracy and password sharing, negatively impact the number of customers purchasing our video product.

Internet Competition

Our residential Internet service faces competition from fiber-to-the-home ("FTTH"), fiber-to-the-node ("FTTN"), DSL and wireless broadband offerings, as well as from a variety of companies that offer other forms of online services, including fixed wireless and satellite-based broadband services. AT&T, Frontier FiOS and Verizon's Fios are our primary FTTH competitors. Given the FTTH deployments of our competitors, launches of broadband services offering 1 gigabit per second ("Gbps") speed have recently grown. Several competitors, including AT&T, Frontier FiOS, Verizon's Fios, WideOpenWest Finance, LLC ("WOW") and Google Fiber, deliver 1 Gbps broadband speed in at least a portion of their footprints which overlap our footprint. DSL service is often offered at prices lower than our Internet services, although typically at speeds much lower than the minimum speeds we offer as part of SPP. Various mobile phone companies offer wireless Internet services delivered over networks which they continue to enhance to deliver faster speeds. AT&T, Verizon, Sprint Corporation ("Sprint") and T-Mobile US, Inc. ("T-Mobile") all began deploying fifth generation (5G) mobile services in 2019, although generally in limited geographies, with plans to expand 5G more broadly in 2020. In April 2018, Sprint and T-Mobile announced their intent to merge. If the transaction closes, the resulting company would be one of the nation's largest mobile carriers bringing increased competition with a stated intent of pursuing broad 5G network deployment and offering fixed wireless broadband service. Some mobile phone companies offer unlimited data packages to customers. In addition, a growing number of commercial areas, such as retail malls, restaurants and airports, offer WiFi Internet service. Numerous local governments are also considering or actively pursuing publicly subsidized WiFi Internet access networks. These options offer alternatives to cable-based Internet access.

Voice Competition

Our residential voice service competes with wireless and wireline phone providers, as well as other forms of communication, such as text messaging on cellular phones, instant messaging, social networking services, video conferencing and email. We also compete with "over-the-top" phone providers, such as Vonage, Skype, magicJack, Google Voice and Ooma, Inc., as well as companies that sell phone cards at a cost per minute for both national and international service. The increase in the number of different technologies capable of carrying voice services and the number of alternative communication options available to customers as well as the replacement of wireline services by wireless have intensified the competitive environment in which we operate our residential voice service. Our mobile service competes with other mobile providers such as Verizon, AT&T, T-Mobile and Sprint, as well as various regional wireless service providers. We also compete for retail activations with other resellers that buy bulk wholesale service from wireless service providers for resale.

Regional Competitors

In some of our operating areas, other competitors have built networks that offer video, Internet and voice services that compete with our services. For example, in certain service areas, our residential video, Internet and voice services compete with Google Fiber, Cincinnati Bell Inc., Hawaiian Telcom (owned by Cincinnati Bell Inc.), RCN Telecom Services, LLC, Grande Communications Networks, LLC and WOW.

Additional Competition

In addition to multi-channel video providers, cable systems compete with other sources of news, information and entertainment, including over-the-air television broadcast reception, live events, movie theaters and the Internet. Competition is also posed by fixed wireless and satellite master antenna television systems, or SMATV systems, serving MDUs, such as condominiums, apartment complexes, and private residential communities.

Business Services

We face intense competition across each of our business services product offerings. Our small and medium business video, Internet, networking and voice services face competition from a variety of providers as described above. Our enterprise solutions also face competition from the competitors described above as well as application-service providers and other telecommunications carriers, such as metro and regional fiber-based carriers.

Advertising

We face intense competition for advertising revenue across many different platforms and from a wide range of local and national competitors. Advertising competition has increased and will likely continue to increase as new advertising avenues seek to attract the same advertisers. We compete for advertising revenue against, among others, local broadcast stations, national cable and broadcast networks, radio stations, print media and online advertising companies and content providers.

Seasonality and Cyclicality

Our business is subject to seasonal and cyclical variations. Our results are impacted by the seasonal nature of customers receiving our cable services in college and vacation service areas. Our revenue is subject to cyclical advertising patterns and changes in viewership levels. Our advertising revenue is generally higher in the second and fourth calendar quarters of each year, due in part to increases in consumer advertising in the spring and in the period leading up to and including the holiday season. U.S. advertising revenue is also cyclical, benefiting in even-numbered years from advertising related to candidates running for political office and issue-oriented advertising. Our capital expenditures and trade working capital are also subject to significant seasonality based on the timing of subscriber growth, network programs, specific projects and construction.

Regulation and Legislation

The following summary addresses the key regulatory and legislative developments affecting the cable industry and our services for both residential and commercial customers. Cable system operations are extensively regulated by the federal government (primarily the FCC), certain state governments and many local governments. A failure to comply with these regulations could subject us to substantial penalties. Our business can be dramatically impacted by changes to the existing regulatory framework, whether triggered by legislative, administrative, or judicial rulings. Congress and the FCC have frequently revisited the subject of communications regulation and they are likely to do so again in the future. We could be materially disadvantaged in the future if we are subject to new laws, regulations or regulatory actions that do not equally impact our key competitors. We cannot provide assurance that the already extensive regulation of our business will not be expanded in the future. In addition, we are already subject to Charter-specific conditions regarding certain business practices as a result of the FCC's approval of the merger in 2016 with Time Warner Cable Inc. ("TWC") and acquisition of Bright House Networks, LLC ("Bright House").

Video Service

Must Carry/Retransmission Consent

There are two alternative legal methods for carriage of local broadcast television stations on cable systems. Federal "must carry" regulations require cable systems to carry local broadcast television stations upon the request of the local broadcaster. Alternatively, federal law includes "retransmission consent" regulations, by which popular commercial television stations can prohibit cable carriage unless the cable operator first negotiates for "retransmission consent," which may be conditioned on significant payments or other concessions. Popular stations invoking "retransmission consent" have been demanding substantial compensation increases in their recent negotiations with cable operators, thereby significantly increasing our operating costs.

Pole Attachments

The Communications Act of 1934, as amended (the "Communications Act") requires most utilities owning utility poles to provide cable systems with access to poles and conduits and also subjects the rates charged for this access to either federal or state regulation. The federally regulated rates now applicable to pole attachments used for cable, Internet, and telecommunications services are substantially similar. The FCC's approach does not directly affect the rate in states that self-regulate, but many of those states have substantially the same rate for all communications attachments.

Some municipalities have enacted "one-touch" make-ready pole attachment ordinances, which permit third parties to alter components of our network attached to utility poles in ways that could adversely affect our businesses. Some of these ordinances have been challenged with differing results. In 2018, the FCC adopted "one-touch" make-ready ("OTMR") rules that will apply in states where pole attachments are FCC regulated, and they may impact many of our existing pole attachments. Various utilities have sought review of the OTMR rules in federal court.

Cable Rate Regulation

Pursuant to federal law, a cable system's video offerings are universally exempt from rate regulation, except for a cable system's minimum level of video programming service, referred to as "basic service," and associated equipment. FCC regulations require a local franchise authority interested in regulating rates for basic service and associated equipment to first make an affirmative showing that there is no "effective competition" (as defined under federal law) in the community. Given the competitive nature of our markets, the FCC recently rescinded certifications for the relatively few communities where we had been subject to rate regulation. It is possible that the competitive situation could change, and that some local franchising authorities may be certified to regulate rates in the future, and existing and potential laws and regulations may affect our marketing practices (including our disclosure and itemization of subscriber fees).

Other FCC Regulatory Matters

The Communications Act and FCC regulations cover a variety of additional areas, including, among other things: (1) licensing of systems and facilities; (2) equal employment opportunity obligations; (3) customer service standards; (4) technical service standards; (5) mandatory blackouts of certain network and syndicated programming; (6) restrictions on political advertising; (7) restrictions on advertising in children's programming; (8) ownership restrictions; (9) maintenance of public files; (10) emergency alert systems; (11) inside wiring and exclusive contracts for MDU complexes; (12) disability access, including requirements governing video-description and closed-captioning; (13) competitive availability of cable equipment; (14) the provision of up to 15% of video channel capacity for commercial leased access by unaffiliated third parties; and (15) public, education and government entity access requirements. Each of these regulations restricts our business practices to varying degrees and may impose additional costs on our operations. Further, the FCC regulates spectrum usage and other communications enterprises in ways that could impact our operations. For example, the FCC is currently considering proposals to reallocate certain spectrum for new wireless communications purposes, which could be disruptive to the satellite platform we rely upon to provide our video services. The FCC is also preparing to make additional spectrum available for commercial services, which we might use to deliver services in the future. Our ability to access and use such spectrum is uncertain and may be limited by further FCC auction or allocation decisions.

It is possible that Congress or the FCC will expand or modify its regulation of cable systems in the future, and we cannot predict at this time how that might impact our business.

Copyright

Cable systems are subject to a federal compulsory copyright license covering carriage of television and radio broadcast signals. The copyright law provides copyright owners the right to audit our payments under the compulsory license, and the Copyright Office is currently considering modifications to the license's royalty calculations and reporting obligations. The possible modification or elimination of this license is the subject of continuing legislative proposals and administrative review and could adversely affect our ability to obtain desired broadcast programming.

Franchise Matters

Our cable systems generally are operated pursuant to nonexclusive franchises, permits, and similar authorizations granted by a municipality or other state or local government entity in order to utilize and cross public rights-of-way.

Cable franchises generally are granted for fixed terms and in many cases include monetary penalties for noncompliance and may be terminable if the franchisee fails to comply with material provisions. The specific terms and conditions of cable franchises vary significantly between jurisdictions. They generally contain provisions governing cable operations, franchise fees, system construction, maintenance, technical performance, customer service standards, supporting and carrying public access channels, and changes in the ownership of the franchisee. Although local franchising authorities have considerable discretion in establishing franchise terms, certain federal protections benefit cable operators. For example, federal law imposes a 5% cap on franchise fees. In August 2019, the FCC clarified that in-kind contribution requirements set forth in cable franchises are subject to the statutory cap on franchise fees, and it reaffirmed that state and local authorities are barred from imposing duplicative franchise and/or fee requirements on franchised cable systems providing non-cable services. An appeal of the FCC's order is pending in federal court.

A number of states have adopted franchising laws that provide for statewide franchising. Generally, state-wide cable franchises are issued for a fixed term, but streamline many of the traditional local cable franchise requirements and eliminate local negotiation.

The Communications Act provides for an orderly franchise renewal process in which granting authorities may not unreasonably deny renewals. If we fail to obtain renewals of franchises representing a significant number of our customers, it could have a material adverse effect on our consolidated financial condition, results of operations, or our liquidity. Similarly, if a franchising authority's consent is required for the purchase or sale of a cable system, the franchising authority may attempt to impose more burdensome requirements as a condition for providing its consent.

Internet Service

The FCC originally classified broadband Internet access services, such as those we offer, as an "information service," which exempted the service from traditional communications common carrier laws and regulations. In 2015, the FCC reclassified broadband Internet access services as "telecommunications service" and, on that basis, imposed a number of "net neutrality" rules governing the provision of broadband service. In 2017, the FCC reversed its 2015 decision. The Commission's 2017 Order restored the "information service" classification and eliminated the 2015 rules, other than a transparency requirement, which

created an obligation to disclose performance statistics and other service information to consumers. The 2017 FCC decision also ruled that state regulators may not impose obligations similar to federal network neutrality obligations that the FCC eliminated.

In 2019, the U.S. Court of Appeals for the District of Columbia upheld the FCC's information service reclassification, but vacated the FCC's blanket prohibition of state utility regulation of broadband services. The court left open the possibility that individual state laws could be deemed preempted on a case by case basis if it is shown that they conflict with federal law. We understand that this decision may be subject to further judicial review. Several states (including California) have already adopted state obligations, and additional states may consider the imposition of new regulations on our Internet services, such as rules similar to the network neutrality requirements that were eliminated by the FCC. California's legislation has been challenged in court, and we cannot predict how the challenge to California's legislation or challenges to any future state legislation will be resolved. As recent history has shown, it is possible that the FCC might further revise its approach to broadband Internet access, or that Congress might enact legislation affecting the rules applicable to the service. The application of new legal requirements to our Internet services could adversely affect our business.

In recent years, the FCC has demonstrated an interest in accelerating advancements in, and deployment of, wired and wireless broadband infrastructure, including advanced 5G wireless service. For example, the FCC and some state regulatory commissions direct certain subsidies to telephone and other companies deploying broadband to areas deemed to be "unserved" or "underserved." We have opposed such subsidies when directed to areas that we serve. However, continued regulatory efforts to accelerate competitive wireline and wireless broadband deployment, including reforms that create regulatory imbalances, could adversely affect our business.

Aside from the FCC's generally applicable regulations, we have made certain commitments to comply with the FCC's order in connection with the FCC's approval of the merger with TWC and acquisition of Bright House (discussed below).

Wireline Voice Service

The FCC has never classified the VoIP telephone services we offer as "telecommunications services" that are subject to traditional federal common carrier regulation, but instead has imposed some of these requirements on a case-by-case basis, such as requirements relating to 911 emergency services ("E911"), Communications Assistance for Law Enforcement Act ("CALEA") (the statute governing law enforcement access to and surveillance of communications), Universal Service Fund contributions, customer privacy and Customer Proprietary Network Information protections, number portability, network outage reporting, rural call completion, disability access, regulatory fees, back-up power obligations, and discontinuance of service. It is possible that the FCC or Congress will impose additional requirements on our VoIP telephone services in the future.

Although we believe that VoIP telephone services should be governed only by federal regulation, some states have attempted to subject cable VoIP services to state level regulation, and at least one state has asserted jurisdiction over our VoIP services. We prevailed on a legal challenge to that state's assertion of jurisdiction, which was affirmed by a federal appellate court, but that ruling is limited to the seven states in that circuit. Although we have registered with, or obtained certificates or authorizations from the FCC and the state regulatory authorities in those states in which we offer competitive voice services in order to ensure the continuity of our services, it is unclear whether and how these and other ongoing regulatory matters ultimately will be resolved. State regulatory commissions and legislatures in other jurisdictions may continue to consider imposing regulatory requirements on our fixed telephone services.

Mobile Service

Our Spectrum Mobile service offers mobile Internet access and telephone service. We provide this service as an MVNO using Verizon's network and our network of Spectrum Wi-Fi hotspots. As an MVNO, we are subject to many of the same FCC regulations that apply to facilities-based wireless carriers, as well as certain state or local regulations, including (but not limited to): E911, local number portability, customer privacy, CALEA, universal service fund contribution, and hearing aid compatibility and safety and emission requirements for mobile devices. Spectrum Mobile's broadband Internet access service is also subject to the FCC's transparency rule. The FCC or other regulatory authorities may adopt new or different regulations for MVNOs and/or mobile service providers in the future, or impose new taxes or fees applicable to Spectrum Mobile, which could adversely affect the service offering or our business generally.

Privacy and Information Security Regulation

The Communications Act limits our ability to collect, use, and disclose customers' personally identifiable information for our video, voice, and Internet services. We are subject to additional federal, state, and local laws and regulations that impose additional restrictions on the collection, use and disclosure of consumer information. All broadband providers are also obliged by CALEA

to configure their networks in a manner that facilitates the ability of state and federal law enforcement, with proper legal process authorized under the Electronic Communications Privacy Act, to obtain records and information concerning our customers, including the content of their communications. Further, the FCC, Federal Trade Commission ("FTC"), and many states regulate and restrict the marketing practices of communications service providers, including telemarketing and sending unsolicited commercial emails. The FTC currently has the authority, pursuant to its general authority to enforce against unfair or deceptive acts and practices, to protect the privacy of Internet service customers, including our use and disclosure of certain customer information.

Our operations are also subject to federal and state laws governing information security. In the event of an information security breach, such rules may require consumer and government agency notification and may result in regulatory enforcement actions with the potential of monetary forfeitures. The FCC, the FTC and state attorneys general regularly bring enforcement actions against companies related to information security breaches and privacy violations.

Various security standards provide guidance to telecommunications companies in order to help identify and mitigate cybersecurity risks. One such standard is the voluntary framework released by the National Institute for Standards and Technologies ("NIST") in 2014 and updated in 2018, in cooperation with other federal agencies and owners and operators of U.S. critical infrastructure. The NIST cybersecurity framework provides a prioritized and flexible model for organizations to identify and manage cyber risks inherent to their business. It was designed to supplement, not supersede, existing cybersecurity regulations and requirements. Several government agencies have encouraged compliance with the NIST cybersecurity framework, including the FCC, which is also considering expansion of its cybersecurity guidelines or the adoption of cybersecurity requirements.

Many states and local authorities have considered legislative or other actions that would impose restrictions on our ability to collect, use and disclose, and safeguard certain consumer information, particularly with regard to our broadband Internet business. For example, the California Consumer Privacy Act and Maine's Act to Protect Privacy of Online Customer Information are both scheduled go into effect in 2020. The California law will, under certain circumstances, regulate companies' use and disclosure of the personal information of California residents and authorizes enforcement actions by the California Attorney General and private class actions for data breaches. The Maine law regulates how Internet service providers use and disclose customers' personal information and requires Internet service providers to take reasonable measures to protect customers' personal information. We expect state and local efforts to regulate consumer privacy to continue in 2020. Additionally, several state legislatures are considering the adoption of new data security and cybersecurity legislation that could result in additional network and information security requirements for our business. We expect such state activity to increase as a result of the recent U.S. Court of Appeals decision that, while affirming the FCC's reclassification of Internet access as an "information service," vacated the FCC's blanket prohibition of state regulation of broadband service and instead left open the possibility that individual state laws could be deemed preempted on a case by case basis if it is shown that they conflict with federal law. There are also bills pending in both the U.S. House of Representatives and Senate that could impose new privacy and data security obligations. We cannot predict whether any of these efforts will be successful or preempted, or how new legislation and regulations, if any, would affect our business.

Commitments Related to the 2016 Merger with TWC and Acquisition of Bright House

In connection with approval of the 2016 merger with TWC and acquisition of Bright House (the "Transactions"), federal and state regulators imposed a number of post-transaction conditions on us including but not limited to the following.

FCC Conditions

- Offer settlement-free Internet interconnection to any party that meets the requirements of our Interconnection Policy (available on Charter's website) on terms generally consistent with the policy for seven years (with a possible reduction to five years from FCC approval in 2016);
- Deploy and offer high-speed broadband Internet access service to an additional two million locations over five years;
- Refrain from charging usage-based prices or imposing data caps on any fixed mass market broadband Internet access service plans for seven years (with a possible reduction to five);
- Offer 30/4 Mbps discounted broadband where technically feasible to eligible customers throughout our service area for four years from the offer's commencement; and
- Continue to provide CableCARDs to any new or existing customer upon request for use in third-party retail devices for four years and continue to support such CableCARDs for seven years (in each case, unless the FCC changes the relevant rules).

The FCC conditions also contain a number of compliance reporting requirements.

DOJ Conditions

The Department of Justice ("DOJ") Order prohibits us from entering into or enforcing any agreement with a video programmer that forbids, limits or creates incentives to limit the video programmer's provision of content to online video distributors ("OVDs"). We will not be able to avail ourself of other distributors' most favored nation ("MFN") provisions if they are inconsistent with this prohibition. The DOJ's conditions are effective for seven years after entry of the final judgment in 2016, although we may petition the DOJ to eliminate the conditions after five years.

State Conditions

Certain state regulators, including California, New York, Hawaii and New Jersey also imposed conditions in connection with the approval of the Transactions. These conditions include requirements related to:

- Building out our network to certain households and business locations that are not currently served by cable within the designated states;
- Offering LifeLine service discounts and low-income broadband to eligible households served within the applicable states;
- Investing in service improvement programs and customer service enhancements and maintaining customer-facing jobs within the designated state; and
- Complying with reporting requirements.

Employees

As of December 31, 2019, we had approximately 95,100 active full-time equivalent employees.

Item 1A. Risk Factors.

Risks Related to Our Business

We operate in a very competitive business environment, which affects our ability to attract and retain customers and can adversely affect our business, operations and financial results.

The industry in which we operate is highly competitive and has become more so in recent years. In some instances, we compete against companies with fewer regulatory burdens, access to better financing, greater personnel resources, greater resources for marketing, greater and more favorable brand name recognition, and long-established relationships with regulatory authorities and customers. Increasing consolidation in the telecommunications and content industries have provided additional benefits to certain of our competitors, either through access to financing, resources, or efficiencies of scale including the ability to launch new video services.

Our video service faces competition from a number of sources, including DBS services, as well as other companies that deliver linear network programming, movies and television shows on demand and other video content over broadband Internet connections to televisions, computers, tablets and mobile devices often with password sharing among multiple users and security that makes content susceptible to piracy. Newer products and services, particularly alternative methods for the distribution, sale and viewing of content will likely continue to be developed, further increasing the number of competitors that we face.

The increasing number of choices available to audiences, including low-cost or free choices, could negatively impact not only consumer demand for our products and services, but also advertisers' willingness to purchase advertising from us. We compete for the sale of advertising revenue with television networks and stations, as well as other advertising platforms, such as radio, print and, increasingly, online media.

Our Internet service faces competition from the phone companies' FTTH, FTTN, DSL and wireless broadband offerings as well as from a variety of companies that offer other forms of online services, including fixed wireless and satellite-based broadband services. Various mobile phone companies offer wireless Internet services delivered over networks which they continue to enhance to deliver faster speeds and some began deploying 5G mobile services in 2019 with plans to expand 5G more broadly in the 2020. Our voice and mobile services compete with wireless and wireline phone providers, as well as other forms of communication, such as text messaging on cellular phones, instant messaging, social networking services, video conferencing and email. Competition from these companies, including intensive marketing efforts with aggressive pricing, exclusive programming and increased HD broadcasting may have an adverse impact on our ability to attract and retain customers.

Wireline and wireless overbuilds could also adversely affect our growth, financial condition, and results of operations, by creating or increasing competition. We are aware of traditional overbuild situations impacting certain of our service areas, however, we are unable to predict the extent to which additional overbuild situations may occur.

Our services may not allow us to compete effectively. Our failure to effectively anticipate or adapt to new technologies and changes in consumer expectations and behavior could significantly adversely affect our competitive position with respect to the leisure time and discretionary spending of our customers and, as a result, affect our business and results of operations. Competition may also reduce our expected growth of future cash flows which may contribute to future impairments of our franchises and goodwill and our ability to meet cash flow requirements, including debt service requirements. For additional information regarding the competition we face, see "Item 1. Business -Competition" and "-Regulation and Legislation."

We face risks inherent in our commercial business.

We may encounter unforeseen difficulties as we increase the scale of our service offerings to businesses. We sell Internet access, data networking and fiber connectivity to office buildings and cellular towers, and video and business voice services to businesses. In order to grow our commercial business, we expect to continue to invest in technology, equipment and personnel focused on the commercial business. Commercial business customers often require service level agreements and generally have heightened customer expectations for reliability of services. If our efforts to build the infrastructure to scale the commercial business are not successful, the growth of our commercial services business would be limited. We depend on interconnection and related services provided by certain third parties for the growth of our commercial business. As a result, our ability to implement changes as the services grow may be limited. If we are unable to meet these service level requirements or expectations, our commercial business could be adversely affected. Competition continues to increase as well, as more companies deploy more fiber to more buildings, which may negatively impact our growth and/or put pressure on margins. Finally, we expect advances in communications technology, as well as changes in the marketplace and the regulatory and legislative environment. Consequently, we are unable to predict the effect that ongoing or future developments in these areas might have on our commercial businesses and operations.

Programming costs per video customer are rising at a much faster rate than wages or inflation, and we may not have the ability to reduce or moderate the growth rates of, or pass on to our customers, our increasing programming costs, which would adversely affect our cash flow and operating margins.

Video programming has been, and is expected to continue to be, our largest operating expense item. In recent years, the cable industry has experienced a rapid escalation in programming rates. Media corporation consolidation has resulted in fewer suppliers and additional selling power on the part of programming suppliers. We expect programming rates will continue to increase due to a variety of factors, including annual increases imposed by programmers with additional selling power as a result of media consolidation, increased demands by owners of broadcast stations for payment for retransmission consent or linking carriage of other services to retransmission consent, and additional programming, particularly new services. The inability to fully pass programming cost increases on to our customers has had, and is expected in the future to have, an adverse impact on our cash flow and operating margins associated with the video product. The contracts set to expire in any particular year vary. There can be no assurance that these agreements will be renewed on favorable or comparable terms. In addition, a number of programmers have begun to sell their services through alternative distribution channels, including IP-based platforms, which are less secure than our own video distribution platforms. There is growing evidence that these less secure video distribution platforms are leading to video product theft via password sharing among consumers. Password sharing may drive down the number of customers who pay for certain programming, putting programmer revenues at risk, and which in turn may cause certain programmers to seek even higher programming fees from us. The ability for consumers to receive the same content for free through such unauthorized channels has devalued our video product which could impact sales, customer retention and our ability to pass through programming costs to consumers, which increases the risk of non-renewal when programmers seek increases. To the extent that we are unable to reach agreement with certain programmers on terms that we believe are reasonable, we have been, and may be in the future, forced to remove such programming channels from our line-up, which may result in a loss of customers. Our failure to carry programming that is attractive to our customers could adversely impact our customer levels, operations and financial results. In addition, if our Internet customers are unable to access desirable content online because content providers block or limit access by our customers as a class, our ability to gain and retain customers, especially Internet customers, may be negatively impacted.

Increased demands by owners of some broadcast stations for carriage of other services or payments to those broadcasters for retransmission consent are likely to further increase our programming costs. Federal law allows commercial television broadcast stations to make an election between "must-carry" rights and an alternative "retransmission-consent" regime. When a station opts for the retransmission consent regime, we are not allowed to carry the station's signal without that station's permission. In some cases, we carry stations under short-term arrangements while we attempt to negotiate new long-term retransmission agreements. If negotiations with these programmers prove unsuccessful, they could require us to cease carrying their signals, possibly for an indefinite period. Any loss of stations could make our video service less attractive to customers, which could result in less

subscription and advertising revenue. In retransmission-consent negotiations, broadcasters often condition consent with respect to one station on carriage of one or more other stations or programming services in which they or their affiliates have an interest. Carriage of these other services, as well as increased fees for retransmission rights, may increase our programming expenses and diminish the amount of capacity we have available to introduce new services, which could have an adverse effect on our business and financial results.

Our inability to respond to technological developments and meet customer demand for new products and services could adversely affect our ability to compete effectively.

We operate in a highly competitive, consumer-driven and rapidly changing environment. From time to time, we may pursue strategic initiatives, including, for example, our wireless strategy which includes the launch of our mobile product through an MVNO and testing the deployment of unlicensed and licensed spectrum for fixed and mobile wireless services. Our success is, to a large extent, dependent on our ability to acquire, develop, adopt, upgrade and exploit new and existing technologies to address consumers' changing demands and distinguish our services from those of our competitors. We may not be able to accurately predict technological trends or the success of new products and services. If we choose technologies or equipment that are less effective, cost-efficient or attractive to customers than those chosen by our competitors, if we offer services that fail to appeal to consumers, are not available at competitive prices or that do not function as expected, or we are not able to fund the expenditures necessary to keep pace with technological developments, our competitive position could deteriorate, and our business and financial results could suffer.

The ability of some of our competitors to introduce new technologies, products and services more quickly than we do may adversely affect our competitive position. Furthermore, advances in technology, decreases in the cost of existing technologies or changes in competitors' product and service offerings may require us in the future to make additional research and development expenditures or to offer, at no additional charge or at a lower price, certain products and services that we currently offer to customers separately or at a premium. In addition, the uncertainty of our ability, and the costs, to obtain intellectual property rights from third parties could impact our ability to respond to technological advances in a timely and effective manner.

Our inability to maintain and expand our upgraded systems and provide advanced services such as a state of the art user interface in a timely manner, or to anticipate the demands of the marketplace, could materially adversely affect our ability to attract and retain customers. In addition, as we launch our new mobile services using virtual network operator rights from a third party, we expect an initial funding period to grow a new product as well as negative working capital impacts from the timing of device-related cash flows when we provide the handset or tablet pursuant to equipment installation plans. Consequently, our growth, financial condition and results of operations could suffer materially.

We depend on third-party service providers, suppliers and licensors; thus, if we are unable to procure the necessary services, equipment, software or licenses on reasonable terms and on a timely basis, our ability to offer services could be impaired, and our growth, operations, business, financial results and financial condition could be materially adversely affected.

We depend on a limited number of third-party service providers, suppliers and licensors to supply some of the services, hardware, software and operational support necessary to provide some of our services. Some of our hardware, software and operational support vendors, and service providers represent our sole source of supply or have, either through contract or as a result of intellectual property rights, a position of some exclusivity. If any of these parties breaches or terminates its agreement with us or otherwise fails to perform its obligations in a timely manner, demand exceeds these vendors' capacity, tariffs are imposed that impact vendors' ability to perform their obligations or significantly increase the amount we pay, they experience operating or financial difficulties, they significantly increase the amount we pay for necessary products or services, or they cease production of any necessary product due to lack of demand, profitability or a change in ownership or are otherwise unable to provide the equipment or services we need in a timely manner, at our specifications and at reasonable prices, our ability to provide some services might be materially adversely affected, or the need to procure or develop alternative sources of the affected materials or services might delay our ability to serve our customers. In addition, the existence of only a limited number of vendors of key technologies can lead to less product innovation and higher costs. These events could materially and adversely affect our ability to retain and attract customers and our operations, business, financial results and financial condition.

Our business may be adversely affected if we cannot continue to license or enforce the intellectual property rights on which our business depends.

We rely on patent, copyright, trademark and trade secret laws and licenses and other agreements with our employees, customers, suppliers and other parties to establish and maintain our intellectual property rights in technology and the products and services used in our operations. Also, because of the rapid pace of technological change, we both develop our own technologies, products and services and rely on technologies developed or licensed by third parties. However, any of our intellectual property rights, or

the rights of our suppliers, could be challenged or invalidated, or such intellectual property rights may not be sufficient to permit us to take advantage of current industry trends or otherwise to provide competitive advantages, which could result in costly redesign efforts, discontinuance of certain product or service offerings or other competitive harm. We may not be able to obtain or continue to obtain licenses from these third parties on reasonable terms, if at all. In addition, claims of intellectual property infringement could require us to enter into royalty or licensing agreements on unfavorable terms, incur substantial monetary liability or be enjoined preliminarily or permanently from further use of the intellectual property in question, which could require us to change our business practices or offerings and limit our ability to compete effectively. Even unsuccessful claims can be time-consuming and costly to defend and may divert management's attention and resources away from our business. Infringement claims continue to be brought frequently in the communications and entertainment industries, and we are also often a party to such litigation alleging that certain of our services or technologies infringe the intellectual property rights of others.

Various events could disrupt or result in unauthorized access to our networks, information systems or properties and could impair our operating activities and negatively impact our reputation and financial results.

Network and information systems technologies are critical to our operating activities, both for our internal uses, such as network management and supplying services to our customers, including customer service operations and programming delivery. Network or information system shutdowns or other service disruptions caused by events such as computer hacking, phishing, dissemination of computer viruses, worms and other destructive or disruptive software, "cyber attacks," process breakdowns, denial of service attacks and other malicious activity pose increasing risks. Both unsuccessful and successful "cyber attacks" on companies have continued to increase in frequency, scope and potential harm in recent years. While we develop and maintain systems seeking to prevent systems-related events and security breaches from occurring, the development and maintenance of these systems is costly and requires ongoing monitoring and updating as techniques used in such attacks become more sophisticated and change frequently. We, and the third parties on which we rely, may be unable to anticipate these techniques or implement adequate preventive measures. While from time to time attempts have been made to access our network, these attempts have not as yet resulted in any material release of information, degradation or disruption to our network and information systems.

Our network and information systems are also vulnerable to damage or interruption from power outages, telecommunications failures, accidents, natural disasters (including extreme weather arising from short-term or any long-term changes in weather patterns), terrorist attacks and similar events. Our system redundancy may be ineffective or inadequate, and our disaster recovery planning may not be sufficient for all eventualities.

Any of these events, if directed at, or experienced by, us or technologies upon which we depend, could have adverse consequences on our network, our customers and our business, including degradation of service, service disruption, excessive call volume to call centers, and damage to our or our customers' equipment and data. Large expenditures may be necessary to repair or replace damaged property, networks or information systems or to protect them from similar events in the future. Moreover, the amount and scope of insurance that we maintain against losses resulting from any such events or security breaches may not be sufficient to cover our losses or otherwise adequately compensate us for any disruptions to our business that may result. Any such significant service disruption could result in damage to our reputation and credibility, customer dissatisfaction and ultimately a loss of customers or revenue. Any significant loss of customers or revenue, or significant increase in costs of serving those customers, could adversely affect our growth, financial condition and results of operations.

Furthermore, our operating activities could be subject to risks caused by misappropriation, misuse, leakage, falsification or accidental release or loss of information maintained in our information technology systems and networks and those of our third-party vendors, including customer, personnel and vendor data. We provide certain confidential, proprietary and personal information to third parties in connection with our business, and there is a risk that this information may be compromised.

We process, store, and transmit large amounts of data, including the personal information of our customers. Ongoing increases in the potential for mis-use of personal information, the public's awareness of the importance of safeguarding personal information, and the volume of legislation that has been adopted or is being considered regarding the protection, privacy, and security of personal information have resulted in increases to our information-related risks. We could be exposed to significant costs if such risks were to materialize, and such events could damage our reputation, credibility and business and have a negative impact on our revenue. We could be subject to regulatory actions and claims made by consumers in private litigations involving privacy issues related to consumer data collection and use practices. We also could be required to expend significant capital and other resources to remedy any such security breach.

Our exposure to the economic conditions of our current and potential customers, vendors and third parties could adversely affect our cash flow, results of operations and financial condition.

We are exposed to risks associated with the economic conditions of our current and potential customers, the potential financial instability of our customers and their financial ability to purchase our products. If there were a general economic downturn, we may experience increased cancellations or non-payment by our customers or unfavorable changes in the mix of products purchased. This may include an increase in the number of homes that replace their video service with Internet-delivered and/or over-air content, as well as an increase in the number of Internet and voice customers substituting mobile data and voice products for wireline services, which would negatively impact our ability to attract customers, increase rates and maintain or increase revenue. In addition, our ability to gain new customers is dependent to some extent on growth in occupied housing in our service areas, which is influenced by both national and local economic conditions. Weak economic conditions may also have a negative impact on our advertising revenue. These events have adversely affected us in the past, and may adversely affect our cash flow, results of operations and financial condition if a downturn were to occur.

In addition, we are susceptible to risks associated with the potential financial instability of the vendors and third parties on which we rely to provide products and services or to which we outsource certain functions. The same economic conditions that may affect our customers, as well as volatility and disruption in the capital and credit markets, also could adversely affect vendors and third parties and lead to significant increases in prices, reduction in output or the bankruptcy of our vendors or third parties upon which we rely. Any interruption in the services provided by our vendors or by third parties could adversely affect our cash flow, results of operation and financial condition.

For tax purposes, Charter could experience a deemed ownership change in the future that could limit its ability to use its tax loss carryforwards.

Charter had approximately $7.5 billion of federal tax net operating loss carryforwards resulting in a gross deferred tax asset of approximately $1.6 billion as of December 31, 2019. These losses resulted from the operations of Charter Communications Holding Company, LLC ("Charter Holdco") and its subsidiaries and from loss carryforwards received as a result of the merger with TWC. Federal tax net operating loss carryforwards expire in the years 2020 through 2035. In addition, Charter had state tax net operating loss carryforwards resulting in a gross deferred tax asset (net of federal tax benefit) of approximately $257 million as of December 31, 2019. State tax net operating loss carryforwards generally expire in the years 2020 through 2039.

In the past, Charter has experienced ownership changes as defined in Section 382 of the Internal Revenue Code of 1986, as amended (the "Code"). In general, an ownership change occurs whenever the percentage of the stock of a corporation owned, directly or indirectly, by 5-percent stockholders (within the meaning of Section 382 of the Code) increases by more than 50 percentage points over the lowest percentage of the stock of such corporation owned, directly or indirectly, by such 5-percent stockholders at any time over the preceding three years. As a result, Charter is subject to an annual limitation on the use of its loss carryforwards which existed at November 30, 2009 for the first ownership change, those that existed at May 1, 2013 for the second ownership change, and those created at May 18, 2016 for the third ownership change. The limitation on Charter's ability to use its loss carryforwards, in conjunction with the loss carryforward expiration provisions, could reduce Charter's ability to use a portion of its loss carryforwards to offset future taxable income, which could result in Charter being required to make material cash tax payments. Charter's ability to make such income tax payments, if any, will depend at such time on its liquidity or its ability to raise additional capital, and/or on receipt of payments or distributions from Charter Holdco and its subsidiaries, including us.

If Charter were to experience additional ownership changes in the future (as a result of purchases and sales of stock by its 5-percent stockholders, new issuances or redemptions of our stock, certain acquisitions of its stock and issuances, redemptions, sales or other dispositions or acquisitions of interests in its 5-percent stockholders), Charter's ability to use its loss carryforwards could become subject to further limitations.

If we are unable to retain key employees, our ability to manage our business could be adversely affected.

Our operational results have depended, and our future results will depend, upon the retention and continued performance of our management team. Our ability to retain and hire new key employees for management positions could be impacted adversely by the competitive environment for management talent in the broadband communications industry. The loss of the services of key members of management and the inability or delay in hiring new key employees could adversely affect our ability to manage our business and our future operational and financial results.

Risks Related to Our Indebtedness

We have a significant amount of debt and expect to incur significant additional debt, including secured debt, in the future, which could adversely affect our financial health and our ability to react to changes in our business.

We have a significant amount of debt and expect to (subject to applicable restrictions in our debt instruments) incur additional debt in the future as Charter maintains its stated objective of 4.0 to 4.5 times Adjusted EBITDA leverage (net debt divided by the last twelve months Adjusted EBITDA). As of December 31, 2019, our total principal amount of debt was approximately$78.4 billion and Charter's leverage ratio was 4.5 times Adjusted EBITDA.

Our significant amount of debt could have consequences, such as:

- impact our ability to raise additional capital at reasonable rates, or at all;
- make us vulnerable to interest rate increases, in part because approximately14% of our borrowings as of December 31, 2019 were, and may continue to be, subject to variable rates of interest;
- expose us to increased interest expense to the extent we refinance existing debt with higher cost debt;
- require us to dedicate a significant portion of our cash flow from operating activities to make payments on our debt, reducing our funds available for working capital, capital expenditures, and other general corporate expenses;
- limit our flexibility in planning for, or reacting to, changes in our business, the cable and telecommunications industries, and the economy at large;
- place us at a disadvantage compared to our competitors that have proportionately less debt; and
- adversely affect our relationship with customers and suppliers.

To the extent our current debt amounts increase more than expected, our business results are lower than expected, or credit rating agencies downgrade our debt limiting our access to investment grade markets, the related risks that we now face will intensify. In addition, our variable rate indebtedness may use London Interbank Offering Rate (“LIBOR”) as a benchmark for establishing the rate. The United Kingdom’s Financial Conduct Authority, which regulates LIBOR, has announced that it intends to stop encouraging or compelling banks to submit rates for the calculation of LIBOR rates after 2021 (the “FCA Announcement”). The FCA Announcement indicates that the continuation of LIBOR on the current basis is not guaranteed after 2021 and, based on the foregoing, it appears likely that LIBOR will be discontinued or modified by 2021. The effects of the FCA Announcement cannot be entirely predicted, but could include an increase in the cost of our variable rate indebtedness.

The agreements and instruments governing our debt contain restrictions and limitations that could significantly affect our ability to operate our business, as well as significantly affect our liquidity.

Our credit facilities and the indentures governing our debt contain a number of significant covenants that could adversely affect our ability to operate our business, our liquidity, and our results of operations. These covenants restrict, among other things, our and our subsidiaries’ ability to:

- incur additional debt;
- repurchase or redeem equity interests and debt;
- issue equity;
- make certain investments or acquisitions;
- pay dividends or make other distributions;
- dispose of assets or merge;
- enter into related party transactions; and
- grant liens and pledge assets.

Additionally, the Charter Communications Operating, LLC ("Charter Operating") credit facilities require Charter Operating to comply with a maximum total leverage covenant and a maximum first lien leverage covenant. The breach of any covenants or obligations in our indentures or credit facilities, not otherwise waived or amended, could result in a default under the applicable debt obligations and could trigger acceleration of those obligations, which in turn could trigger cross defaults under other agreements governing our long-term indebtedness. In addition, the secured lenders under our notes and the Charter Operating credit facilities could foreclose on their collateral, which includes equity interests in our subsidiaries, and exercise other rights of secured creditors.

Risks Related to Ownership Position of Liberty Broadband Corporation and Advance/Newhouse Partnership

Liberty Broadband and Advance/Newhouse Partnership ("A/N") have governance rights that give them influence over corporate transactions and other matters.

Liberty Broadband currently owns a significant amount of Charter Class A common stock and is entitled to certain governance rights with respect to Charter and us. A/N currently owns Charter Class A common stock and a significant amount of membership interests in our indirect parent company, Charter Holdings, that are convertible into Charter Class A common stock and is entitled to certain governance rights with respect to Charter. Members of the Charter board of directors include a director who is also an officer and director of Liberty Broadband and directors who are current or former officers and directors of A/N. Mr. Greg Maffei is the President and Chief Executive Officer of Liberty Broadband. Steven Miron is the Chief Executive Officer of A/N and Michael Newhouse is an officer or director of several of A/N's affiliates. As of December 31, 2019, Liberty Broadband beneficially held approximately 25% of Charter's voting stock (including shares owned by GCI Liberty, Inc. ("GCI Liberty," formerly known as Liberty Interactive Corporation) over which Liberty Broadband holds an irrevocable voting proxy) and A/N beneficially held approximately 13% of Charter's voting stock. Pursuant to the stockholders agreement between Liberty Broadband, A/N and Charter, Liberty Broadband currently has the right to designate up to three directors as nominees for Charter's board of directors and A/N currently has the right to designate up to two directors as nominees for Charter's board of directors. Each of A/N and Liberty Broadband is entitled to nominate at least one director to each of the committees of Charter's board of directors, subject to applicable stock exchange listing rules and certain specified voting or equity ownership thresholds for each of A/N and Liberty Broadband, and provided that the Nominating and Corporate Governance Committee and the Compensation and Benefit Committee each have at least a majority of directors independent from A/N, Liberty Broadband and Charter (referred to as the "unaffiliated directors").

In connection with the merger with TWC, Liberty Broadband and GCI Liberty entered into a proxy and right of first refusal agreement, pursuant to which GCI Liberty granted Liberty Broadband an irrevocable proxy to vote all Charter Class A common stock owned beneficially or of record by GCI Liberty, with certain exceptions. In addition, at the closing of the acquisition of Bright House, A/N and Liberty Broadband entered into a proxy agreement pursuant to which A/N granted to Liberty Broadband a 5-year irrevocable proxy (which we refer to as the "A/N proxy") to vote, subject to certain exceptions, that number of shares of Charter Class A common stock and Charter Class B common stock, in each case held by A/N (such shares are referred to as the "proxy shares"), that will result in Liberty Broadband having voting power in Charter equal to 25.01% of the outstanding voting power of Charter, provided, that the voting power of the proxy shares is capped at 7.0% of the outstanding voting power of Charter. In December of 2019, Liberty Broadband's voting power in Charter exceeded 25.01% and, therefore, as of December 31, 2019, the A/N proxy had no impact on Liberty Broadband's voting power. The stockholders agreement and Charter's amended and restated certificate of incorporation fixes the size of the board at 13 directors. Liberty Broadband and A/N are required to vote (subject to the applicable voting cap) their respective shares of Charter Class A common stock and Charter Class B common stock for the director nominees nominated by the nominating and corporate governance committee of the board of directors, including the respective designees of Liberty Broadband and A/N, and against any other nominees, except that, with respect to the unaffiliated directors, Liberty Broadband and A/N must instead vote in the same proportion as the voting securities are voted by stockholders other than A/N and Liberty Broadband or any group which includes any of them are voted, if doing so would cause a different outcome with respect to the unaffiliated directors. In addition, because Liberty Broadband's voting power exceeds its voting cap of 25.01%, Liberty Broadband must vote and exercise rights to consent with respect to voting securities held in excess of the voting cap in the same proportion as all other votes cast by stockholders other than A/N and Liberty Broadband with respect to the applicable matter. As a result of their rights under the stockholders agreement and their significant equity and voting stakes in Charter, Liberty Broadband and/or A/N, who may have interests different from those of other stockholders, will be able to exercise substantial influence over certain matters relating to the governance of Charter, including the approval of significant corporate actions, such as mergers and other business combination transactions.

Risks Related to Regulatory and Legislative Matters

Our business is subject to extensive governmental legislation and regulation, which could adversely affect our business.

Regulation of the cable industry has increased cable operators' operational and administrative expenses and limited their revenues. Cable operators are subject to numerous laws and regulations including those covering the following:

- the provision of high-speed Internet service, including net neutrality and transparency rules;
- the provision of voice communications;
- cable franchise renewals and transfers;
- the provisioning and marketing of cable equipment;
- customer and employee privacy and data security;
- copyright royalties for retransmitting broadcast signals;

- when a cable system must carry a particular broadcast station and when it must first obtain retransmission consent to carry a broadcast station;
- the provision of video channel capacity to unaffiliated commercial leased access programmers;
- limitations on our ability to enter into exclusive agreements with multiple dwelling unit complexes and control our inside wiring;
- equal employment opportunity;
- emergency alert systems, disability access, pole attachments, and technical standards;
- marketing practices, customer service, and consumer protection; and
- approval for mergers and acquisitions often accompanied by the imposition of restrictions and requirements on an applicant's business in order to secure approval of the proposed transaction.

Legislators and regulators at all levels of government frequently consider changing, and sometimes do change, existing statutes, rules, regulations, or interpretations thereof, or prescribe new ones. Any future legislative, judicial, regulatory or administrative actions may increase our costs or impose additional restrictions on our businesses.

As a result of the closing of the 2016 merger with TWC and acquisition of Bright House, our businesses are subject to the conditions set forth in the FCC Order and the DOJ Consent Decree and those imposed by state utility commissions and local franchise authorities, and there can be no assurance that these conditions will not have an adverse effect on our businesses and results of operations.

In connection with the Transactions, the FCC Order, the DOJ Consent Decree, and the approvals from state utility commissions and local franchise authorities incorporated numerous commitments and voluntary conditions made by the parties and imposed numerous conditions on our businesses relating to the operation of our business and other matters. Under federal approvals, among other things, (i) we are not permitted to charge usage-based prices or impose data caps and are prohibited from charging interconnection fees for qualifying parties; (ii) we are prohibited from entering into or enforcing any agreement with a programmer that forbids, limits or creates incentives to limit the programmer's provision of content to OVD and cannot retaliate against programmers for licensing to OVDs; (iii) we are not able to avail ourself of other distributors' MFN provisions if they are inconsistent with this prohibition; (iv) we appointed an independent compliance monitor and comply with a broad array of reporting requirements; and (v) we must satisfy various other conditions relating to our Internet services, including building out an additional two million locations with access to a high-speed connection of at least 60 megabits per second, and implementing a reduced price high-speed Internet program for low income families. These and other conditions and commitments relating to the transactions are of varying duration, ranging from three to seven years. In light of the breadth and duration of the conditions and potential changes in market conditions during the time the conditions and commitments are in effect, there can be no assurance that our compliance, and ability to comply, with the conditions will not have a material adverse effect on our business or results of operations.

Changes to existing statutes, rules, regulations, or interpretations thereof, or adoption of new ones, could have an adverse effect on our business.

There are ongoing efforts to amend or expand the federal, state, and local regulation of some of the services offered over our cable systems, which may compound the regulatory risks we already face. For example, with respect to our retail broadband Internet access service, the FCC has reclassified the service twice in the last few years, with the first change adding federal regulatory obligations and the second change largely removing those new regulatory obligations. These changes reflect a lack of regulatory certainty in this business area, which may continue as a result of litigation, as well as future legislative or administrative changes.

Other potential legislative and regulatory changes could adversely impact our business by increasing our costs and competition and limiting our ability to offer services in a manner that that would maximize our revenue potential. These changes could include, for example, the adoption of new privacy restrictions on our collection, use and disclosure of certain customer information, new data security and cybersecurity mandates that could result in additional network and information security requirements for our business, new restraints on our discretion over programming decisions, including commercial leased access programming, new restrictions on the rates we charge for video programming and the marketing and packaging of that video programming and other services to consumers, changes to the cable industry's compulsory copyright license to carry broadcast signals, new requirements to assure the availability of navigation devices (such as set-top boxes) from third-party providers, new Universal Service Fund obligations on our provision of Internet service that would add to the cost of that service; increases in government-administered broadband subsidies to rural areas that could result in subsidized overbuilding of our more rural facilities, changes to the FCC's administration of spectrum, and changes in the regulatory framework for VoIP phone service, including the scope of regulatory obligations associated with our VoIP service and our ability to interconnect our VoIP service with incumbent providers of traditional telecommunications service.

If any of these such laws or regulations are enacted, they could affect our operations and require significant expenditures. We cannot predict future developments in these areas, and we are already subject to Charter-specific conditions regarding certain Internet practices as a result of the FCC's approval in 2016 of the merger with TWC and acquisition of Bright House, but any changes to the regulatory framework for our video, Internet or VoIP services could have a negative impact on our business and results of operations.

It remains uncertain what rule changes, if any, will ultimately be adopted by Congress and the FCC and what operating or financial impact any such rules might have on us, including on our programming agreements, customer privacy and the user experience. In addition, the FCC, the FTC, and various state agencies and attorney generals actively investigate industry practices and could impose substantial forfeitures for alleged regulatory violations.

Our cable system franchises are subject to non-renewal or termination and are non-exclusive. The failure to renew a franchise or the grant of additional franchises in one or more service areas could adversely affect our business.

Our cable systems generally operate pursuant to franchises, permits, and similar authorizations issued by a state or local governmental authority controlling the public rights-of-way. Many franchises establish comprehensive facilities and service requirements, as well as specific customer service standards and monetary penalties for non-compliance. In many cases, franchises are terminable if the franchisee fails to comply with significant provisions set forth in the franchise agreement governing system operations. Franchises are generally granted for fixed terms and must be periodically renewed. Franchising authorities may resist granting a renewal if either past performance or the prospective operating proposal is considered inadequate. Franchise authorities often demand concessions or other commitments as a condition to renewal. In some instances, local franchises have not been renewed at expiration, and we have operated and are operating under either temporary operating agreements or without a franchise while negotiating renewal terms with the local franchising authorities.

We cannot assure you that we will be able to comply with all significant provisions of our franchise agreements and certain of our franchisers have from time to time alleged that we have not complied with these agreements. Additionally, although historically we have renewed our franchises without incurring significant costs, we cannot assure you that we will be able to renew, or to renew as favorably, our franchises in the future. A termination of or a sustained failure to renew a franchise in one or more service areas could adversely affect our business in the affected geographic area.

Our cable system franchises are non-exclusive. Consequently, local and state franchising authorities can grant additional franchises to competitors in the same geographic area or operate their own cable systems. In some cases, local government entities and municipal utilities may legally compete with us on more favorable terms.

Tax legislation and administrative initiatives or challenges to our tax and fee positions could adversely affect our results of operations and financial condition.

We operate cable systems in locations throughout the United States and, as a result, we are subject to the tax laws and regulations of federal, state and local governments. From time to time, various legislative and/or administrative initiatives may be proposed that could adversely affect our tax positions. There can be no assurance that our effective tax rate or tax payments will not be adversely affected by these initiatives. Certain states and localities have imposed or are considering imposing new or additional taxes or fees on our services or changing the methodologies or base on which certain fees and taxes are computed. Potential changes include additional taxes or fees on our services which could impact our customers, changes to income tax sourcing rules and other changes to general business taxes, central/unit-level assessment of property taxes and other matters that could increase our income, franchise, sales, use and/or property tax liabilities. For example, some local franchising authorities are seeking to impose franchise fee assessments on our broadband Internet access service (in addition to our video service), and more may do so in the future. If they do so, and challenges to such assessments are unsuccessful, it could adversely impact our costs. Although the FCC recently issued a decision precluding the imposition of such duplicative fees, that favorable decision is currently subject to judicial review. In addition, federal, state and local tax laws and regulations are extremely complex and subject to varying interpretations. There can be no assurance that our tax positions will not be challenged by relevant tax authorities or that we would be successful in any such challenge.

Item 1B. *Unresolved Staff Comments.*

None.

Item 2. ***Properties.***

Our principal physical assets consist of cable distribution plant and equipment, including signal receiving, encoding and decoding devices, headend reception facilities, distribution systems, and customer premise equipment for each of our cable systems.

Our cable plant and related equipment are generally attached to utility poles under pole rental agreements with local public utilities and telephone companies, and in certain locations are buried in underground ducts or trenches. We own or lease real property for signal reception sites, and own our service vehicles.

We generally lease space for business offices. Our headend and tower locations are located on owned or leased parcels of land, and we generally own the towers on which our equipment is located.

The physical components of our cable systems require maintenance as well as periodic upgrades to support the new services and products we introduce. See “Item 1. Business – Our Network Technology and Customer Premise Equipment.” We believe that our properties are generally in good operating condition and are suitable for our business operations.

Item 3. ***Legal Proceedings.***

The legal proceedings information set forth in Note 19 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data” in this Annual Report on Form 10-K is incorporated herein by reference.

Item 4. ***Mine Safety Disclosures.***

Not applicable.

PART II

Item 5. ***Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.***

Our membership interests are not publicly traded. All of the membership interests of CCO Holdings are owned by CCH I Holdings, LLC. All of the outstanding capital stock of CCO Holdings Capital Corp. is owned by CCO Holdings.

Securities Authorized for Issuance Under Equity Compensation Plans

The following information is provided as of December 31, 2019 with respect to Charter's equity compensation plans:

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	Weighted Average Exercise Price of Outstanding Warrants and Rights	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans
Equity compensation plans approved by security holders	12,608,020 (1)	$ 242.50	15,882,887 (1)
Equity compensation plans not approved by security holders	—	$ —	—
TOTAL	12,608,020 (1)		15,882,887 (1)

(1) This total does not include 8,284 shares issued pursuant to restricted stock grants made under Charter's 2019 Stock Incentive Plan, which are subject to vesting based on continued service.

For information regarding securities issued under Charter's equity compensation plans, see Note 15 to our accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

Item 7. ***Management's Discussion and Analysis of Financial Condition and Results of Operations.***

Reference is made to "Part I. Item 1A. Risk Factors" and "Cautionary Statement Regarding Forward-Looking Statements," which describe important factors that could cause actual results to differ from expectations and non-historical information contained herein. In addition, the following discussion should be read in conjunction with the audited consolidated financial statements and accompanying notes thereto of CCO Holdings included in "Part II. Item 8. Financial Statements and Supplementary Data."

Overview

We are the second largest cable operator in the United States and a leading broadband communications services company providing video, Internet and voice services to approximately 29.2 million residential and small and medium business customers at December 31, 2019. We also offer mobile service to residential customers and recently launched mobile service to small and medium business customers. In addition, we sell video and online advertising inventory to local, regional and national advertising customers and tailored communications and managed solutions to larger enterprise customers. We also own and operate regional sports networks and local sports, news and community channels. See "Part I. Item 1. Business — Products and Services" for further description of these services, including customer statistics for different services.

In 2019, with the integration of TWC and Bright House substantially behind us, we are realizing the benefits of operating as one company, with a unified product, marketing and service infrastructure. We remain focused on driving customer relationship growth by deploying superior products and services packaged with attractive pricing. We expect our insourced, high quality workforce will continue to drive an improved customer experience which will result in lower customer churn, longer customer lifetimes and, combined with our continued ramping of our self-installation program, improved productivity with fewer customer calls and truck rolls per customer relationship. With approximately 85% of our residential customer base now in SPP packages, we expect additional benefits from lower legacy package migration activity, combined with SPP customers rolling off introductory pricing and price increases. Further, we expect to continue to drive customer relationship growth through sales of bundled services and improving customer retention despite the expectation for continued losses of video and wireline voice customers. With the completion of our all-digital conversion, roll-out of DOCSIS 3.1 technology across our footprint, and the integration of TWC and

Bright House substantially complete, we have experienced a meaningful reduction in cable capital expenditures as a percent of revenue in 2019 and expect continued lower cable capital intensity in 2020.

We launched our mobile product, Spectrum Mobile, in the second half of 2018 under our MVNO reseller agreement with Verizon. Our Spectrum Mobile service is offered to customers subscribing to our Internet service and runs on Verizon's mobile network combined with Spectrum WiFi. In the second quarter of 2019, we expanded our Spectrum Mobile bring-your-own-device program across all sales channels to include a broader set of devices which we believe lowers the cost for consumers of switching mobile carriers, and reduces the short-term working capital impact of selling new mobile devices on installment plans. We expect these developments, along with the launch of 5G service offerings in 2020, to contribute to the growth of our mobile business. We also continue to explore ways to drive even more mobile traffic to our network. We plan to use our WiFi network in conjunction with additional unlicensed, and potentially licensed, spectrum to improve network performance and expand capacity to offer consumers a superior mobile service at a lower total cost to us. Further, we have experimental wireless licenses from the FCC that we are utilizing to test next generation mobile services in several service areas around the country.

We believe Spectrum-branded mobile services will drive higher sales of our core products, create longer customer lives and increase profitability and cash flow over time. As a result of growth costs associated with our new mobile product line, we cannot be certain that we will be able to grow revenues or maintain our margins at recent historical rates. During the years ended December 31, 2019 and 2018, our mobile product line increased revenues by$726 million and $106 million, respectively, reduced Adjusted EBITDA by approximately $520 million and $240 million, respectively, and reduced free cash flow by approximately $1.2 billion and $594 million, respectively. As we continue to grow our mobile service and scale the business, we expect continued negative impacts to Adjusted EBITDA, as well as negative working capital impacts from the timing of device-related cash flows when we sell the handset or tablet to customers pursuant to equipment installment plans.

We realized revenue, Adjusted EBITDA and income from operations during the periods presented as follows (in millions; all percentages are calculated using whole numbers. Minor differences may exist due to rounding).

	Years ended December 31,		
	2019	2018	2019 vs. 2018 Growth
Revenues	$ 45,756	$ 43,620	4.9%
Adjusted EBITDA	$ 16,796	$ 16,014	4.9%
Income from operations	$ 6,459	$ 5,192	24.4%

Adjusted EBITDA is defined as net income attributable to CCO Holdings member plus net income attributable to noncontrolling interest, net interest expense, income taxes, depreciation and amortization, stock compensation expense, loss on extinguishment of debt, (gain) loss on financial instruments, net, other pension (benefits) costs, net, other (income) expense, net and other operating (income) expenses, net, such as merger and restructuring costs, special charges and (gain) loss on sale or retirement of assets. See "—Use of Adjusted EBITDA and Free Cash Flow" for further information on Adjusted EBITDA and free cash flow.

Growth in total revenue was primarily due to growth in our residential Internet, mobile and commercial business customers. Adjusted EBITDA and income from operations growth was impacted by growth in revenue and increases in operating costs and expenses, primarily mobile, programming and regulatory, connectivity and produced content. Income from operations was also affected by a decrease in depreciation and amortization expense.

Approximately 91% of our revenues for each of the years endedDecember 31, 2019 and 2018 are attributable to monthly subscription fees charged to customers for our video, Internet, voice, mobile and commercial services. Generally, these customer subscriptions may be discontinued by the customer at any time subject to a fee for certain commercial customers. The remaining 9% of revenue is derived primarily from advertising revenues, franchise and other regulatory fee revenues (which are collected by us but then paid to local authorities), VOD and pay-per-view programming, installation, processing fees or reconnection fees charged to customers to commence or reinstate service, revenue from regional sports and news channels and commissions related to the sale of merchandise by home shopping services.

Critical Accounting Policies and Estimates

Certain of our accounting policies require our management to make difficult, subjective and/or complex judgments. Management has discussed these policies with the Audit Committee of Charter's board of directors, and the Audit Committee has reviewed the

following disclosure. We consider the following policies to be the most critical in understanding the estimates, assumptions and judgments that are involved in preparing our financial statements, and the uncertainties that could affect our results of operations, financial condition and cash flows:

- Capitalization of labor and overhead costs
- Valuation and impairment of franchises and goodwill
- Income taxes
- Defined benefit pension plans

Capitalization of labor and overhead costs

Costs associated with network construction or upgrades, placement of the customer drop to the dwelling and the placement of outlets within a dwelling along with the costs associated with the deployment of new customer premise equipment necessary to provide video, Internet or voice services, are capitalized. Costs capitalized include materials, direct labor and certain indirect costs. These indirect costs are associated with the activities of personnel who assist in installation activities, and consist of compensation and overhead costs associated with these support functions. While our capitalization is based on specific activities, once capitalized, we track these costs on a composite basis by fixed asset category at the cable system level, and not on a specific asset basis. For assets that are sold or retired, we remove the estimated applicable cost and accumulated depreciation. The costs of disconnecting service and removing customer premise equipment from a dwelling and the costs to reconnect a customer drop or to redeploy previously installed customer premise equipment are charged to operating expense as incurred. Costs for repairs and maintenance are charged to operating expense as incurred, while plant and equipment replacement, including replacement of certain components, betterments, and replacement of cable drops and outlets, are capitalized.

We make judgments regarding the installation and construction activities to be capitalized. We capitalized direct labor and overhead of $1.6 billion and $1.8 billion, respectively, for the years ended December 31, 2019 and 2018. We capitalize direct labor and overhead using standards developed from actual costs and applicable operational data. We calculate standards annually (or more frequently if circumstances dictate) for items such as the labor rates, overhead rates, and the actual amount of time required to perform a capitalizable activity. For example, the standard amounts of time required to perform capitalizable activities are based on studies of the time required to perform such activities. Overhead rates are established based on an analysis of the nature of costs incurred in support of capitalizable activities, and a determination of the portion of costs that is directly attributable to capitalizable activities. The impact of changes that resulted from these studies were not material in the periods presented.

Labor costs directly associated with capital projects are capitalized. Capitalizable activities performed in connection with installations include such activities as:

- dispatching a “truck roll” to the customer’s dwelling or business for service connection or placement of new equipment;
- verification of serviceability to the customer’s dwelling or business (i.e., determining whether the customer’s dwelling is capable of receiving service by our cable network);
- customer premise activities performed by in-house field technicians and third-party contractors in connection with the installation, replacement and betterment of equipment and materials to enable video, Internet or voice services; and
- verifying the integrity of the customer’s network connection by initiating test signals downstream from the headend to the customer premise equipment, as well as testing signal levels at the utility pole or pedestal.

Judgment is required to determine the extent to which overhead costs incurred result from specific capital activities, and therefore should be capitalized. The primary costs that are included in the determination of the overhead rate are (i) employee benefits and payroll taxes associated with capitalized direct labor, (ii) direct variable costs associated with capitalizable activities, (iii) the cost of support personnel, such as care personnel and dispatchers, who assist with capitalizable installation activities, and (iv) indirect costs directly attributable to capitalizable activities.

While we believe our existing capitalization policies are appropriate, a significant change in the nature or extent of our operating practices could affect management’s judgment about the extent to which we should capitalize direct labor or overhead in the future. We monitor the appropriateness of our capitalization policies, and perform updates to our internal studies on an ongoing basis to determine whether facts or circumstances warrant a change to our capitalization policies.

Valuation and impairment of franchises

The net carrying value of franchises as of both December 31, 2019 and 2018 was approximately $67.3 billion (representing 46% of total assets). For more information and a complete discussion of how we value and test franchise assets for impairment, see

Note 5 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

We perform an impairment assessment of franchise assets annually or more frequently as warranted by events or changes in circumstances. We performed a qualitative assessment in 2019. Our assessment included consideration of a fair value appraisal performed for tax purposes in the beginning of 2019 as of a December 31, 2018 valuation date (the "Appraisal") along with a multitude of factors that affect the fair value of our franchise assets. Examples of such factors include environmental and competitive changes within our operating footprint, actual and projected operating performance, the consistency of our operating margins, equity and debt market trends, including changes in our market capitalization, and changes in our regulatory and political landscape, among other factors. Based on our assessment, we concluded that it was more likely than not that the estimated fair values of our franchise assets equals or exceeds their carrying values and that a quantitative impairment test is not required.

Valuation and impairment of goodwill

The net carrying value of goodwill as of bothDecember 31, 2019 and 2018 was approximately $29.6 billion (representing 20% of total assets). We have determined that we have one reporting unit for purposes of the assessment of goodwill impairment. For more information and a complete discussion on how we test goodwill for impairment, see Note 5 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.” We perform our impairment assessment of goodwill annually as of November 30. As with our franchise impairment testing, we elected to perform a qualitative assessment of goodwill in 2019 which included the Appraisal and other factors described above. Based on the Appraisal, we determined that the fair value of the reporting unit significantly exceeded the net asset carrying value of the reporting unit. Given the completion of the assessment and absence of significant adverse changes in factors impacting our fair value estimates, we concluded that it is more likely than not that our goodwill is not impaired.

Income taxes

In determining our tax provision for financial reporting purposes, we establish a reserve for uncertain tax positions unless such positions are determined to be “more likely than not” of being sustained upon examination, based on their technical merits. In evaluating whether a tax position has met the more-likely-than-not recognition threshold, we presume the position will be examined by the appropriate taxing authority that has full knowledge of all relevant information. A tax position that meets the more-likely-than-not recognition threshold is measured to determine the amount of benefit to be recognized in our financial statements. The tax position is measured as the largest amount of benefit that has a greater than 50% likelihood of being realized when the position is ultimately resolved. There is considerable judgment involved in determining whether positions taken on the tax return are “more likely than not” of being sustained. We adjust our uncertain tax reserve estimates periodically because of ongoing examinations by, and settlements with, the various taxing authorities, as well as changes in tax laws, regulations and interpretations.

No tax years for Charter are currently under examination by the IRS for income tax purposes. Charter's 2016 through 2019 tax years remain open for examination and assessment. Charter’s short period return dated May 17, 2016 (prior to the merger with TWC and acquisition of Bright House) remain subject to examination and assessment. Years prior to 2016 remain open solely for purposes of examination of Charter’s loss and credit carryforwards. The IRS is currently examining Charter Holdings' income tax return for 2016. Charter Holdings’ 2017 through 2019 tax years remain open for examination and assessment. The IRS is currently examining TWC’s income tax returns for 2011 through 2014. TWC’s tax year 2015 remains subject to examination and assessment. Prior to TWC’s separation from Time Warner Inc. (“Time Warner”) in March 2009, TWC was included in the consolidated U.S. federal and certain state income tax returns of Time Warner. The IRS has examined Time Warner’s 2008 through 2010 income tax returns and the results are under appeal. We do not anticipate that these examinations will have a material impact on our consolidated financial position or results of operations. In addition, we are also subject to ongoing examinations of our tax returns by state and local tax authorities for various periods. Activity related to these state and local examinations did not have a material impact on our consolidated financial position or results of operations during the year ended December 31, 2019, nor do we anticipate a material impact in the future.

Defined benefit pension plans

We sponsor three qualified defined benefit pension plans and one nonqualified defined benefit pension plan that provide pension benefits to a majority of employees who were employed by TWC before the merger with TWC. As of December 31, 2019, the accumulated benefit obligation and fair value of plan assets was $3.4 billion and $3.2 billion, respectively, and the net underfunded liability was recorded as a $1 million noncurrent asset, $4 million current liability and $160 million long-term liability. As of December 31, 2018, the accumulated benefit obligation and fair value of plan assets was$3.0 billion and $2.9 billion, respectively, and the net underfunded liability was recorded as a $1 million noncurrent asset, $4 million current liability and $95 million long-term liability.

Pension benefits are based on formulas that reflect the employees' years of service and compensation during their employment period. Actuarial gains or losses are changes in the amount of either the benefit obligation or the fair value of plan assets resulting from experience different from that assumed or from changes in assumptions. We have elected to follow a mark-to-market pension accounting policy for recording the actuarial gains or losses annually during the fourth quarter, or earlier if a remeasurement event occurs during an interim period. We use a December 31 measurement date for our pension plans.

We recognized net periodic pension costs of $69 million and net periodic pension benefits of $192 million in 2019 and 2018, respectively. Net periodic pension benefit or expense is determined using certain assumptions, including the expected long-term rate of return on plan assets, discount rate and mortality assumptions. We determined the discount rate used to compute pension expense based on the yield of a large population of high-quality corporate bonds with cash flows sufficient in timing and amount to settle projected future defined benefit payments. In developing the expected long-term rate of return on assets, we considered the current pension portfolio's composition, past average rate of earnings, and our asset allocation targets. We used a discount rate of 3.48% to determine the December 31, 2019 pension plan benefit obligation. A decrease in the discount rate of 25 basis points would result in a $157 million increase in our pension plan benefit obligation as of December 31, 2019 and net periodic pension expense recognized in 2019 under our mark-to-market accounting policy. The expected long-term rate of return on plan assets used to determine net periodic pension benefit for the year ended December 31, 2020 is expected to be 5.00%. A decrease in the expected long-term rate of return of 25 basis points to 4.75%, while holding all other assumptions constant, would result in an increase in our 2020 net periodic pension expense of approximately $7 million. See Note 20 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data" for additional discussion on these assumptions.

Results of Operations

A discussion of changes in our results of operations during the year ended December 31, 2018 compared to the year ended December 31, 2017 has been omitted from this Annual Report on Form 10-K, but may be found in "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" in our Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on February 8, 2019, which is available free of charge on the SECs website at www.sec.gov and on Charter's investor relations website at ir.charter.com.

The following table sets forth the consolidated statements of operations for the periods presented (dollars in millions, except per share data):

	Year Ended December 31,	
	2019	**2018**
Revenues	$ 45,756	$ 43,620
Costs and Expenses:		
Operating costs and expenses (exclusive of items shown separately below)	29,275	27,891
Depreciation and amortization	9,911	10,307
Other operating expenses, net	111	230
	39,297	38,428
Income from operations	6,459	5,192
Other Expenses:		
Interest expense, net	(3,839)	(3,579)
Loss on extinguishment of debt	(25)	—
Loss on financial instruments, net	(54)	(110)
Other pension benefits (costs), net	(69)	192
Other expense, net	(131)	(46)
	(4,118)	(3,543)
Income before income taxes	2,341	1,649
Income tax expense	(89)	(16)
Consolidated net income	2,252	1,633
Less: Net income attributable to noncontrolling interests	(1)	(1)
Net income attributable to CCO Holdings member	$ 2,251	$ 1,632

Revenues. Total revenues grew $2.1 billion or 4.9% during the year ended December 31, 2019 as compared to 2018 primarily due to increases in the number of residential Internet and commercial business customers, price adjustments as well as the launch of our mobile service in the second half of 2018 offset by a decrease in video customers.

Revenues by service offering were as follows (dollars in millions; all percentages are calculated using whole numbers. Minor differences may exist due to rounding):

	Years ended December 31,		
	2019	2018	% Growth
Video	$ 17,607	$ 17,348	1.5 %
Internet	16,667	15,181	9.8 %
Voice	1,920	2,114	(9.1)%
Residential revenue	36,194	34,643	4.5 %
Small and medium business	3,868	3,665	5.6 %
Enterprise	2,556	2,528	1.1 %
Commercial revenue	6,424	6,193	3.7 %
Advertising sales	1,568	1,785	(12.1)%
Mobile	726	106	NM
Other	844	893	(5.5)%
	$ 45,756	$ 43,620	4.9 %

Video revenues consist primarily of revenues from basic and digital video services provided to our residential customers, as well as franchise fees, equipment service fees and video installation revenue. The increase in video revenues was attributable to the following (dollars in millions):

	2019 compared to 2018
Increase related to rate changes	$ 758
Decrease in average residential video customers	(412)
Decrease in VOD and pay-per-view	(87)
	$ 259

The increase related to rate changes was primarily due to price adjustments including annual increases and promotional roll-off. Residential video customers decreased by 484,000 in 2019 compared to 2018.

The increase in Internet revenues from our residential customers was attributable to the following (dollars in millions):

	2019 compared to 2018
Increase in average residential Internet customers	$ 790
Increase related to rate changes	696
	$ 1,486

Residential Internet customers grew by 1,283,000 in 2019 compared to 2018. The increase related to rate changes was primarily due to price adjustments including promotional roll-off.

The decrease in voice revenues from our residential customers was attributable to the following (dollars in millions):

	2019 compared to 2018
Decrease in average residential voice customers	$ (102)
Decrease related to rate changes	(92)
	$ (194)

The decrease related to rate changes was primarily due to value-based pricing. Residential wireline voice customers decreased by 692,000 in 2019 compared to 2018.

The increase in small and medium business commercial revenues was attributable to the following (dollars in millions):

	2019 compared to 2018	
Increase in small and medium business customers	$	317
Decrease related to rate changes		(114)
	$	203

Small and medium business PSUs increased by 237,000 in 2019 compared to 2018. The decrease related to rate changes was primarily due to value-based pricing related to SPP, net of promotional roll-off and price adjustments.

Enterprise revenues increased $28 million during the year ended December 31, 2019 as compared to the corresponding period in 2018 primarily due to growth in customers offset by the sale of non-strategic assets. Enterprise PSUs increased by 19,000 in 2019 compared to 2018.

Advertising sales revenues consist primarily of revenues from commercial advertising customers, programmers and other vendors, as well as local cable and advertising on regional sports and news channels. Advertising sales revenues decreased $217 million during the year ended December 31, 2019 as compared to the corresponding period in 2018 primarily due to a decrease in political revenue.

During the year ended December 31, 2019, mobile revenues included approximately $488 million of device revenues and approximately $238 million of service revenues. During the year ended December 31, 2018, mobile revenues included approximately $97 million of device revenues and approximately $9 million of service revenues. As of December 31, 2019, we had 1,082,000 mobile lines compared to 134,000 mobile as of December 31, 2108.

Other revenues consist of revenue from regional sports and news channels (excluding intercompany charges or advertising sales on those channels), home shopping, late payment fees, wire maintenance fees and other miscellaneous revenues. The decrease during the year ended December 31, 2019 as compared to the corresponding period in 2018 was primarily due to a decrease in late payment fees and home shopping revenue offset by the sale of video devices.

Operating costs and expenses. The increase in our operating costs and expenses, exclusive of items shown separately in the consolidated statements of operations, was attributable to the following (dollars in millions):

	2019 compared to 2018	
Programming	$	166
Regulatory, connectivity and produced content		156
Costs to service customers		(50)
Marketing		2
Mobile		900
Other		210
	$	1,384

Programming costs were approximately $11.3 billion and $11.1 billion, representing 39% and 40% of operating costs and expenses for the years ended December 31, 2019 and 2018, respectively. Programming costs consist primarily of costs paid to programmers for basic, digital, premium, VOD, and pay-per-view programming. The increase in programming costs is primarily a result of contractual rate adjustments, including renewals and increases in amounts paid for retransmission consents partly offset by lower video customers and pay-per-view. We expect programming rates will continue to increase due to a variety of factors, including annual increases imposed by programmers with additional selling power as a result of media consolidation, increased demands by owners of broadcast stations for payment for retransmission consent or linking carriage of other services to retransmission consent, and additional programming, particularly new services. We have been unable to fully pass these increases on to our customers and do not expect to be able to do so in the future without a potential loss of customers.

Regulatory, connectivity and produced content increased $156 million during the year ended December 31, 2019 compared to the corresponding period in 2018 primarily due to higher costs of video devices sold to customers, regulatory pass-through fees and original programming costs.

Costs to service customers decreased $50 million during the year ended December 31, 2019 compared to the corresponding period in 2018 primarily due to lower maintenance and labor costs driven by fewer customer calls and truck rolls with improved productivity and a higher number of self-installations.

Mobile costs of $1.2 billion and $346 million for the years ended December 31, 2019 and 2018, respectively, were comprised of mobile device costs and mobile service and operating costs.

The increase in other expense was attributable to the following (dollars in millions):

	2019 compared to 2018
Corporate costs	$ 80
Property tax and insurance	54
Stock compensation expense	30
Sports and news	26
Advertising sales expense	(32)
Other	52
	$ 210

Depreciation and amortization. Depreciation and amortization expense decreased by $396 million during the year ended December 31, 2019 compared to the corresponding period in 2018 primarily due to certain assets acquired from TWC and Bright House becoming fully depreciated offset by an increase in depreciation as a result of more recent capital expenditures.

Other operating expenses, net. The decrease in other operating expenses, net was attributable to the following (dollars in millions):

	2019 compared to 2018
Merger and restructuring costs	$ (87)
Loss on sale of assets, net	(43)
Special charges, net	11
	$ (119)

The decrease in merger and restructuring costs is primarily due to lower employee retention and employee termination costs incurred during 2019 as compared to 2018.

The decrease in loss on sale of assets, net for the year ended December 31, 2019 as compared to the year ended December 31, 2018 is primarily due to a $42 million impairment of non-strategic assets incurred during 2019 compared to a $75 million impairment of non-strategic assets incurred during 2018. For more information, see Note 14 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Interest expense, net. Net interest expense increased by $260 million in 2019 from 2018 primarily due to an increase in weighted average debt outstanding of approximately $3.0 billion primarily as a result of the issuance of notes in 2019 and 2018 for general corporate purposes including distributions to parent companies for stock buybacks and debt repayments offset by a decrease in weighted average interest rates.

Loss on extinguishment of debt. Loss on extinguishment of debt of $25 million for the year ended December 31, 2019 primarily represents losses recognized as a result of the repurchase of CCO Holdings notes and amendments to Charter Operating's credit facilities. For more information, see Note 9 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Loss on financial instruments, net. Gains and losses on financial instruments are recognized due to changes in the fair value of our interest rate and our cross currency derivative instruments, and the foreign currency remeasurement of the fixed-rate British pound sterling denominated notes (the “Sterling Notes”) into U.S. dollars. For more information, see Note 11 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Other pension benefits (costs), net. Other pension benefits (costs), net increased by $261 million during the year ended December 31, 2019 compared to the corresponding period in 2018 primarily due to a remeasurement loss recorded in 2019 versus a remeasurement gain in 2018. For more information, see Note 20 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Other expense, net. Other expense, net includes impairments on equity investments of approximately $121 million and $38 million for the years ended December 31, 2019 and 2018, respectively. For more information, see Note 6 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Income tax expense. We recognized income tax expense of $89 million and $16 million for the years ended December 31, 2019 and 2018, respectively Income tax expense increased during the year ended December 31, 2019 compared to the corresponding period in 2018 primarily as a result of an internal entity simplification and higher pretax income in 2019. For more information, see Note 16 to the accompanying consolidated financial statements contained in “Part II. Item 8. Financial Statements and Supplementary Data.”

Net income attributable to noncontrolling interest. Net income attributable to noncontrolling interest relates to our third-party interest in CV of Viera, LLP, a consolidated joint venture in a small cable system in Florida.

Net income attributable to CCO Holdings member. Net income attributable to CCO Holdings member was $2.3 billion and $1.6 billion for the years ended December 31, 2019 and 2018, respectively, primarily as a result of the factors described above.

Use of Adjusted EBITDA and Free Cash Flow

We use certain measures that are not defined by U.S. generally accepted accounting principles (“GAAP”) to evaluate various aspects of our business. Adjusted EBITDA and free cash flow are non-GAAP financial measures and should be considered in addition to, not as a substitute for, net income attributable to CCO Holdings member and net cash flows from operating activities reported in accordance with GAAP. These terms, as defined by us, may not be comparable to similarly titled measures used by other companies. Adjusted EBITDA and free cash flow are reconciled to net income attributable to CCO Holdings member and net cash flows from operating activities, respectively, below.

Adjusted EBITDA eliminates the significant non-cash depreciation and amortization expense that results from the capital-intensive nature of our businesses as well as other non-cash or special items, and is unaffected by our capital structure or investment activities. However, this measure is limited in that it does not reflect the periodic costs of certain capitalized tangible and intangible assets used in generating revenues and our cash cost of financing. These costs are evaluated through other financial measures.

Free cash flow is defined as net cash flows from operating activities, less capital expenditures and changes in accrued expenses related to capital expenditures.

Management and Charter’s board of directors use Adjusted EBITDA and free cash flow to assess our performance and our ability to service our debt, fund operations and make additional investments with internally generated funds. In addition, Adjusted EBITDA generally correlates to the leverage ratio calculation under our credit facilities or outstanding notes to determine compliance with the covenants contained in the facilities and notes (all such documents have been previously filed with the SEC). For the purpose of calculating compliance with leverage covenants, we use Adjusted EBITDA, as presented, excluding certain expenses paid by our operating subsidiaries to other Charter entities. Our debt covenants refer to these expenses as management fees, which fees were in the amount of $1.2 billion and $1.1 billion for the years ended December 31, 2019 and 2018, respectively.

	Years ended December 31,	
	2019	2018
Net income attributable to CCO Holdings member	$ 2,251	$ 1,632
Plus: Net income attributable to noncontrolling interest	1	1
Interest expense, net	3,839	3,579
Income tax expense	89	16
Depreciation and amortization	9,911	10,307
Stock compensation expense	315	285
Loss on extinguishment of debt	25	—
Loss on financial instruments, net	54	110
Other pension (benefits) costs, net	69	(192)
Other, net	242	276
Adjusted EBITDA	$ 16,796	$ 16,014
Net cash flows from operating activities	$ 11,708	$ 11,657
Less: Purchases of property, plant and equipment	(7,195)	(9,109)
Change in accrued expenses related to capital expenditures	55	(470)
Free cash flow	$ 4,568	$ 2,078

Liquidity and Capital Resources

Overview

We have significant amounts of debt. The principal amount of our debt as of December 31, 2019 was $78.4 billion, consisting of $10.4 billion of credit facility debt, $45.9 billion of investment grade senior secured notes and $22.1 billion of high-yield senior unsecured notes. Our business requires significant cash to fund principal and interest payments on our debt.

Our projected cash needs and projected sources of liquidity depend upon, among other things, our actual results, and the timing and amount of our expenditures. As we continue to grow our new mobile services, we expect an initial funding period to grow a new product as well as negative working capital impacts from the timing of device-related cash flows when we provide the handset or tablet to customers pursuant to equipment installment plans. Free cash flow was $4.6 billion and $2.1 billion for the years ended December 31, 2019 and 2018, respectively. See table below for factors impacting free cash flow during the year ended December 31, 2019 compared to 2018. As of December 31, 2019, the amount available under our credit facilities was approximately $4.7 billion and cash on hand was approximately $3.2 billion. We expect to utilize free cash flow, cash on hand and availability under our credit facilities as well as future refinancing transactions to further extend the maturities of our obligations. The timing and terms of any refinancing transactions will be subject to market conditions among other considerations. Additionally, we may, from time to time, and depending on market conditions and other factors, use cash on hand and the proceeds from securities offerings or other borrowings to retire our debt through open market purchases, privately negotiated purchases, tender offers or redemption provisions. We believe we have sufficient liquidity from cash on hand, free cash flow and Charter Operating’s revolving credit facility as well as access to the capital markets to fund our projected cash needs.

We continue to evaluate the deployment of our cash on hand and anticipated future free cash flow including to invest in our business growth and other strategic opportunities, including mergers and acquisitions as well as distributions to parent companies for stock repurchases and dividends. Charter's target leverage of net debt to the last twelve months Adjusted EBITDA remains at 4 to 4.5 times Adjusted EBITDA, and up to 3.5 times Adjusted EBITDA at the Charter Operating level. Charter's leverage ratio was 4.5 times Adjusted EBITDA as of December 31, 2019. As Adjusted EBITDA grows, we expect to increase the total amount of our indebtedness to maintain leverage within Charter's target leverage range. During the years ended December 31, 2019 and 2018, Charter purchased approximately 16.7 million and 14.1 million shares, respectively, of Charter Class A common stock for approximately $6.7 billion and $4.3 billion, respectively.

In December 2017, Charter and A/N entered into an amendment to the letter agreement (the "Letter Agreement") that requires A/N to sell to Charter or to Charter Holdings, on a monthly basis, a number of shares of Charter Class A common stock or Charter Holdings common units that represents a pro rata participation by A/N and its affiliates in any repurchases of shares of Charter Class A common stock from persons other than A/N effected by Charter during the immediately preceding calendar month, at a purchase price equal to the average price paid by Charter for the shares repurchased from persons other than A/N during such immediately preceding calendar month. A/N and Charter both have the right to terminate or suspend the pro rata repurchase

arrangement on a prospective basis. Charter Holdings purchased from A/N 2.3 million and 2.1 million Charter Holdings common units at an average price per unit of $388.72 and $308.90, or $885 million and $656 million, during the years ended December 31, 2019 and 2018, respectively.

As of December 31, 2019, Charter had remaining board authority to purchase an additional $1.4 billion of Charter's Class A common stock and/or Charter Holdings common units. Although Charter expects to continue to buy back its common stock consistent with its leverage target range, Charter is not obligated to acquire any particular amount of common stock, and the timing of any purchases that may occur cannot be predicted and will largely depend on market conditions and other potential uses of capital. Purchases may include open market purchases, tender offers or negotiated transactions. To the extent such purchases occur, CCO Holdings and its subsidiaries are the primary source for funding such purchases through distributions to their parent companies.

As possible acquisitions, swaps or dispositions arise, we actively review them against our objectives including, among other considerations, improving the operational efficiency, geographic clustering of assets, product development or technology capabilities of our business and achieving appropriate return targets, and we may participate to the extent we believe these possibilities present attractive opportunities. However, there can be no assurance that we will actually complete any acquisitions, dispositions or system swaps, or that any such transactions will be material to our operations or results.

Recent Events

In December 2019, CCO Holdings and CCO Holdings Capital Corp. jointly issued an additional $1.2 billion aggregate principal amount of 4.750% senior unsecured notes due 2030 at a price of 101.125% of the aggregate principal amount. The net proceeds were or will be used to pay related fees and expenses and for general corporate purposes, including distributions to our parent companies to fund buybacks of Charter Class A common stock and Charter Holdings common units as well as repaying certain indebtedness.

In December 2019, Charter Operating and Charter Communications Operating Capital Corp. jointly issued an additional $1.3 billion aggregate principal amount of 4.800% senior secured notes due 2050 at a price of 101.964% of the aggregate principal amount. The net proceeds were or will be used to pay related fees and expenses and for general corporate purposes, including distributions to our parent companies to fund buybacks of Charter Class A common stock and Charter Holdings common units as well as repaying certain indebtedness.

In addition to the debt issued in December 2019 as described above, CCO Holdings and CCO Holdings Capital Corp. jointly issued $3.35 billion aggregate principal amount of senior unsecured notes at varying rates, prices and maturity dates in 2019, and Charter Operating and Charter Communications Operating Capital Corp. jointly issued $4.75 billion aggregate principal amount of senior secured notes at varying rates, prices and maturity dates in 2019. The net proceeds were used to pay related fees and expenses and for general corporate purposes, including distributions to our parent companies to fund buybacks of Charter Class A common stock and Charter Holdings common units as well as repaying certain indebtedness.

In 2019, Charter Operating also entered into an amendment to its Credit Agreement repricing $4.5 billion of its revolving loan and $4.0 billion of term loan A to LIBOR plus 1.25% and its existing term loan B to LIBOR plus 1.75%. In addition, $4.5 billion of the revolving loan and $4.0 billion of term loan A maturities were extended to 2025 and $3.8 billion of term loan B maturities were extended to 2027.

In February 2020, CCO Holdings and CCO Holding Capital Corp. announced an offering of $1.65 billion aggregate principal amount of 4.500% senior notes due 2030. The Company expects to close the offering in February 2020 and the net proceeds will be used to pay related fees and expenses and for general corporate purposes, including repaying certain indebtedness, including repayment of all of CCO Holdings' 5.125% senior notes due 2023, 5.750% senior notes due 2023 and 5.750% senior notes due 2024, as well as to fund potential buybacks of Charter Class A common stock and Charter Holdings common units.

Free Cash Flow

Free cash flow increased $2.5 billion during the year ended December 31, 2019 compared to the corresponding prior period due to the following.

	2019 compared to 2018
Decrease in capital expenditures	$ 1,914
Increase in Adjusted EBITDA	782
Change in working capital, excluding change in accrued interest	(183)
Increase in cash paid for interest, net	(77)
Other, net	54
	$ 2,490

Free cash flow was reduced by $567 million during the year ended December 31, 2019 compared to the corresponding prior period due to mobile with impacts negatively affecting working capital, capital expenditures and Adjusted EBITDA.

Contractual Obligations

The following table summarizes our payment obligations as of December 31, 2019 under our long-term debt and certain other contractual obligations and commitments inclusive of parent company obligations and commitments, the expense of which are pushed down to us (dollars in millions).

	Payments by Period				
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Long-Term Debt Principal Payments [(a)]	$ 78,416	$ 3,777	$ 6,504	$ 8,701	$ 59,434
Long-Term Debt Interest Payments [(b)]	50,577	3,924	7,551	6,635	32,467
Finance and Operating Lease Obligations [(c)]	1,594	272	492	360	470
Programming Minimum Commitments [(d)]	276	216	49	11	—
Other [(e)]	12,658	2,536	3,034	892	6,196
	$ 143,521	$ 10,725	$ 17,630	$ 16,599	$ 98,567

(a) The table presents maturities of long-term debt outstanding as of December 31, 2019. Refer to Notes 9 and 19 to our accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data" for a description of our long-term debt and other contractual obligations and commitments.

(b) Interest payments on variable debt are estimated using amounts outstanding at December 31, 2019 and the average implied forward LIBOR rates applicable for the quarter during the interest rate reset based on the yield curve in effect at December 31, 2019. Actual interest payments will differ based on actual LIBOR rates and actual amounts outstanding for applicable periods.

(c) We lease certain facilities and equipment under noncancelable finance and operating leases. Finance lease obligations represented $95 million of total finance and operating lease obligations as of December 31, 2019. Lease and rental costs charged to expense for the years ended December 31, 2019 and 2018 were $445 million and $382 million, respectively.

(d) We pay programming fees under multi-year contracts typically based on a flat fee per customer, which may be fixed for the term, or may in some cases escalate over the term. Programming costs included in the accompanying statement of operations were approximately $11.3 billion and $11.1 billion for the years ended December 31, 2019 and 2018, respectively. Certain of our programming agreements are based on a flat fee per month or have guaranteed minimum payments. The table sets forth the aggregate guaranteed minimum commitments under our programming contracts.

(e) "Other" represents other guaranteed minimum commitments, including rights negotiated directly with content owners for distribution on company-owned channels or networks, commitments related to our role as an advertising and distribution sales agent for third party-owned channels or networks, commitments to our customer premise equipment and device vendors and contractual obligations related to third-party network augmentation.

The following items are not included in the contractual obligations table because the obligations are not fixed and/or determinable due to various factors discussed below. However, we incur these costs as part of our operations:

- We rent utility poles used in our operations. Generally, pole rentals are cancelable on short notice, but we anticipate that such rentals will recur. Rent expense incurred for pole rental attachments for the years ended December 31, 2019 and 2018 was $180 million and $171 million, respectively.
- We pay franchise fees under multi-year franchise agreements based on a percentage of revenues generated from video service per year. We also pay other franchise related costs, such as public education grants, under multi-year agreements. Franchise fees and other franchise-related costs included in the accompanying statement of operations were $750 million and $747 million for the years ended December 31, 2019 and 2018, respectively.
- We have $363 million in letters of credit, of which $36 million is secured under the Charter Operating credit facility, primarily to our various casualty carriers as collateral for reimbursement of workers' compensation, auto liability and general liability claims.
- Minimum pension funding requirements have not been presented in the table above as such amounts have not been determined beyond 2019. We made no cash contributions to the qualified pension plans in 2019; however, we are permitted to make discretionary cash contributions to the qualified pension plans in 2020. For the nonqualified pension plan, we contributed $4 million during 2019 and will continue to make contributions in 2020 to the extent benefits are paid.

See "Part I. Item 1. Business — Commitments Related to the 2016 Merger with TWC and Acquisition of Bright House" for a listing of commitments as a result of the merger with TWC and acquisition of Bright House in 2016.

Historical Operating, Investing, and Financing Activities

Cash and Cash Equivalents. We held $3.2 billion and $300 million in cash and cash equivalents as of December 31, 2019 and 2018, respectively.

Operating Activities. Net cash provided by operating activities increased $51 million during the year ended December 31, 2019 compared to the year ended December 31, 2018, primarily due to an increase in Adjusted EBITDA of $782 million offset by changes in working capital, excluding the change in accrued interest and accrued expenses related to capital expenditures, that used $708 million more cash.

Investing Activities. Net cash used in investing activities for the years ended December 31, 2019 and 2018 was $7.1 billion and $9.7 billion, respectively. The decrease in cash used was primarily due to a decrease in capital expenditures and increase in accrued expenses related to capital expenditures.

Financing Activities. Net cash used in financing activities decreased $335 million during the year ended December 31, 2019 compared to the year ended December 31, 2018 primarily due to an increase in the amount by which borrowings of long-term debt exceeded repayments offset by an increase in distributions to parent companies.

Capital Expenditures

We have significant ongoing capital expenditure requirements. Capital expenditures were $7.2 billion and $9.1 billion for the years ended December 31, 2019 and 2018, respectively. The decrease was primarily due to lower customer premise equipment expenditures as a result of the completion of our all-digital conversion and fewer SPP migrations, lower scalable infrastructure as a result of the completion of the roll-out of DOCSIS 3.1 technology across our footprint and lower support spending with the substantial completion of the integration of TWC and Bright House. See the table below for more details.

We currently expect 2020 cable capital expenditures to decline as a percentage of cable revenue versus 2019. The actual amount of our capital expenditures in 2020 will depend on a number of factors including further spend related to product development and growth rates of both our residential and commercial businesses.

Our capital expenditures are funded primarily from cash flows from operating activities and borrowings on our credit facility. In addition, our accrued liabilities related to capital expenditures increased $55 million and decreased $470 million for the years ended December 31, 2019 and 2018, respectively.

The following tables present our major capital expenditures categories in accordance with National Cable and Telecommunications Association ("NCTA") disclosure guidelines for the years ended December 31, 2019 and 2018. These disclosure guidelines are not required disclosures under GAAP, nor do they impact our accounting for capital expenditures under GAAP (dollars in millions):

	Year ended December 31,	
	2019	2018
Customer premise equipment [(a)]	$ 2,070	$ 3,124
Scalable infrastructure [(b)]	1,439	2,227
Line extensions [(c)]	1,444	1,373
Upgrade/rebuild [(d)]	634	704
Support capital [(e)]	1,608	1,681
Total capital expenditures	$ 7,195	$ 9,109
Capital expenditures included in total related to:		
Commercial services	$ 1,314	$ 1,313
All-digital transition	$ —	$ 344
Mobile	$ 432	$ 242

(a) Customer premise equipment includes costs incurred at the customer residence to secure new customers and revenue generating units, including customer installation costs and customer premise equipment (e.g., set-top boxes and cable modems).

(b) Scalable infrastructure includes costs not related to customer premise equipment, to secure growth of new customers and revenue generating units, or provide service enhancements (e.g., headend equipment).

(c) Line extensions include network costs associated with entering new service areas (e.g., fiber/coaxial cable, amplifiers, electronic equipment, make-ready and design engineering).

(d) Upgrade/rebuild includes costs to modify or replace existing fiber/coaxial cable networks, including betterments.

(e) Support capital includes costs associated with the replacement or enhancement of non-network assets due to technological and physical obsolescence (e.g., non-network equipment, land, buildings and vehicles).

Debt

As of December 31, 2019, the accreted value of our total debt was approximately$79.1 billion, as summarized below (dollars in millions):

	December 31, 2019			
	Principal Amount	Accreted Value [(a)]	Interest Payment Dates	Maturity Date [(b)]
CCO Holdings, LLC:				
5.250% senior notes due 2022	$ 1,250	$ 1,241	3/30 & 9/30	9/30/2022
5.125% senior notes due 2023	1,000	995	2/15 & 8/15	2/15/2023
4.000% senior notes due 2023	500	497	3/1 & 9/1	3/1/2023
5.125% senior notes due 2023	1,150	1,145	5/1 & 11/1	5/1/2023
5.750% senior notes due 2023	500	497	3/1 & 9/1	9/1/2023
5.750% senior notes due 2024	150	149	1/15 & 7/15	1/15/2024
5.875% senior notes due 2024	1,700	1,690	4/1 & 10/1	4/1/2024
5.375% senior notes due 2025	750	746	5/1 & 11/1	5/1/2025
5.750% senior notes due 2026	2,500	2,471	2/15 & 8/15	2/15/2026
5.500% senior notes due 2026	1,500	1,491	5/1 & 11/1	5/1/2026
5.875% senior notes due 2027	800	796	5/1 & 11/1	5/1/2027
5.125% senior notes due 2027	3,250	3,222	5/1 & 11/1	5/1/2027
5.000% senior notes due 2028	2,500	2,469	2/1 & 8/1	2/1/2028
5.375% senior notes due 2029	1,500	1,501	6/1 & 12/1	6/1/2029
4.750% senior notes due 2030	3,050	3,041	3/1 & 9/1	3/1/2030
Charter Communications Operating, LLC:				
3.579% senior notes due 2020	2,000	1,997	1/23 & 7/23	7/23/2020

4.464% senior notes due 2022	3,000	2,987	1/23 & 7/23	7/23/2022
Senior floating rate notes due 2024	900	902	2/1, 5/1, 8/1 & 11/1	2/1/2024
4.500% senior notes due 2024	1,100	1,093	2/1 & 8/1	2/1/2024
4.908% senior notes due 2025	4,500	4,471	1/23 & 7/23	7/23/2025
3.750% senior notes due 2028	1,000	987	2/15 & 8/15	2/15/2028
4.200% senior notes due 2028	1,250	1,240	3/15 & 9/15	3/15/2028
5.050% senior notes due 2029	1,250	1,241	3/30 & 9/30	3/30/2029
6.384% senior notes due 2035	2,000	1,982	4/23 & 10/23	10/23/2035
5.375% senior notes due 2038	800	786	4/1 & 10/1	4/1/2038
6.484% senior notes due 2045	3,500	3,467	4/23 & 10/23	10/23/2045
5.375% senior notes due 2047	2,500	2,506	5/1 & 11/1	5/1/2047
5.750% senior notes due 2048	2,450	2,391	4/1 & 10/1	4/1/2048
5.125% senior notes due 2049	1,250	1,240	1/1 & 7/1	7/1/2049
4.800% senior notes due 2050	2,800	2,798	3/1 & 9/1	3/1/2050
6.834% senior notes due 2055	500	495	4/23 & 10/23	10/23/2055
Credit facilities	10,427	10,345		Varies
Time Warner Cable, LLC:				
5.000% senior notes due 2020	1,500	1,503	2/1 & 8/1	2/1/2020
4.125% senior notes due 2021	700	711	2/15 & 8/15	2/15/2021
4.000% senior notes due 2021	1,000	1,021	3/1 & 9/1	9/1/2021
5.750% sterling senior notes due 2031 [(c)]	828	886	6/2	6/2/2031
6.550% senior debentures due 2037	1,500	1,675	5/1 & 11/1	5/1/2037
7.300% senior debentures due 2038	1,500	1,772	1/1 & 7/1	7/1/2038
6.750% senior debentures due 2039	1,500	1,713	6/15 & 12/15	6/15/2039
5.875% senior debentures due 2040	1,200	1,255	5/15 & 11/15	11/15/2040
5.500% senior debentures due 2041	1,250	1,258	3/1 & 9/1	9/1/2041
5.250% sterling senior notes due 2042 [(d)]	861	831	7/15	7/15/2042
4.500% senior debentures due 2042	1,250	1,142	3/15 & 9/15	9/15/2042
Time Warner Cable Enterprises LLC:				
8.375% senior debentures due 2023	1,000	1,148	3/15 & 9/15	3/15/2023
8.375% senior debentures due 2033	1,000	1,284	7/15 & 1/15	7/15/2033
	$ 78,416	$ 79,078		

(a) The accreted values presented in the table above represent the principal amount of the debt adjusted for original issue discount or premium at the time of sale, deferred financing costs, and, in regards to the TWC debt assumed, fair value premium adjustments as a result of applying acquisition accounting plus the accretion of those amounts to the balance sheet date. However, the amount that is currently payable if the debt becomes immediately due is equal to the principal amount of the debt. In regards to the Sterling Notes, the principal amount of the debt and any premium or discount is remeasured into US dollars as of each balance sheet date. We have availability under our credit facilities of approximately $4.7 billion as of December 31, 2019.

(b) In general, the obligors have the right to redeem all of the notes set forth in the above table in whole or in part at their option, beginning at various times prior to their stated maturity dates, subject to certain conditions, upon the payment of the outstanding principal amount (plus a specified redemption premium) and all accrued and unpaid interest.

(c) Principal amount includes £625 million valued at $828 million as of December 31, 2019 using the exchange rate as of December 31, 2019.

(d) Principal amount includes £650 million valued at $861 million as of December 31, 2019 using the exchange rate as of December 31, 2019.

See Note 9 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data" for further details regarding our outstanding debt and other financing arrangements, including certain information about maturities, covenants and restrictions related to such debt and financing arrangements. The agreements and instruments governing our debt and financing arrangements are complicated and you should consult such agreements and instruments which are filed with the SEC for more detailed information.

At December 31, 2019, Charter Operating had a consolidated leverage ratio of approximately 2.9 to 1.0 and a consolidated first lien leverage ratio of 2.8 to 1.0. Both ratios are in compliance with the ratios required by the Charter Operating credit facilities of 5.0 to 1.0 consolidated leverage ratio and 4.0 to 1.0 consolidated first lien leverage ratio. A failure by Charter Operating to maintain the financial covenants would result in an event of default under the Charter Operating credit facilities and the debt of CCO Holdings. See "Part I. Item 1A. Risk Factors — The agreements and instruments governing our debt contain restrictions and limitations that could significantly affect our ability to operate our business, as well as significantly affect our liquidity."

Recently Issued Accounting Standards

See Note 21 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data" for a discussion of recently issued accounting standards.

Item 7A. ***Quantitative and Qualitative Disclosures About Market Risk.***

We use derivative instruments to manage foreign exchange risk on the Sterling Notes, and do not hold or issue derivative instruments for speculative trading purposes.

Cross-currency derivative instruments are used to effectively convert £1.275 billion aggregate principal amount of fixed-rate British pound sterling denominated debt, including annual interest payments and the payment of principal at maturity, to fixed-rate U.S. dollar denominated debt. The cross-currency derivative instruments have maturities of June 2031 and July 2042. We are required to post collateral on the cross-currency derivative instruments when such instruments are in a liability position. In April 2019, we entered into a collateral holiday agreement for 60% of both the 2031 and 2042 cross-currency swaps, which eliminates the requirement to post collateral for three years, as well as a ten year collateral cap on the remaining40% of the cross-currency swaps which limits the required collateral posting on that 40% of the cross-currency swaps to $150 million. The fair value of our cross-currency derivatives included in other long-term liabilities on our consolidated balance sheets was $224 million and $237 million as of December 31, 2019 and 2018, respectively. For more information, see Note 11 to the accompanying consolidated financial statements contained in "Part II. Item 8. Financial Statements and Supplementary Data."

As of December 31, 2019 and 2018, the weighted average interest rate on the credit facility debt was approximately 3.3% and 4.3%, respectively, and the weighted average interest rate on the senior notes was approximately 5.4% and 5.6%, respectively, resulting in a blended weighted average interest rate of 5.1% and 5.4%, respectively. The interest rate on approximately 86% and 85% of the total principal amount of our debt was effectively fixed as ofDecember 31, 2019 and 2018, respectively.

The table set forth below summarizes the fair values and contract terms of financial instruments subject to interest rate risk maintained by us as ofDecember 31, 2019 (dollars in millions):

	2020	2021	2022	2023	2024	Thereafter	Total	Fair Value
Debt:								
Fixed Rate	$ 3,500	$ 1,700	$ 4,250	$ 4,150	$ 2,950	$ 50,539	$ 67,089	$ 74,011
Average Interest Rate	4.19%	4.05%	4.70%	5.85%	5.36%	5.53%	5.38%	
Variable Rate	$ 277	$ 277	$ 277	$ 436	$ 1,165	$ 8,895	$ 11,327	$ 11,375
Average Interest Rate	2.94%	2.75%	2.78%	2.90%	3.16%	3.28%	3.22%	

Interest rates on variable-rate debt are estimated using the average implied forward LIBOR for the year of maturity based on the yield curve in effect at December 31, 2019 including applicable bank spread.

Item 8. ***Financial Statements and Supplementary Data.***

Our consolidated financial statements, the related notes thereto, and the reports of independent accountants are included in this annual report beginning on page F-1.

Item 9. ***Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.***

None.

Item 9A. ***Controls and Procedures.***

Conclusion Regarding the Effectiveness of Disclosure Controls and Procedures

As of the end of the period covered by this report, under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we have evaluated the effectiveness of the design and operation of disclosure controls and procedures with respect to the information generated for use in this annual report. The evaluation was based upon reports and certifications provided by a number of executives. Based on, and as of the date of that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that the disclosure controls and procedures were effective to provide reasonable assurances that information required to be disclosed in the reports we file or submit under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms.

In designing and evaluating the disclosure controls and procedures, our management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable, not absolute, assurance of achieving the desired control objectives, and management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based upon the above evaluation, we believe that our controls provide such reasonable assurances.

During the quarter ended December 31, 2019, there was no change in our internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) for the Company. Our internal control system was designed to provide reasonable assurance to our management and board of directors regarding the preparation and fair presentation of published financial statements.

Management has assessed the effectiveness of our internal control over financial reporting as ofDecember 31, 2019. In making this assessment, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in *Internal Control — Integrated Framework* (2013). Based on management's assessment utilizing these criteria we believe that, as of December 31, 2019, our internal control over financial reporting was effective.

Item 9B. ***Other Information.***

On January 28, 2020, Charter's board of directors approved an amendment to Charter's 2019 Stock Incentive Plan (the "Stock Plan") to remove the ability under the Stock Plan for Charter to effect a repricing of stock options without stockholder approval.

The foregoing summary of the amendment to the Stock Plan does not purport to be complete and is qualified in its entirety by reference to the full text of such amendment, which is included as Exhibit 10.152 hereto.

PART III

Item 14. ***Principal Accounting Fees and Services.***

Principal Accounting Firm

KPMG acted as Charter and its subsidiaries' independent registered public accounting firm since 2002, and, subject to ratification by stockholders at Charter's annual meeting, KPMG is expected to serve as our independent registered public accounting firm for 2020.

Services of Independent Registered Public Accounting Firm

Charter's Audit Committee has adopted policies and procedures requiring the pre-approval of non-audit services that may be provided by our independent registered public accounting firm. We have also complied and will continue to comply with the provisions of the Sarbanes-Oxley Act of 2002 and the related SEC rules pertaining to auditor independence and audit committee pre-approval of audit and non-audit services.

Audit Fees

During each of the years ended December 31, 2019 and 2018, we incurred fees and related expenses for professional services rendered by KPMG for the audits of Charter and its subsidiaries' financial statements (including CCO Holdings), for the review of Charter and its subsidiaries' interim financial statements (including CCO Holdings), registration statement filings and offering memoranda filings totaling approximately $8 million.

Audit-Related Fees

Charter incurred audit-related fees to KPMG of approximately $0.2 million during each of the years ended December 31, 2019 and 2018. These services were primarily related to diligence services.

Tax Fees

Charter incurred tax fees to KPMG of approximately $2 million and $1 million during the years ended December 31, 2019 and 2018, respectively.

All Other Fees

None.

Charter's Audit Committee appoints, retains, compensates and oversees the independent registered public accounting firm (subject, if applicable, to board of director and/or stockholder ratification), and approves in advance all fees and terms for the audit engagement and non-audit engagements where non-audit services are not prohibited by Section 10A of the Securities Exchange Act of 1934, as amended with respect to independent registered public accounting firms. Pre-approvals of non-audit services are sometimes delegated to a single member of Charter's Audit Committee. However, any pre-approvals made by Charter's Audit Committee's designee are presented at Charter's Audit Committee's next regularly scheduled meeting. Charter's Audit Committee has an obligation to consult with management on these matters. Charter's Audit Committee approved 100% of the KPMG fees for the years ended December 31, 2019 and 2018. Each year, including 2019, with respect to the audit engagement, Charter's Audit Committee reviews the risk assessment process in establishing the scope of examination and the reports to be rendered.

In its capacity as a committee of the board, Charter's Audit Committee oversees the work of the independent registered public accounting firm (including resolution of disagreements between management and the public accounting firm regarding financial reporting) for the purpose of preparing or issuing an audit report or performing other audit, review or attest services. The independent registered public accounting firm reports directly to Charter's Audit Committee. In performing its functions, Charter's Audit Committee undertakes those tasks and responsibilities that, in its judgment, most effectively contribute to and implement the purposes of Charter's Audit Committee charter. For more detail of Charter's Audit Committee's authority and responsibilities, see Charter's Audit Committee charter on Charter's website, www.charter.com.

PART IV

Item 15. ***Exhibits and Financial Statement Schedules.***

(a) The following documents are filed as part of this annual report:

(1) Financial Statements.

A listing of the financial statements, notes and reports of independent public accountants required by "Part II. Item 8. Financial Statements and Supplementary Data" begins on page F-1 of this annual report.

(2) Financial Statement Schedules.

No financial statement schedules are required to be filed by Items 8 and 15(c) because they are not required or are not applicable, or the required information is set forth in the applicable financial statements or notes thereto.

(3) The index to the exhibits begins on page E-1 of this annual report.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, CCO Holdings, LLC and CCO Holdings Capital Corp. have duly caused this annual report to be signed on their behalf by the undersigned, thereunto duly authorized.

CCO HOLDINGS, LLC
Registrant

By: /s/ Kevin D. Howard
Kevin D. Howard
Executive Vice President, Chief Accounting Officer and Controller

Date: February 7, 2020

CCO HOLDINGS CAPITAL CORP.
Registrant

By: /s/ Kevin D. Howard
Kevin D. Howard
Executive Vice President, Chief Accounting Officer and Controller

Date: February 7, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of CCO Holdings, LLC and CCO Holdings Capital Corp. and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Thomas M. Rutledge Thomas M. Rutledge	Chairman, Chief Executive Officer, Director (Principal Executive Officer)	February 7, 2020
/s/ Christopher L. Winfrey Christopher L. Winfrey	Chief Financial Officer (Principal Financial Officer)	February 7, 2020
/s/ Kevin D. Howard Kevin D. Howard	Executive Vice President, Chief Accounting Officer and Controller (Principal Accounting Officer)	February 7, 2020

CHARTER COMMUNICATIONS, INC., in its sole capacity as manager of CCO Holdings, LLC

By: /s/ Kevin D. Howard
Kevin D. Howard
Executive Vice President, Chief Accounting Officer and Controller

Date: February 7, 2020

Exhibit Index

Exhibits are listed by numbers corresponding to the Exhibit Table of Item 601 in Regulation S-K.

Exhibit	Description
2.1	Agreement and Plan of Mergers, dated as of May 23, 2015, among Time Warner Cable Inc., Charter Communications, Inc., CCH I, LLC, Nina Corporation I, Inc., Nina Company II, LLC and Nina Company III, LLC (incorporated by reference to Exhibit 2.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 29, 2015 (File No. 001-33664)).
2.2	Contribution Agreement, dated March 31, 2015, by and among Advance/Newhouse Partnership, A/NPC Holdings LLC, Charter Communications, Inc., CCH I, LLC, and Charter Communications Holding Company, LLC (incorporated by reference to Exhibit 2.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 1, 2015 (File No. 001-33664)).
3.1	Certificate of Formation of CCO Holdings, LLC (incorporated by reference to Exhibit 3.1 to the registration statement on Form S-4 of CCO Holdings, LLC and CCO Holdings Capital Corporation filed on February 6, 2004 (File No. 333-112593)).
3.2	By-laws of CCO Holdings Capital Corp. (incorporated by reference to Exhibit 3.6 to the registration statement on Form S-4 of CCO Holdings, LLC and CCO Holdings Capital Corporation filed on February 6, 2004 (File No. 333-112593))
3.3	Amended and Restated Limited Liability Company Agreement of CCO Holdings, LLC (incorporated by reference to Exhibit 3.3 to the quarterly report on Form 10-Q of CCO Holdings, LLC and CCO Holdings Capital Corporation filed on August 15, 2016 (File No. 001-37789)).
4.1(a)	Amended and Restated Stockholders Agreement, dated March 31, 2015, by and among Charter Communications, Inc., Liberty Broadband Corporation and Advance/Newhouse Partnership (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 1, 2015 (File No. 001-33664)).
4.1(b)	Second Amended and Restated Stockholders Agreement, dated May 23, 2015, by and among Charter Communications, Inc., CCH I, LLC, Liberty Broadband Corporation and Advance/Newhouse Partnership (incorporated by reference to Annex C to the registration statement on Form S-4 filed by CCH I, LLC on June 26, 2015 (File No. 333-205240)).
10.1	Indenture dated as of May 10, 2011, by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K of Charter Communications, Inc. filed on May 16, 2011 (File No. 001-33664)).
10.2	Third Supplemental Indenture dated as of January 26, 2012 by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K of Charter Communications, Inc. filed on February 1, 2012 (File No. 001-33664))
10.3	Fourth Supplemental Indenture dated August 22, 2012 relating to the 5.25% Senior Notes due 2022 by and among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 10.1 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed on November 6, 2012 (File No. 001-33664)).
10.4	Fifth Supplemental Indenture dated December 17, 2012 relating to the 5.125% Senior Notes due 2023 by and among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 10.9 to the annual report on Form 10-K of Charter Communications, Inc. filed February 22, 2013 (File No. 001-33664)).
10.5	Sixth Supplemental Indenture relating to the 5.25% senior notes due 2021, dated as of March 14, 2013, by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed March 15, 2013 (File No. 001-33664)).
10.6	Seventh Supplemental Indenture relating to the 5.75% senior notes due 2023, dated as of March 14, 2013, by and among CCO Holdings, LLC, and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed March 15, 2013 (File No. 001-33664)).
10.7	Eighth Supplemental Indenture relating to the 5.75% senior notes due 2024, dated as of May 3, 2013, by and among CCO Holdings, LLC and CCO Holdings Capital Corp., as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 10.7 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed on May 7, 2013 (File No. 001-33664)).

10.8	Indenture dated as of November 5, 2014, by and among CCO Holdings, LLC, CCO Holdings Capital Corp. and CCOH Safari, LLC, as Issuers, Charter Communications, Inc., as Parent Guarantor, and The Bank of New York Mellon Trust Company, N.A., as Trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K of Charter Communications, Inc. filed on November 10, 2014 (File No. 001-33664)).
10.9	Third Supplemental Indenture, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.10	Fourth Supplemental Indenture, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.11	Fifth Supplemental Indenture, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.12	Exchange and Registration Rights Agreement, dated as of April 21, 2015 relating to the 5.125% Senior Notes due 2023, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.13	Exchange and Registration Rights Agreement relating to the 5.375% Senior Notes due 2025, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.14	Exchange and Registration Rights Agreement relating to the 5.875% Senior Notes due 2027, dated as of April 21, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.3 to the current report on Form 8-K filed by Charter Communications, Inc. on April 22, 2015 (File No. 001-33664)).
10.15	Indenture, dated as of July 23, 2015, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp. and CCO Safari II, LLC, as issuers, and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 27, 2015 (File No. 001-33664)).
10.16	First Supplemental Indenture, dated as of July 23, 2015, among CCO Safari II, LLC, as escrow issuer, CCH II, LLC, as limited guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on July 27, 2015 (File No. 001-33664)).
10.17	Exchange and Registration Rights Agreement, dated July 23, 2015 relating to the 3.579% Senior Secured Notes due 2020, 4.464% Senior Secured Notes due 2022, 4.908% Senior Secured Notes due 2025, 6.384% Senior Secured Notes due 2035, 6.484% Senior Secured Notes due 2045 and 6.834% Senior Secured Notes due 2055, between CCO Safari II, LLC and Goldman, Sachs & Co., Credit Suisse Securities (USA) LLC, Merrill Lynch, Pierce, Fenner & Smith Incorporated, Deutsche Bank Securities Inc. and UBS Securities LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 27, 2015 (File No. 001-33664)).
10.18	Indenture, dated as of November 20, 2015, among CCO Holdings, LLC, CCO Holdings Capital Corp. and CCOH Safari, LLC, as issuers, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on November 25, 2015 (File No. 001-33664)).
10.19	First Supplemental Indenture, dated as of November 20, 2015, between CCOH Safari, LLC, as escrow issuer, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on November 25, 2015 (File No. 001-33664)).
10.20	Exchange and Registration Rights Agreement, dated November 20, 2015 relating to the 5.750% Senior Notes due 2026, between CCOH Safari, LLC and Credit Suisse Securities (USA) LLC, Goldman, Sachs & Co., Merrill Lynch, Pierce, Fenner & Smith Incorporated, UBS Securities LLC and Deutsche Bank Securities Inc., as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on November 25, 2015 (File No. 001-33664)).

10.21	Sixth Supplemental Indenture, dated as of February 19, 2016, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 22, 2016 (File No. 001-33664)).
10.22	Exchange and Registration Rights Agreement, dated February 19, 2016, relating to the 5.875% Senior Notes due 2024, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Deutsche Bank Securities Inc., Credit Suisse Securities (USA) LLC, Goldman, Sachs & Co., Merrill Lynch, Pierce, Fenner & Smith Incorporated, UBS Securities LLC, Citigroup Global Markets Inc. and Wells Fargo Securities, LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 22, 2016 (File No. 001-33664)).
10.23	Seventh Supplemental Indenture, dated as of April 21, 2016, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 27, 2016 (File No. 001-33664)).
10.24	Exchange and Registration Rights Agreement, dated April 21, 2016, relating to the 5.500% Senior Notes due 2026, among CCO Holdings, LLC, CCO Holdings Capital Corp., Charter Communications, Inc., as guarantor, and Merrill Lynch, Pierce, Fenner & Smith Incorporated, Citigroup Global Markets Inc., Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co., UBS Securities LLC and Wells Fargo Securities, LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 27, 2016 (File No. 001-33664)).
10.25	Second Supplemental Indenture, dated as of May 18, 2016, by and among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Safari II, LLC and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.26	Third Supplemental Indenture, dated as of May 18, 2016, by and among CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.27	Second Supplemental Indenture, dated as of May 18, 2016, by and among CCO Holdings, LLC, CCO Holdings Capital Corp., CCOH Safari, LLC and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.28	Third Supplemental Indenture, dated as of February 6, 2017, among CCO Holdings, LLC, CCO Holdings Capital Corp., and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated herein by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 6, 2017 (File No. 001-33664)).
10.29	Exchange and Registration Rights Agreement, dated February 6, 2017, relating to the 5.125% Senior Notes due 2027, among CCO Holdings, LLC, CCO Holdings Capital Corp., and Merrill Lynch, Pierce, Fenner & Smith Incorporated, Citigroup Global Markets Inc., Credit Suisse Securities (USA) LLC, Deutsche Bank Securities Inc., Goldman, Sachs & Co., UBS Securities LLC, and Wells Fargo Securities, LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on February 6, 2017 (File No. 001-33664)).
10.30	Exchange and Registration Rights Agreement, dated March 29, 2017, relating to the 5.125% Senior Notes due 2027, among CCO Holdings, LLC, CCO Holdings Capital Corp., and Deutsche Bank Securities Inc., Merrill Lynch, Pierce, Fenner & Smith Incorporated, Citigroup Global Markets Inc., Credit Suisse Securities (USA) LLC, Goldman, Sachs & Co., UBS Securities LLC, and Wells Fargo Securities, LLC, as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on March 31, 2017 (File No. 001-33664)).
10.31	Fifth Supplemental Indenture, dated as of April 20, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on April 26, 2017 (File No. 001-33664)).
10.32	Exchange and Registration Rights Agreement, dated April 20, 2017, relating to the 5.125% Senior Notes due 2027, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Citigroup Global Markets Inc., as a representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 26, 2017 (File No. 001-33664)).
10.33	Exchange and Registration Rights Agreement, dated April 20, 2017, relating to the 5.375% Senior Notes due 2047, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Citigroup Global Markets Inc., as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 26, 2017 (File No. 001-33664)).

10.34	Sixth Supplemental Indenture, dated as of July 6, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on July 12, 2017 (File No. 001-33664)).
10.35	Exchange and Registration Rights Agreement, dated July 6, 2017, relating to the 3.750% Senior Notes due 2028, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 12, 2017 (File No. 001-33664)).
10.36	Exchange and Registration Rights Agreement, dated July 6, 2017, relating to the 5.375% Senior Notes due 2047, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on July 12, 2017 (File No. 001-33664)).
10.37	Fourth Supplemental Indenture, dated as of August 8, 2017, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on August 14, 2017 (File No. 001-33664)).
10.38	Exchange and Registration Rights Agreement, dated August 8, 2017, relating to the 5.000% Senior Notes due 2028, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on August 14, 2017 (File No. 001-33664)).
10.39	Seventh Supplemental Indenture, dated as of September 18, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on September 21, 2017 (File No. 001-33664)).
10.40	Exchange and Registration Rights Agreement, dated September 18, 2017, relating to the 4.200% Senior Secured Notes due 2028, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated and Citigroup Global Markets Inc., as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on September 21, 2017 (File No. 001-33664)).
10.41	Exchange and Registration Rights Agreement, dated September 18, 2017, relating to the 5.375% Senior Secured Notes due 2047, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., the guarantors party thereto and Merrill Lynch, Pierce, Fenner & Smith Incorporated and Citigroup Global Markets Inc., as representatives of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on September 21, 2017 (File No. 001-33664)).
10.42	Fifth Supplemental Indenture, dated as of October 17, 2017, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on October 20, 2017 (File No. 001-33664)).
10.43	Exchange and Registration Rights Agreement, dated October 17, 2017, relating to the 5.000% Senior Notes due 2028, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on October 20, 2017 (File No. 001-33664)).
10.44	Exchange and Registration Rights Agreement, dated October 17, 2017, relating to the 4.000% Senior Notes due 2023, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on October 20, 2017 (File No. 001-33664)).
10.45	Eighth Supplemental Indenture, dated as of December 21, 2017, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, the subsidiary guarantor parties thereto and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.5 to the current report on Form S-3 filed by Charter Communications, Inc. on December 22, 2017 (File No. 333-222241)).
10.46	Underwriting Agreement, dated as of April 3, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Citigroup Global Markets Inc. and Deutsche Bank Securities Inc., as representatives of the several underwriters named therein (incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on April 6, 2018 (File No. 001-33664)).

10.47	Ninth Supplemental Indenture, dated as of April 17, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., as issuers, CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on April 20, 2018 (File No. 001-33664)).
10.48	Underwriting Agreement, dated as of June 28, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Citigroup Global Markets Inc. and Morgan Stanley & Co. LLC, as representatives of the several underwriters named therein (incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 3, 2018 (File No. 001-33664)).
10.49	Tenth Supplemental Indenture, dated as of July 3, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., as issuers, CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on July 9, 2018 (File No. 001-33664)).
10.50	Underwriting Agreement, dated as of August 9, 2018, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Morgan Stanley & Co. LLC, as underwriter (incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on August 15, 2018 (File No. 001-33664)).
10.51	Underwriting Agreement, dated as of January 14, 2019, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Citigroup Global Markets Inc. and Deutsche Bank Securities Inc., as representatives of the several underwriters named therein (incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on January 17, 2019 (File No. 001-33664)).
10.52	Twelfth Supplemental Indenture, dated as of January 17, 2019, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., as issuers, CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.4 to the current report on Form 8-K filed by Charter Communications, Inc. on January 24, 2019 (File No. 001-33664)).
10.53	Indenture, dated as of May 23, 2019, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 30, 2019 (File No. 001-33664)).
10.54	First Supplemental Indenture, dated as of May 23, 2019, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to the current report on Form 8-K filed by Charter Communications, Inc. on May 30, 2019 (File No. 001-33664)).
10.55	Form of 5.375% Senior Notes due 2029 (incorporated by reference to Exhibit 4.3 to the current report on Form 8-K filed by Charter Communications, Inc. on May 30, 2019 (File No. 001-33664)).
10.56	Exchange and Registration Rights Agreement, dated May 23, 2019, relating to the 5.375% Senior Notes due 2029, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Deutsche Bank Securities Inc., as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 30, 2019 (File No. 001-33664)).
10.57	Underwriting Agreement, dated as of June 25, 2019, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Citigroup Global Markets Inc., J.P. Morgan Securities LLC and Morgan Stanley & Co. LLC, as representatives of the several underwriters named in Schedule I thereto (incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 1, 2019 (File No. 001-33664)).
10.58	Fourteenth Supplemental Indenture, dated as of July 10, 2019, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., as issuers, CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.5 to the current report on Form 8-K filed by Charter Communications, Inc. on July 10, 2019 (File No. 001-33664)).
10.59	Form of 5.125% Senior Secured Notes due 2049 (incorporated by reference to Exhibit 4.6 to the current report on Form 8-K filed by Charter Communications, Inc. on July 10, 2019 (File No. 001-33664)).
10.60	Exchange and Registration Rights Agreement, dated July 10, 2019, relating to the 5.375% Senior Notes due 2029, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Deutsche Bank Securities Inc., as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on July 10, 2019 (File No. 001-33664)).
10.61	Second Supplemental Indenture, dated as of October 1, 2019, among CCO Holdings, LLC, CCO Holdings Capital Corp. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 7, 2019).

10.62	Form of 4.750% Senior Notes due 2030 (incorporated by reference to Exhibit 4.3 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 7, 2019 (File No. 001-33664)).
10.63	Exchange and Registration Rights Agreement, dated October 1, 2019, relating to the 4.750% Senior Notes due 2030, among CCO Holdings, LLC, CCO Holdings Capital Corp. and BofA Securities, Inc., as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 7, 2019 (File No. 001-33664)).
10.64	Form of 4.750% Senior Notes due 2030 (incorporated by reference to Exhibit 4.3 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 30, 2019 (File No. 001-33664)).
10.65	Fifteenth Supplemental Indenture, dated as of October 24, 2019, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., as issuers, CCO Holdings, LLC, the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee and collateral agent (incorporated by reference to Exhibit 4.5 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 30, 2019 (File No. 001-33664)).
10.66	Form of 4.800% Senior Secured Notes due 2050 (incorporated by reference to Exhibit 4.6 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 30, 2019 (File No. 001-33664)).
10.67	Exchange and Registration Rights Agreement, dated October 24, 2019, relating to the 4.750% Senior Notes due 2030, among CCO Holdings, LLC, CCO Holdings Capital Corp. and BofA Securities, Inc., as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 30, 2019 (File No. 001-33664)).
10.68	Underwriting Agreement, dated as of December 2, 2019, among Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC, as parent guarantor, the subsidiary guarantors party thereto and Deutsche Bank Securities Inc., Mizuho Securities USA LLC and Morgan Stanley & Co. LLC, as representatives of the several underwriters named in Schedule I thereto (incorporated by reference to Exhibit 99.1 to the current report on Form 8-K filed by Charter Communications, Inc. on December 5, 2019 (File No. 001-33664)).
10.69	Form of 4.750% Senior Notes due 2030 (incorporated by reference to Exhibit 4.3 to the Current Report on Form 8-K filed by Charter Communications, Inc. on December 16, 2019 (File No. 001-33664)).
10.70	Form of 4.800% Senior Secured Notes due 2050 (incorporated by reference to Exhibit 4.6 to the Current Report on Form 8-K filed by Charter Communications, Inc. on December 16, 2019 (File No. 001-33664)).
10.71	Exchange and Registration Rights Agreement, dated December 16, 2019, relating to the 4.750% Senior Notes due 2030, among CCO Holdings, LLC, CCO Holdings Capital Corp. and Citigroup Global Markets, Inc., as representative of the several Purchasers (as defined therein) (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed by Charter Communications, Inc. on December 16, 2019 (File No. 001-33664)).
10.72	Indenture, dated as of April 30, 1992 (the "TWCE Indenture"), as amended by the First Supplemental Indenture, dated as of June 30, 1992, among Time Warner Entertainment Company, L.P. ("TWE"), Time Warner Companies, Inc. ("TWCI"), certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibits 10(g) and 10(h) to TWCI's current report on Form 8-K dated June 26, 1992 and filed with the SEC on July 15, 1992 (File No. 1-8637)). (P)
10.73	Second Supplemental Indenture to the TWCE Indenture, dated as of December 9, 1992, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.2 to Amendment No. 1 to TWE's Registration Statement on Form S-4 dated and filed with the SEC on October 25, 1993 (Registration No. 33-67688) (the "TWE October 25, 1993 Registration Statement")). (P)
10.74	Third Supplemental Indenture to the TWCE Indenture, dated as of October 12, 1993, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.3 to the TWE October 25, 1993 Registration Statement). (P)
10.75	Fourth Supplemental Indenture to the TWCE Indenture, dated as of March 29, 1994, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.4 to TWE's Annual Report on Form 10-K for the year ended December 31, 1993 and filed with the SEC on March 30, 1994 (File No. 1-12878)). (P)
10.76	Fifth Supplemental Indenture to the TWCE Indenture, dated as of December 28, 1994, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.5 to TWE's Annual Report on Form 10-K for the year ended December 31, 1994 and filed with the SEC on March 30, 1995 (File No. 1-12878)). (P)
10.77	Sixth Supplemental Indenture to the TWCE Indenture, dated as of September 29, 1997, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.7 to Historic TW Inc.'s ("Historic TW") Annual Report on Form 10-K for the year ended December 31, 1997 and filed with the SEC on March 25, 1998 (File No. 1-12259) (the "Time Warner 1997 Form 10-K")).

10.78	Seventh Supplemental Indenture to the TWCE Indenture, dated as of December 29, 1997, among TWE, TWCI, certain of TWCI's subsidiaries that are parties thereto and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.8 to the Time Warner 1997 Form 10-K).
10.79	Eighth Supplemental Indenture to the TWCE Indenture, dated as of December 9, 2003, among Historic TW, TWE, Warner Communications Inc. ("WCI"), American Television and Communications Corporation ("ATC"), TWC and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.10 to Time Warner Inc.'s ("Time Warner") Annual Report on Form 10-K for the year ended December 31, 2003 (File No. 1-15062)).
10.80	Ninth Supplemental Indenture to the TWCE Indenture, dated as of November 1, 2004, among Historic TW, TWE, Time Warner NY Cable Inc., WCI, ATC, TWC and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.1 to Time Warner's Quarterly Report on Form 10-Q for the quarter ended September 30, 2004 (File No. 1-15062)).
10.81	Tenth Supplemental Indenture to the TWCE Indenture, dated as of October 18, 2006, among Historic TW, TWE, TW NY Cable Holding Inc. ("TW NY"), Time Warner NY Cable LLC ("TW NY Cable"), TWC, WCI, ATC and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 4.1 to Time Warner's current report on Form 8-K dated and filed October 18, 2006 (File No. 1-15062)).
10.82	Eleventh Supplemental Indenture to the TWCE Indenture, dated as of November 2, 2006, among TWE, TW NY, TWC and The Bank of New York, as Trustee (incorporated herein by reference to Exhibit 99.1 to Time Warner's current report on Form 8-K dated and filed November 2, 2006 (File No. 1-15062)).
10.83	Twelfth Supplemental Indenture to the TWCE Indenture, dated as of September 30, 2012, among Time Warner Cable Enterprises LLC ("TWCE"), TWC, TW NY, Time Warner Cable Internet Holdings II LLC ("TWC Internet Holdings II") and The Bank of New York Mellon, as trustee, supplementing the Indenture dated April 30, 1992, as amended (incorporated herein by reference to Exhibit 4.2 to TWC's current report on Form 8-K dated September 30, 2012 and filed with the SEC on October 1, 2012 (File No. 1-33335) (the "TWC September 30, 2012 Form 8-K")).
10.84	Thirteenth Supplemental Indenture, dated as of May 18, 2016, by and among Time Warner Cable Enterprises LLC, the guarantors party thereto and The Bank of New York Mellon (formerly known as The Bank of New York), as trustee (incorporated by reference to Exhibit 4.4 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.85	Indenture, dated as of April 9, 2007 (the "TWC Indenture"), among TWC, TW NY, TWE and The Bank of New York, as trustee (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated April 4, 2007 and filed with the SEC on April 9, 2007 (File No. 1-33335) (the "TWC April 4, 2007 Form 8-K")).
10.86	First Supplemental Indenture to the TWC Indenture, dated as of April 9, 2007, among TWC, TW NY, TWE and The Bank of New York, as trustee (incorporated herein by reference to Exhibit 4.2 to the TWC April 4, 2007 Form 8-K).
10.87	Second Supplemental Indenture to the TWC Indenture, dated as of September 30, 2012, among TWC, TW NY, TWCE, TWC Internet Holdings II and The Bank of New York Mellon, as trustee, supplementing the Indenture dated April 9, 2007, as amended (incorporated herein by reference to Exhibit 4.1 to the TWC September 30, 2012 Form 8-K).
10.88	Third Supplemental Indenture, dated as of May 18, 2016, by and among Time Warner Cable Inc., TWC NewCo LLC and The Bank of New York Mellon (formerly known as The Bank of New York), as trustee (incorporated by reference to Exhibit 4.5 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.89	Fourth Supplemental Indenture, dated as of May 18, 2016, by and among TWC NewCo LLC, the guarantors party thereto and The Bank of New York Mellon (formerly known as The Bank of New York), as trustee (incorporated by reference to Exhibit 4.6 to the current report on Form 8-K filed by Charter Communications, Inc. on May 24, 2016 (File No. 001-33664)).
10.90	Form of TWC 6.55% Exchange Debentures due 2037 (included as Exhibit C to the First Supplemental Indenture incorporated herein by reference to Exhibit 4.2 to the TWC April 4, 2007 Form 8-K).
10.91	Form of TWC 7.30% Debentures due 2038 (incorporated herein by reference to Exhibit 4.3 to the TWC June 16, 2008 Form 8-K).
10.92	Form of TWC 8.75% Notes due 2019 (incorporated herein by reference to Exhibit 4.2 to TWC's current report on Form 8-K dated November 13, 2008 and filed with the SEC on November 18, 2008) (File No. 1-33335).
10.93	Form of TWC 8.25% Notes due 2019 (incorporated herein by reference to Exhibit 4.2 to TWC's current report on Form 8-K dated March 23, 2009 and filed with the SEC on March 26, 2009 (File No. 1-33335)).
10.94	Form of TWC 6.75% Debentures due 2039 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated June 24, 2009 and filed with the SEC on June 29, 2009 (File No. 1-33335)).
10.95	Form of TWC 5.0% Notes due 2020 (incorporated herein by reference to Exhibit 4.2 to the TWC December 8, 2009 Form 8-K).

10.96	Form of TWC 4.125% Notes due 2021 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated November 9, 2010 and filed with the SEC on November 15, 2010 (File No. 1-33335) (the "TWC November 9, 2010 Form 8-K")).
10.97	Form of TWC 5.875% Debentures due 2040 (incorporated herein by reference to Exhibit 4.2 to the TWC November 9, 2010 Form 8-K).
10.98	Form of TWC 5.75% Note due 2031 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated and filed with the SEC on May 26, 2011 (File No. 1-33335)).
10.99	Form of TWC 4% Note due 2021 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated September 7, 2011 and filed with the SEC on September 12, 2011 (File No. 1-33335) (the "TWC September 7, 2011 Form 8-K")).
10.100	Form of TWC 5.5% Debenture due 2041 (incorporated herein by reference to Exhibit 4.2 to the TWC September 7, 2011 Form 8-K).
10.101	Form of TWC 4.5% Debenture due 2042 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated August 7, 2012 and filed with the SEC on August 10, 2012 (File No. 1-33335)).
10.102	Form of TWC 5.25% Note due 2042 (incorporated herein by reference to Exhibit 4.1 to TWC's current report on Form 8-K dated and filed with the SEC on June 27, 2012 (File No. 1-33335)).
10.103	Form of 5.500% Senior Notes due 2026 (incorporated herein by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed April 27, 2016).
10.104	Amendment No. 5, dated as of August 24, 2015, to the Amended and Restated Credit Agreement dated as of April 11, 2012 between Charter Communications Operating, LLC, as borrower, CCO Holdings, LLC, as guarantor, and Bank of America, N.A., as administrative agent (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed on August 28, 2015 (File No. 001-33664)).
10.105	Incremental Activation Notice, dated as of August 24, 2015 delivered by Charter Communications Operating, LLC, CCO Holdings, LLC, the subsidiary guarantors party thereto, each Term H Lender party thereto to, each Term I Lender party thereto and Bank of America, N.A., as Administrative Agent under the Amended and Restated Credit Agreement, dated as of April 11, 2012 (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on August 28, 2015 (File No. 001-33664)).
10.106	Escrow Credit Agreement, dated as of August 24, 2015, between CCO Safari III, LLC, as borrower, and Bank of America, N.A., as administrative agent, and the lenders party thereto (incorporated by reference to Exhibit 10.3 to the current report on Form 8-K of Charter Communications, Inc. filed on August 28, 2015 (File No. 001-33664)).
10.107(a)	Restatement Agreement dated as of May 18, 2016, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, the subsidiary guarantors party thereto, Bank of America, N.A., as administrative agent and the lenders party thereto (incorporated by reference to Exhibit 10.5 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 (File No. 001-33664)).
10.107(b)	Amendment No. 1 dated as of December 23, 2016, to the Amended and Restated Credit Agreement dated as of March 18, 1999, as amended and restated on May 18, 2016, by and among Chart Communications Operating, LLC, CCO Holdings, LLC, the Lenders Party thereto and Bank of America, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on December 30, 2016 (File No. 001-33664)).
10.107(c)	Restatement Agreement dated as of December 21, 2017 to the Amended and Restated Credit Agreement dated as of March 18, 1999, as amended and restated on May 18, 2016, as amended by Amendment No. 1, dated as of December 23, 2016 and as further amended by that certain Incremental Activation Notice No. 1, dated as of January 19, 2017, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, the Lenders Party thereto and Bank of America, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on December 28, 2017 (File No. 001-33664)).
10.107(d)	Incremental Activation Notice, dated as of May 18, 2016, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, the subsidiary guarantors party thereto, Bank of America, N.A., as administrative agent and the lenders party thereto (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 (File No. 001-33664)).
10.108	Amendment No. 1, dated as of January 24, 2019, to (i) the Amended and Restated Credit Agreement, dated as of March 18, 1999, as amended and restated on December 21, 2017, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, certain subsidiaries of Charter Communications Operating, LLC, the lenders party thereto and Bank of America, N.A., as Administrative Agent and (ii) the Guarantee and Collateral Agreement, dated as of March 18, 1999, as amended and restated as of March 31, 2010, as further amended and restated on May 18, 2016, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, certain subsidiaries of Charter Communications Operating, LLC and Bank of America, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on January 30, 2019 (File No. 001-33664)).

10.109	Restatement Agreement, dated as of April 26 2019, to the Amended and Restated Credit Agreement, dated as of March 18, 1999, as amended and restated on December 21, 2017 and as amended by Amendment No. 1 as of January 24, 2019, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, certain subsidiaries of Charter Communications Operating, LLC, the lenders party thereto and Bank of America, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.4 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed April 30, 2019 (File No. 001-33664)).
10.110	Amendment No. 1, dated as of October 24, 2019, to the Amended and Restated Credit Agreement, dated as of March 18, 1999, as amended and restated on April 26, 2019, by and among Charter Communications Operating, LLC, CCO Holdings, LLC, certain subsidiaries of Charter Communications Operating, LLC, the lenders party thereto and Bank of America, N.A., as administrative agent (incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K filed by Charter Communications, Inc. on October 30, 2019 (File No. 001-33664)).
10.111	Collateral Agreement, dated as of May 18, 2016, by Charter Communications Operating, LLC, Charter Communications Operating Capital Corp. and the other grantors party thereto in favor of The Bank of New York Mellon Trust Company, N.A., as collateral agent (incorporated by reference to Exhibit 10.6 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 (File No. 001-33664)).
10.112	First Lien Intercreditor Agreement, dated as of May 18, 2016, by and among Charter Communications Operating, LLC, the other grantors party thereto, Bank of America, N.A., as credit agreement collateral agent for the credit agreement secured parties, The Bank of New York Mellon Trust Company, N.A., as notes collateral agent for the indenture secured parties, and each additional agent from time to time party thereto (incorporated by reference to Exhibit 10.7 to the current report on Form 8-K of Charter Communications, Inc. filed on May 24, 2016 (File No. 001-33664)).
10.113	Joinder Agreement to Registration Rights Agreement, dated as of May 18, 2016, by and among CCO Safari II, LLC, CCH II, LLC, Charter Communications Operating, LLC, Charter Communications Operating Capital Corp., CCO Holdings, LLC and the other guarantors party thereto (incorporated herein by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed May 24, 2016).
10.114	Joinder Agreement to Registration Rights Agreement, dated as of May 18, 2016, by CCO Holdings, LLC and CCO Holdings Capital Corp (incorporated herein by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed May 24, 2016).
10.115	Escrow Assumption Agreement, dated as of May 18, 2016, by and among CCO Safari III, LLC, Charter Communications Operating, LLC, Bank of America, N.A., as escrow administrative agent and Bank of America, N.A., as administrative agent (incorporated herein by reference to Exhibit 10.3 to the current report on Form 8-K of Charter Communications, Inc. filed May 24, 2016).
10.116	Amended and Restated Limited Liability Company Agreement of Charter Communications Holdings, LLC, dated as of May 18, 2016, by and among Charter Holdings, Charter, CCH II, LLC, Advance/Newhouse Partnership and the other party or parties thereto (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.117	Exchange Agreement, dated as of May 18, 2016, by and among Charter Holdings, Charter, Advance/Newhouse Partnership and the other party or parties thereto (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.118	Registration Rights Agreement, dated as of May 18, 2016, by and among Charter, Advance/Newhouse Partnership and Liberty Broadband (incorporated by reference to Exhibit 10.3 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.119	Tax Receivables Agreement, dated as of May 18, 2016, by and among Charter, Advance/Newhouse Partnership and the other party or parties thereto (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.120	Wireless Operational Cooperation Agreement dated as of May 5, 2017 between Charter Communications, Inc. and Comcast Corporation (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on May 8, 2017 (File No. 001-33664)).
10.121+	Charter Communications, Inc. Executive Bonus Plan (incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q of Charter Communications, Inc. filed on May 8, 2012 (File No. 001-33664)).
10.122+	Charter Communications, Inc. 2016 Executive Incentive Performance Plan (incorporated by reference to Appendix A to the proxy statement for the Charter Communications, Inc. 2016 Annual Meeting of Stockholders filed March 17, 2016 (File No. 001-33664)).
10.123+	Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan (incorporated by reference to Exhibit 10.6 to the Current Report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.124+	Amendment to the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan, dated as of October 25, 2016 (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K of Charter Communications, Inc. filed on October 28, 2016 (File No. 001-33664)).

10.125+	Charter Communications, Inc.'s Amended and Restated Supplemental Deferred Compensation Plan, dated as of September 1, 2011(incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on September 2, 2011 (File No. 001-33664)).
10.126+	Form of Non-Qualified Time Vesting Stock Option Agreement dated April 26, 2011(incorporated by reference to Exhibit 10.3 to the quarterly report on Form 10-Q filed by Charter Communications, Inc. on August 2, 2011 (File No. 001-33664)).
10.127+	Form of Non-Qualified Price Vesting Stock Option Agreement dated April 26, 2011(incorporated by reference to Exhibit 10.2 to the quarterly report on Form 10-Q filed by Charter Communications, Inc. on August 2, 2011 (File No. 001-33664)).
10.128+	Form of Notice of LTIP Award Agreement Changes (RSU Awards) (incorporated by reference to Exhibit 10.3 to the current report on Form 8-K filed by Charter Communications, inc. on January 22, 2014 (File No. 001-33664)).
10.129+	Form of Notice of LTIP Award Agreement Changes (Time-Vesting Option Awards) (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
10.130+	Form of Notice of LTIP Award Agreement Changes (Restricted Stock Awards) (incorporated by reference to Exhibit 10.5 to the current report on Form 8-K filed by Charter Communications, inc. on January 22, 2014 (File No. 001-33664)).
10.131+	Form of Notice of LTIP Award Agreement Changes (Performance-Vesting Option Awards) (incorporated by reference to Exhibit 10.6 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
10.132+	Form of Stock Option Agreement dated January 15, 2014 (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
10.133+	Form of Restricted Stock Unit Agreement dated January 15, 2014 (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on January 22, 2014 (File No. 001-33664)).
10.134+	Charter Communications, Inc. 2019 Stock Incentive Plan (incorporated by reference to Annex A to the proxy statement for the Charter Communications, Inc. 2019 Annual Meeting of Stockholders filed March 14, 2019 (File No. 001-33664)).
10.135+	Form of Nonqualified Stock Option Agreement under the Charter Communications, Inc. 2019 Stock Incentive Plan (incorporated by reference to Exhibit 10.2 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed July 26, 2019 (File No. 001-33664)).
10.136+	Form of Restricted Stock Unit Agreement under the Charter Communications, Inc. 2019 Stock Incentive Plan (incorporated by reference to Exhibit 10.3 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed July 26, 2019 (File No. 001-33664)).
10.137+	Form of Restricted Stock Agreement under the Charter Communications, Inc. 2019 Stock Incentive Plan (incorporated by reference to Exhibit 10.4 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed July 26, 2019 (File No. 001-33664)).
10.138(a)+	Employment Agreement between Thomas Rutledge and Charter Communications, Inc., dated as of May 17, 2016 (incorporated by reference to Exhibit 10.5 to the current report on Form 8-K of Charter Communications, Inc. filed on May 19, 2016 (File No. 001-33664)).
10.138(b)+	Time-Vesting Stock Option Agreement dated as of December 19, 2011 by and between Charter Communications, Inc. and Thomas M. Rutledge (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on December 19, 2011 (File No. 001-33664)).
10.138(c)+	Performance-Vesting Stock Option Agreement dated as of December 19, 2011 by and between Charter Communications, Inc. and Thomas M. Rutledge (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K filed by Charter Communications, Inc. on December 19, 2011 (File No. 001-33664)).
10.139(a)+	Employment Agreement dated effective as of November 2, 2016 by and between Charter Communications, Inc. and John Bickham (incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q of Charter Communications, Inc. filed on November 3, 2016 (File No. 001-33664)).
10.139(b)+	Time-Vesting Stock Option Agreement dated as of April 30, 2012 by and between Charter Communications, Inc. and John Bickham (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K filed by Charter Communications, Inc. on May 1, 2012 (File No. 001-33664)).
10.139(c)+	Performance-Vesting Stock Option Agreement dated as of April 30, 2012 by and between Charter Communications, Inc. and John Bickham (incorporated by reference to Exhibit 10.4 to the current report on Form 8-K filed by Charter Communications, Inc. on May 1, 2012 (File No. 001-33664)).
10.140+	Form of First Amended and Restated Indemnification Agreement (incorporated by reference to Exhibit 10.3 to the quarterly report on Form 10-Q of Charter Communications, Inc. filed on August 6, 2013 (File No. 001-33664)).
10.141+	Time Warner Cable Inc. 2006 Stock Incentive Plan (incorporated herein by reference to Exhibit 10.45 to TWC's current report on Form 8-K dated February 13, 2007 and filed with the SEC on February 13, 2007).

10.142+	Time Warner Cable Inc. 2006 Stock Incentive Plan, as amended, effective March 12, 2009 (incorporated herein by reference to Exhibit 10.1 to TWC's Quarterly Report on Form 10-Q for the quarter ended March 31, 2009).
10.143+	Time Warner Cable Inc. 2011 Stock Incentive Plan (incorporated herein by reference to Annex A to TWC's definitive Proxy Statement dated April 6, 2011 and filed with the SEC on April 6, 2011).
10.144+	Form of Amendment to Nonqualified Stock Option Agreements Granted Under the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan, dated as of October 25, 2016 (incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K of Charter Communications, Inc. filed on October 28, 2016 (File No. 001-33664)).
10.145+	Employment Agreement dated effective as of November 2, 2016 by and between Charter Communications, Inc. and Christopher L. Winfrey (incorporated by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q of Charter Communications, Inc. filed on November 3, 2016 (File No. 001-33664)).
10.146+	Employment Agreement dated as of November 10, 2016 by and between Charter Communications, Inc. and David Ellen (incorporated by reference to Exhibit 10.101 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on February 16, 2017 (File No. 001-33664)).
10.147+	Form of Performance-Vesting Stock Option Agreement granted to certain executive officers in 2016 under the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan (incorporated by reference to Exhibit 10.102 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on February 16, 2017 (File No. 001-33664)).
10.148+	Form of Performance-Vesting Restricted Stock Unit Agreement granted to certain executive officers in 2016 under the Charter Communications, Inc. Amended and Restated 2009 Stock Incentive Plan (incorporated by reference to Exhibit 10.103 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on February 16, 2017 (File No. 001-33664)).
10.149+	Employment Agreement between Charter Communications, Inc. and Kevin D. Howard, dated August 2, 2019 (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed by Charter Communications, Inc. on August 7, 2019 (File No. 001-33664)).
10.150	Letter Agreement, dated as of December 23, 2016, between Charter Communications, Inc. and Advance/Newhouse Partnership (incorporated by reference to Exhibit 99.1 to the Current Report on Form 8-K of Charter Communications, Inc. filed on December 28, 2016 (File No. 001-33664)).
10.151	Amendment to Letter Agreement, dated as of December 21, 2017, between Charter Communications, Inc. and Advance/Newhouse Partnership (incorporated by reference to Exhibit 99.1 to the Current Report on Form 8-K of Charter Communications, Inc. filed on December 22, 2017 (File No. 001-33664)).
10.152	Amendment to the Charter Communications, Inc. 2019 Stock Incentive Plan, dated as of January 28, 2020 (incorporated by reference to Exhibit 10.152 to the Annual Report on Form 10-K of Charter Communications, Inc. filed on January 31, 2020 (File No. 001-33664)).
23.1*	Consent of KPMG LLP.
31.1*	Certificate of Chief Executive Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) under the Securities Exchange Act of 1934.
31.2*	Certificate of Chief Financial Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) under the Securities Exchange Act of 1934.
32.1*	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (Chief Executive Officer).
32.2*	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (Chief Financial Officer).
101	The following financial information from CCO Holdings, LLC and CCO Holdings Capital Corp.'s Annual Report on Form 10-K for the year ended December 31, 2019, filed with the Securities and Exchange Commission on February 7, 2020, formatted in iXBRL (inline eXtensible Business Reporting Language) includes: (i) the Consolidated Balance Sheets; (ii) the Consolidated Statements of Operations; (iii) the Consolidated Statements of Changes in Member's Equity; (iv) the Consolidated Statements of Cash Flows; and (vi) the Notes to the Consolidated Financial Statements.
104	Cover page, formatted in iXBRL and contained in Exhibit 101.

* Filed herewith

\+ Management compensatory plan or arrangement

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Report of Independent Registered Public Accounting Firm

To the Manager and the Member of
CCO Holdings, LLC and CCO Holdings Capital Corp.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of CCO Holdings, LLC and subsidiaries (the Company) as of December 31, 2019 and 2018, the related consolidated statements of operations, changes in member's equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

Change in Accounting Principle

As discussed in Note 21 to the consolidated financial statements, the Company has changed its method of accounting for leases as of January 1, 2019 due to the adoption of Accounting Standard Codification Topic 842, *Leases*.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

(signed) KPMG LLP

We have served as the Company's auditor since 2003.

St. Louis, Missouri
February 7, 2020

CCO HOLDINGS, LLC AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(dollars in million)

	December 31,	
	2019	**2018**
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$ 3,249	$ 300
Accounts receivable, less allowance for doubtful accounts of $151 and $129, respectively	2,195	1,699
Prepaid expenses and other current assets	711	400
Total current assets	6,155	2,399
INVESTMENT IN CABLE PROPERTIES:		
Property, plant and equipment, net of accumulated depreciation of $27,595 and $23,038, respectively	33,908	34,658
Customer relationships, net	7,453	9,565
Franchises	67,322	67,319
Goodwill	29,554	29,554
Total investment in cable properties, net	138,237	141,096
OPERATING LEASE RIGHT-OF-USE ASSETS	925	—
OTHER NONCURRENT ASSETS	1,426	1,403
Total assets	$ 146,743	$ 144,898
LIABILITIES AND MEMBER'S EQUITY		
CURRENT LIABILITIES:		
Accounts payable and accrued liabilities	$ 7,958	$ 7,903
Payables to related party	298	545
Operating lease liabilities	184	—
Current portion of long-term debt	3,500	3,290
Total current liabilities	11,940	11,738
LONG-TERM DEBT	75,578	69,537
LOANS PAYABLE - RELATED PARTY	959	925
DEFERRED INCOME TAXES	55	—
LONG-TERM OPERATING LEASE LIABILITIES	788	—
OTHER LONG-TERM LIABILITIES	2,134	2,144
MEMBER'S EQUITY:		
Member's equity	55,266	60,532
Accumulated other comprehensive loss	—	(2)
Total CCO Holdings member's equity	55,266	60,530
Noncontrolling interests	23	24
Total member's equity	55,289	60,554
Total liabilities and member's equity	$ 146,743	$ 144,898

The accompanying notes are an integral part of these consolidated financial statements.

CCO HOLDINGS, LLC AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(dollars in millions)

	Year Ended December 31,		
	2019	**2018**	**2017**
REVENUES	$ 45,756	$ 43,620	$ 41,578
COSTS AND EXPENSES:			
Operating costs and expenses (exclusive of items shown separately below)	29,275	27,891	26,560
Depreciation and amortization	9,911	10,307	10,579
Other operating expenses, net	111	230	444
	39,297	38,428	37,583
Income from operations	6,459	5,192	3,995
OTHER INCOME (EXPENSES):			
Interest expense, net	(3,839)	(3,579)	(3,115)
Loss on extinguishment of debt	(25)	—	(40)
Gain (loss) on financial instruments, net	(54)	(110)	69
Other pension benefits (costs), net	(69)	192	1
Other expense, net	(131)	(46)	(4)
	(4,118)	(3,543)	(3,089)
Income before income taxes	2,341	1,649	906
Income tax expense	(89)	(16)	(23)
Consolidated net income	2,252	1,633	883
Less: Net income attributable to noncontrolling interests	(1)	(1)	(1)
Net income attributable to CCO Holdings member	$ 2,251	$ 1,632	$ 882

The accompanying notes are an integral part of these consolidated financial statements.

CCO HOLDINGS, LLC AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN MEMBER'S EQUITY
(dollars in millions)

	Member's Equity	Accumulated Other Comprehensive Loss	Total CCO Holdings Member's Equity	Noncontrolling Interests	Total Member's Equity
BALANCE, December 31, 2016	$ 75,845	$ (7)	$ 75,838	$ 25	$ 75,863
Consolidated net income	882	—	882	1	883
Stock compensation expense	261	—	261	—	261
Accelerated vesting of equity awards	49	—	49	—	49
Contributions from parent	10	—	10	—	10
Distributions to parent	(13,488)	—	(13,488)	—	(13,488)
Changes in accumulated other comprehensive loss, net	—	6	6	—	6
Distributions to noncontrolling interest	—	—	—	(2)	(2)
BALANCE, December 31, 2017	63,559	(1)	63,558	24	63,582
Consolidated net income	1,632	—	1,632	1	1,633
Stock compensation expense	285	—	285	—	285
Accelerated vesting of equity awards	5	—	5	—	5
Contributions from parent	142	—	142	—	142
Distributions to parent	(5,178)	—	(5,178)	—	(5,178)
Cumulative effect of accounting changes	87	—	87	—	87
Changes in accumulated other comprehensive loss, net	—	(1)	(1)	—	(1)
Distributions to noncontrolling interest	—	—	—	(1)	(1)
BALANCE, December 31, 2018	$ 60,532	$ (2)	$ 60,530	$ 24	$ 60,554
Consolidated net income	2,251	—	2,251	1	2,252
Stock compensation expense	315	—	315	—	315
Contributions from parent	59	—	59	—	59
Distributions to parent	(7,891)	—	(7,891)	—	(7,891)
Changes in accumulated other comprehensive loss, net	—	2	2	—	2
Distributions to noncontrolling interest	—	—	—	(2)	(2)
BALANCE, December 31, 2019	$ 55,266	$ —	$ 55,266	$ 23	$ 55,289

The accompanying notes are an integral part of these consolidated financial statements.

CCO HOLDINGS, LLC AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(dollars in millions)

	Year Ended December 31,		
	2019	2018	2017
CASH FLOWS FROM OPERATING ACTIVITIES:			
Consolidated net income	$ 2,252	$ 1,633	$ 883
Adjustments to reconcile consolidated net income to net cash flows from operating activities:			
Depreciation and amortization	9,911	10,307	10,579
Stock compensation expense	315	285	261
Accelerated vesting of equity awards	—	5	49
Noncash interest income, net	(107)	(308)	(371)
Other pension (benefits) costs, net	69	(192)	(1)
Loss on extinguishment of debt	25	—	40
(Gain) loss on financial instruments, net	54	110	(69)
Deferred income taxes	57	4	7
Other, net	164	144	105
Changes in operating assets and liabilities, net of effects from acquisitions and dispositions:			
Accounts receivable	(508)	(88)	(115)
Prepaid expenses and other assets	(374)	(274)	118
Accounts payable, accrued liabilities and other	(133)	98	77
Receivables from and payables to related party	(17)	(67)	45
Net cash flows from operating activities	11,708	11,657	11,608
CASH FLOWS FROM INVESTING ACTIVITIES:			
Purchases of property, plant and equipment	(7,195)	(9,109)	(8,681)
Change in accrued expenses related to capital expenditures	55	(470)	820
Other, net	54	(100)	(132)
Net cash flows from investing activities	(7,086)	(9,679)	(7,993)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Borrowings of long-term debt	19,685	13,820	25,276
Repayments of long-term debt	(13,309)	(10,769)	(16,507)
Borrowings of loans payable - related parties	—	12	234
Payments for debt issuance costs	(103)	(29)	(111)
Contributions from parent	59	142	—
Distributions to parent	(7,891)	(5,178)	(13,488)
Distributions to noncontrolling interest	(2)	(1)	(2)
Other, net	(112)	(5)	(11)
Net cash flows from financing activities	(1,673)	(2,008)	(4,609)
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	2,949	(30)	(994)
CASH AND CASH EQUIVALENTS, beginning of period	300	330	1,324
CASH AND CASH EQUIVALENTS, end of period	$ 3,249	$ 300	$ 330
CASH PAID FOR INTEREST	$ 3,962	$ 3,865	$ 3,421
CASH PAID FOR TAXES	$ 29	$ 19	$ 22

The accompanying notes are an integral part of these consolidated financial statements.

1. Organization and Basis of Presentation

Organization

CCO Holdings, LLC (together with its subsidiaries, "CCO Holdings," or the "Company") is the second largest cable operator in the United States and a leading broadband communications services company providing video, Internet and voice services to residential and small and medium business customers. The Company also offers mobile service to residential customers and recently launched mobile service to small and medium business customers. In addition, the Company sells video and online advertising inventory to local, regional and national advertising customers and tailored communications and managed solutions to larger enterprise customers. The Company also owns and operates regional sports networks and local sports, news and community channels.

CCO Holdings is a holding company whose principal assets are the equity interests in its operating subsidiaries. CCO Holdings is a direct subsidiary of CCH I Holdings, LLC, which is an indirect subsidiary of Charter Communications, Inc. ("Charter"), Charter Communications Holdings, LLC ("Charter Holdings") and Spectrum Management Holding Company, LLC ("Spectrum Management"). All of the outstanding capital stock of CCO Holdings Capital Corp. ("CCO Holdings Capital") is owned by CCO Holdings. The consolidated financial statements include the accounts of CCO Holdings and all of its subsidiaries where the underlying operations reside. All significant intercompany accounts and transactions among consolidated entities have been eliminated. Charter, Charter Holdings and Spectrum Management have performed financing, cash management, treasury and other services for CCO Holdings on a centralized basis. Changes in member's equity in the consolidated balance sheets related to these activities have been considered cash receipts (contributions) and payments (distributions) for purposes of the consolidated statements of cash flows and are reflected in financing activities.

Basis of Presentation

The accompanying consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles ("GAAP") and the rules and regulations of the Securities and Exchange Commission (the "SEC").

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Areas involving significant judgments and estimates include capitalization of labor and overhead costs, impairments of franchises and goodwill, pension benefits and income taxes. Actual results could differ from those estimates.

Certain prior period amounts have been reclassified to conform with the 2019 presentation.

2. Summary of Significant Accounting Policies

Consolidation

The accompanying consolidated financial statements include the accounts of CCO Holdings and all entities in which CCO Holdings has a controlling interest. The noncontrolling interest on the Company's balance sheet represents the third-party interest in CV of Viera, LLP, the Company's consolidated joint venture in a small cable system in Florida. All significant intercompany accounts and transactions among consolidated entities have been eliminated in consolidation.

Cash and Cash Equivalents

The Company considers all highly liquid investments with original maturities of three months or less to be cash equivalents. These investments are carried at cost, which approximates market value.

Property, Plant and Equipment

Additions to property, plant and equipment are recorded at cost, including all material, labor and certain indirect costs associated with the construction of cable transmission and distribution facilities. While the Company's capitalization is based on specific

activities, once capitalized, costs are tracked on a composite basis by fixed asset category at the cable system level and not on a specific asset basis. For assets that are sold or retired, the estimated historical cost and related accumulated depreciation is removed. Costs associated with the placement of the customer drop to the dwelling and the placement of outlets within a dwelling along with the costs associated with the deployment of new customer premise equipment necessary to provide video, Internet or voice services are capitalized. Costs capitalized include materials, direct labor and overhead costs. The Company capitalizes direct labor and overhead using standards developed from actual costs and applicable operational data. The Company calculates standards annually (or more frequently if circumstances dictate) for items such as the labor rates, overhead rates, and the actual amount of time required to perform a capitalizable activity. Overhead costs are associated with the activities of the Company's personnel who assist in installation activities and consist of compensation and other indirect costs associated with these support functions. Indirect costs primarily include employee benefits and payroll taxes, and vehicle and occupancy costs. The costs of disconnecting service and removing customer premise equipment from a dwelling and the costs to reconnect a customer drop or to redeploy previously installed customer premise equipment are charged to operating expense as incurred. Costs for repairs and maintenance are charged to operating expense as incurred, while plant and equipment replacement, including replacement of certain components, betterments, including replacement of cable drops and outlets, are capitalized.

Depreciation is recorded using the straight-line composite method over management's estimate of the useful lives of the related assets as follows:

Cable distribution systems	8-20 years
Customer premise equipment and installations	3-8 years
Vehicles and equipment	6-21 years
Buildings and improvements	10-40 years
Furniture, fixtures and equipment	2-10 years

Asset Retirement Obligations

Certain of the Company's franchise agreements and leases contain provisions requiring the Company to restore facilities or remove equipment in the event that the franchise or lease agreement is not renewed. The Company expects to continually renew its franchise agreements and therefore cannot reasonably estimate any liabilities associated with such agreements. A remote possibility exists that franchise agreements could be terminated unexpectedly, which could result in the Company incurring significant expense in complying with restoration or removal provisions. The Company does not have any significant liabilities related to asset retirements recorded in its consolidated financial statements.

Valuation of Long-Lived Assets

The Company evaluates the recoverability of long-lived assets (e.g., property, plant and equipment and finite-lived intangible assets) to be held and used when events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Such events or changes in circumstances could include such factors as impairment of the Company's indefinite life assets, changes in technological advances, fluctuations in the fair value of such assets, adverse changes in relationships with local franchise authorities, adverse changes in market conditions or a deterioration of current or expected future operating results. If a review indicates that the carrying value of such asset is not recoverable from estimated undiscounted cash flows, the carrying value of such asset is reduced to its estimated fair value. While the Company believes that its estimates of future cash flows are reasonable, different assumptions regarding such cash flows could materially affect its evaluations of asset recoverability. No impairments of long-lived assets held for use were recorded in 2019, 2018 and 2017. For non-strategic long-lived assets held for sale and ultimately sold, the Company recorded impairments of approximately $41 million and $75 million during the years ended December 31, 2019 and 2018, respectively, to other operating expenses, net.

Leases

The primary leased asset classes of the Company include real estate, dark fiber, colocation facilities and other equipment. The lease agreements include both lease and non-lease components, which the Company accounts for separately depending on the election made for each leased asset class. For real estate and dark fiber leased asset classes, the Company accounts for lease and non-lease components as a single lease component and includes all fixed payments in the measurement of lease liabilities and

lease assets. For colocation facilities leased asset class, the Company accounts for lease and non-lease components separately including only the fixed lease payment component in the measurement of lease liabilities and lease assets.

In addition to fixed lease payments, certain of the Company's lease agreements include variable lease payments which are tied to an index or rate such as the change in the Consumer Price Index. These variable payments are not included in the measurement of the lease liabilities and lease assets.

Lease assets and lease liabilities are initially recognized based on the present value of the future lease payments over the expected lease term. As for most leases the implicit rate is not readily determinable, the Company uses a discount rate in determining the present value of future payments based on the yield-to-maturity of the Company's secured publicly traded United States dollars denominated debt instruments interpolating the duration of the debt to the term of the executed lease.

The Company's leases have base rent periods and some with optional renewal periods. Leases with base rent periods of less than 12 months are not recorded on the balance sheet. For purposes of measurement of lease liabilities, the expected lease terms may include renewal options when it is reasonably certain that the Company will exercise such options. Based on conditions of the Company's existing leases and its overall business strategies, the majority of the Company's renewal options are not reasonably certain in determining the expected lease term. The Company will periodically reassess expected lease terms (and purchase options, if applicable) based on significant triggering events or compelling economic reasons to exercise such options.

The Company's primary lease income represents sublease income on certain real estate leases. Sublease income is included in other revenue and presented gross from rent expense. For customer premise equipment ("CPE") where such CPE would qualify as a lease, the Company applies the practical expedient to combine the operating lease with the subscription service revenue as a single performance obligation in accordance with revenue recognition accounting guidance as the subscription service is the predominant component.

Other Noncurrent Assets

Other noncurrent assets primarily include investments, customer contract costs and other intangible assets. The Company accounts for its investments in less than majority owned investees under either the equity method or as equity securities. The Company applies the equity method to investments when it has the ability to exercise significant influence over the operating and financial policies of the investee. The Company's share of the investee's earnings (losses) is included in other expense, net in the consolidated statements of operations. The Company monitors its investments for indicators that a decrease in investment value has occurred that is other than temporary. If it has been determined that an investment has sustained an other than temporary decline in value, the investment is written down to fair value with a charge to earnings. Investments acquired are measured at fair value utilizing the acquisition method of accounting. The difference between the fair value and the amount of underlying equity in net assets for most equity method investments is due to previously unrecognized intangible assets at the investee. These amounts are amortized as a component of equity earnings (losses), recorded within other expense, net over the estimated useful life of the asset. Customer contract costs are deferred in other noncurrent assets for upfront costs incurred to obtain a customer contract and upfront costs to fulfill a customer contract, as further discussed below under the *Customer Contract Costs* accounting policy.

Revenue Recognition

Nature of Services

Residential Services

Residential customers are offered video, Internet, and voice services primarily on a subscription basis. Residential customers may generally cancel their subscriptions at the end of their monthly service period without penalty. Each subscription service provided is accounted for as a distinct performance obligation and revenue is recognized ratably over the monthly service period as the subscription services are delivered. Each optional service purchased is generally accounted for as a distinct performance obligation when purchased and revenue is recognized when the service is provided.

Residential video customers have the option to purchase additional tiers of services, as well as video-on-demand ("VOD") programming and pay-per-view programming on a per-event basis. Video revenues consist primarily of revenues from the selected

programming service tier, as well as VOD fees, pay-per-view fees, retransmission fees, regulatory fees, equipment service fees and video installation fees.

Residential Internet customers receive data download and upload services with speeds dependent on the selected tier of service. Customers are also offered a security suite, an in-home WiFi product, and an out-of-home WiFi service. Internet revenues consist primarily of data services, WiFi service fees and Internet installation fees.

Residential voice customers receive unlimited local and long distance calling to United States, Canada, Mexico, and Puerto Rico, voicemail, call waiting, caller ID, call forward and other features. Customers may also purchase international calling either by the minute, or through packages of minutes per month. Voice revenues consist primarily of voice services and regulatory fees.

Small and Medium Business

Small and medium business customers are offered video, Internet and voice services similar to those provided to residential customers. Small and medium business customers may generally cancel their subscriptions at the end of their monthly service period without penalty. Each subscription service provided is accounted for as a distinct performance obligation and revenue is recognized ratably over the monthly service period as the subscription services are delivered.

Enterprise

Services to enterprise clients include more tailored communications products and managed service solutions to larger businesses, as well as high-capacity last-mile data connectivity services to mobile and wireline carriers on a wholesale basis. Services are primarily offered on a subscription basis with a contractually specified and non-cancelable service period. Each subscription service provided is accounted for as a distinct performance obligation and revenue is recognized ratably over the contract period as the subscription services are delivered. Enterprise subscription services are billed as monthly recurring charges to customers and related installation services, if applicable, are billed upon completion of the customer installation. Installation services are not accounted for as distinct performance obligations, but rather a component of the connectivity services, and therefore upfront installation fees are deferred and recognized as revenue over the related contract period.

Advertising Services

The Company offers local, regional and national businesses the opportunity to advertise in individual and multiple service areas on cable television networks and digital outlets. Placement of advertising is accounted for as a distinct performance obligation and revenue is recognized at the point in time when the advertising is distributed. In some service areas, the Company has formed advertising interconnects or entered into representation agreements with other video distributors, under which the Company sells advertising on behalf of those distributors. In other service areas, the Company has entered into representation agreements under which another operator in the area will sell advertising on the Company's behalf. For representation arrangements in which the Company controls the sale of advertising and acts as the principal to the transaction, the Company recognizes revenue earned from the advertising customer on a gross basis and the amount remitted to the distributor as an operating expense. For other representation arrangements in which the Company does not control the sale of advertising and acts as an agent to the transaction, the Company recognizes revenue net of any fee remitted to the distributor.

Mobile

We also offer mobile service to residential customers and recently launched mobile service to small and medium business customers. Mobile services are sold under an unlimited data plan or a by-the-gig data usage plan and revenue is recognized ratably over the monthly service period as the services are delivered. Customers can purchase mobile equipment, including devices and accessory products, and have the option to pay for devices under interest-free monthly installment plans. The sale of equipment is a separate performance obligation. Revenue is recognized from the sale of equipment upon delivery and acceptance by the customer, as this is when control passes to the customer.

The Company's revenues by product line are as follows:

	Year Ended December 31,		
	2019	2018	2017
Video	$ 17,607	$ 17,348	$ 16,621
Internet	16,667	15,181	14,101
Voice	1,920	2,114	2,542
Residential revenue	36,194	34,643	33,264
Small and medium business	3,868	3,665	3,547
Enterprise	2,556	2,528	2,373
Commercial revenue	6,424	6,193	5,920
Advertising sales	1,568	1,785	1,510
Mobile	726	106	—
Other	844	893	884
	$ 45,756	$ 43,620	$ 41,578

Fees imposed on the Company by various governmental authorities are passed through on a monthly basis to the Company's customers and are periodically remitted to authorities. Fees of $1.1 billion, $1.0 billion and $961 million for the years ended December 31, 2019, 2018 and 2017, respectively, are reported in video, voice, mobile and commercial revenues, on a gross basis with a corresponding operating expense because the Company is acting as a principal. Certain taxes, such as sales taxes imposed on the Company's customers, collected and remitted to state and local authorities, are recorded on a net basis because the Company is acting as an agent in such situations.

A significant portion of our revenue is derived from customers who may generally cancel their monthly subscriptions at any time without penalty. As such, the amount of revenue related to unsatisfied performance obligations is not necessarily indicative of the future revenue to be recognized from our existing customer base. Revenue from customers with a contractually specified term and non-cancelable service period will be recognized over the term of such contracts, which is generally two to seven years for our enterprise contracts with a weighted average term of approximately three years.

Significant Judgments in Evaluating Revenue Recognition

The Company often provides multiple services to a customer. Provision of customer premise equipment, installation services, and additional service tiers may have a significant level of integration and interdependency with the subscription video, Internet, voice, or connectivity services provided. Judgment is required to determine whether provision of customer premise equipment, installation services, and additional service tiers are considered distinct and accounted for separately, or not distinct and accounted for together with the subscription services.

Allocation of the transaction price to the distinct performance obligations in bundled residential service subscriptions requires judgment. The transaction price for a bundle of residential services is frequently less than the sum of the standalone selling prices of each individual service. The Company allocates the residential services bundle discount among the services to which the discount relates based on the relative standalone selling prices of those services. Standalone selling prices for the Company's residential video and Internet services are directly observable, while standalone selling price for the Company's residential voice service is estimated using the adjusted market assessment approach which relies upon information from peers and competitors who sell residential voice services individually.

The Company believes residential and small and medium business non-refundable upfront installation fees charged to customers result in a material right to renew the contract as such fees are not required to be paid upon subsequent renewals. The residential and small and medium business upfront fee is deferred over the period the fee remains material to the customer, which the Company has estimated to be approximately six months. Estimation of the period the fee remains material to the customer requires consideration of both quantitative and qualitative factors including average installation fee, average revenue per customer, and customer behavior, among others.

Deferred Revenue Contract Liabilities

Timing of revenue recognition may differ from the timing of invoicing to customers. Residential, small and medium business, and enterprise customers are invoiced for subscription services in advance of the service period. Deferred revenue liabilities, or contract liabilities, are recorded when the Company collects payments in advance of performing the services. Deferred revenue liabilities, or contract liabilities, are also recorded when the Company invoices customers upfront for installation services that are recognized as revenue over time. Residential and small and medium business installation revenues are deferred over the period the fee remains material to the customer. Enterprise installation revenues are deferred using a portfolio approach over the average contract life of each enterprise service category. As of December 31, 2019 and 2018, current deferred revenue liabilities consisting of customer prepayments of$366 million and $410 million, respectively, and upfront installation fees of $94 million and $84 million, respectively, were included in accounts payable and accrued liabilities. As of December 31, 2019 and 2018, long-term deferred revenue liabilities consisting of enterprise upfront installation fees of$34 million were included in other long-term liabilities.

Customer Contract Costs

The Company recognizes an asset for incremental costs of obtaining a contract with a customer if the amortization period of those costs is expected to be longer than one year and the costs are expected to be recovered. Enterprise sales commission costs meet the requirements to be deferred and, as a result, are recognized using a portfolio approach over a commission expense weighted-average enterprise contract period. Deferred enterprise commission costs are included in other noncurrent assets in the consolidated balance sheet and totaled $143 million and $142 million as of December 31, 2019 and 2018, respectively. As the amortization period of residential and small and medium business commissions costs is less than one year, the Company applies the practical expedient that allows such costs to be expensed as incurred. The Company has determined that the amortization period associated with residential and small and medium business commission costs is less than one year based on qualitative and quantitative factors.

The Company recognizes an asset for costs incurred to fulfill a contract when those costs are directly related to services provided under the contract, generate or enhance resources of the entity that will be used in performing service obligations under the contract, and are expected to be recovered. Right-of-entry costs represent upfront costs incurred related to agreements entered into with multiple dwelling units ("MDUs") including landlords, real estate companies or owners to gain access to a building in order to market and service customers who reside in the building. Right-of-entry costs meet the requirements to be deferred and, as a result, are recognized over the term of the contracts. Deferred right-of-entry costs are included in other noncurrent assets in the consolidated balance sheet and totaled $284 million and $273 million as of December 31, 2019 and 2018, respectively. Amortization expense of $67 million and $62 million was included in regulatory, connectivity and produced content within operating costs and expenses in the consolidated statements of operations for the year ended December 31, 2019 and 2018, respectively. Residential and small and medium business installation costs not capitalized into property, plant and equipment are expensed as incurred under cable industry-specific guidance.

Programming Costs

The Company has various contracts to obtain video programming from vendors whose compensation is typically based on a flat fee per customer. The cost of the right to exhibit network programming under such arrangements is recorded in operating expenses in the month the programming is available for exhibition. Programming costs are paid each month based on calculations performed by the Company and are subject to periodic audits performed by the programmers. Certain programming contracts contain cash and non-cash consideration from the programmers. If consideration received does not relate to a separate product or service, the Company recognizes the consideration on a straight-line basis over the life of the programming agreement as a reduction of programming expense. Programming costs included in the statements of operations were $11.3 billion, $11.1 billion and $10.6 billion for the years ended December 31, 2019, 2018 and 2017, respectively.

Advertising Costs

Advertising costs associated with marketing the Company's products and services are generally expensed as costs are incurred.

Multiple-Element Transactions

In the normal course of business, the Company enters into multiple-element transactions where it is simultaneously both a customer and a vendor with the same counterparty or in which it purchases multiple products and/or services, or settles outstanding items

contemporaneous with the purchase of a product or service from a single counterparty. Transactions, although negotiated contemporaneously, may be documented in one or more contracts. The Company's policy for accounting for each transaction negotiated contemporaneously is to record each element of the transaction based on the respective estimated fair values of the products or services purchased and the products or services sold. In determining the fair value of the respective elements, the Company refers to quoted market prices (where available), historical transactions or comparable cash transactions. Cash consideration received from a vendor is recorded as a reduction in the price of the vendor's product unless (i) the consideration is for the reimbursement of a specific, incremental, identifiable cost incurred, in which case the cash consideration received would be recorded as a reduction in such cost (e.g., marketing costs), or (ii) an identifiable benefit in exchange for the consideration is provided, in which case revenue would be recognized for this element.

Stock-Based Compensation

Restricted stock, restricted stock units, stock options as well as equity awards with market conditions are measured at the grant date fair value and amortized to stock compensation expense over the requisite service period. The fair value of options is estimated on the date of grant using the Black-Scholes option-pricing model and the fair value of equity awards with market conditions is estimated on the date of grant using Monte Carlo simulations. The grant date weighted average assumptions used during the years ended December 31, 2019, 2018 and 2017, respectively, were: risk-free interest rate of 2.5%, 2.4% and 1.8%; expected volatility of 27%, 25% and 25%; and expected lives of 4.9 years, 5.1 years and 4.6 years. The Company's volatility assumptions represent management's best estimate and were based on historical volatility of Charter. Expected lives were estimated using historical exercise data. The valuations assume no dividends are paid. The Company has elected an accounting policy to assume zero forfeitures for stock awards grants and account for forfeitures when they occur.

Defined Benefit Pension Plans

The Company sponsors three qualified defined benefit pension plans and one nonqualified defined benefit pension plan that provide pension benefits to a majority of employees who were employed by Time Warner Cable Inc. ("TWC") before the merger with TWC. Pension benefits are based on formulas that reflect the employees' years of service and compensation during their employment period. Actuarial gains or losses are changes in the amount of either the benefit obligation or the fair value of plan assets resulting from experience different from that assumed or from changes in assumptions. The Company has elected to follow a mark-to-market pension accounting policy for recording the actuarial gains or losses annually during the fourth quarter, or earlier if a remeasurement event occurs during an interim period.

Income Taxes

CCO Holdings is a single member limited liability company not subject to income tax. CCO Holdings holds all operations through indirect subsidiaries. The majority of these indirect subsidiaries are limited liability companies that are not subject to income tax. Certain indirect subsidiaries that are required to file separate returns are subject to federal and state tax. CCO Holdings' tax provision reflects the tax provision of the entities required to file separate returns. The Company recognizes deferred tax assets and liabilities for temporary differences between the financial reporting basis and the tax basis of these indirect subsidiaries' assets and liabilities and expected benefits of utilizing loss carryforwards. The impact on deferred taxes of changes in tax rates and tax law, if any, applied to the years during which temporary differences are expected to be settled, are reflected in the consolidated financial statements in the period of enactment. See Note 16.

Charter is subject to income taxes. Accordingly, in addition to the Company's deferred tax liabilities, Charter has recorded net deferred tax liabilities of approximately $17.7 billion and $17.4 billion as December 31, 2019 and 2018, respectively, related to their investment in Charter Holdings, net of loss carryforwards, which is not reflected at the Company.

Segments

The Company's operations are managed and reported to its Chief Executive Officer ("CEO"), the Company's chief operating decision maker, on a consolidated basis. The CEO assesses performance and allocates resources based on the consolidated results of operations. Under this organizational and reporting structure, the Company has one reportable segment, cable services.

3. Allowance for Doubtful Accounts

Activity in the allowance for doubtful accounts is summarized as follows for the years presented:

	Year Ended December 31,		
	2019	2018	2017
Balance, beginning of period	$ 129	$ 113	$ 124
Charged to expense	659	570	469
Uncollected balances written off, net of recoveries	(637)	(554)	(480)
Balance, end of period	$ 151	$ 129	$ 113

4. Property, Plant and Equipment

Property, plant and equipment consists of the following as of December 31, 2019 and 2018:

	December 31,	
	2019	2018
Cable distribution systems	$ 31,542	$ 29,249
Customer premise equipment and installations	17,492	17,241
Vehicles and equipment	1,843	1,688
Buildings and improvements	4,135	3,893
Furniture, fixtures and equipment	6,491	5,625
	61,503	57,696
Less: accumulated depreciation	(27,595)	(23,038)
	$ 33,908	$ 34,658

The Company periodically evaluates the estimated useful lives used to depreciate its assets and the estimated amount of assets that will be abandoned or have minimal use in the future. A significant change in assumptions about the extent or timing of future asset retirements, or in the Company's use of new technology and upgrade programs, could materially affect future depreciation expense.

Depreciation expense for the years ended December 31, 2019, 2018 and 2017 was $7.8 billion, $7.9 billion, and $7.8 billion, respectively.

5. Franchises, Goodwill and Other Intangible Assets

Franchise rights represent the value attributed to agreements or authorizations with local and state authorities that allow access to homes in cable service areas. For valuation purposes, they are defined as the future economic benefits of the right to solicit and service potential customers (customer marketing rights), and the right to deploy and market new services to potential customers (service marketing rights).

Management estimates the fair value of franchise rights at the date of acquisition and determines if the franchise has a finite life or an indefinite life. The Company has concluded that all of its franchises qualify for indefinite life treatment given that there are no legal, regulatory, contractual, competitive, economic or other factors which limit the period over which these rights will contribute to the Company's cash flows. The Company reassesses this determination periodically or whenever events or substantive changes in circumstances occur.

All franchises are tested for impairment annually or more frequently as warranted by events or changes in circumstances. Franchise assets are aggregated into essentially inseparable units of accounting to conduct valuations. The units of accounting generally represent geographical clustering of the Company's cable systems into groups. The Company assesses qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not that an indefinite

lived intangible asset has been impaired. If, after this optional qualitative assessment, the Company determines that it is not more likely than not that an indefinite lived intangible asset has been impaired, then no further quantitative testing is necessary. In completing the qualitative impairment testing, the Company evaluates a multitude of factors that affect the fair value of our franchise assets. Examples of such factors include environmental and competitive changes within our operating footprint, actual and projected operating performance, the consistency of our operating margins, equity and debt market trends, including changes in our market capitalization, and changes in our regulatory and political landscape, among other factors. The Company performed a qualitative assessment in 2019, which also included consideration of a fair value appraisal performed for tax purposes in the beginning of 2019 as of a December 31, 2018 valuation date (the "Appraisal"). After consideration of the qualitative factors in 2019, including the results of the Appraisal, the Company concluded that it is more likely than not that the fair value of the franchise assets in each unit of accounting exceeds the carrying value of such assets and therefore did not perform a quantitative analysis at the assessment date. Periodically, the Company will elect to perform a quantitative analysis for impairment testing. If the Company elects or is required to perform a quantitative analysis to test its franchise assets for impairment, the methodology described below is utilized.

If a quantitative analysis is performed, the estimated fair value of franchises is determined utilizing an income approach model based on the present value of the estimated discrete future cash flows attributable to each of the intangible assets identified assuming a discount rate. The fair value of franchises is determined based on estimated discrete discounted future cash flows using assumptions consistent with internal forecasts. The franchise after-tax cash flow is calculated as the after-tax cash flow generated by the potential customers obtained. The sum of the present value of the franchises' after-tax cash flow in years 1 through 10 and the continuing value of the after-tax cash flow beyond year 10 yields the fair value of the franchises.

This approach makes use of unobservable factors such as projected revenues, expenses, capital expenditures, customer trends, and a discount rate applied to the estimated cash flows. The determination of the franchise discount rate is derived from the Company's weighted average cost of capital, which uses a market participant's cost of equity and after-tax cost of debt and reflects the risks inherent in the cash flows. The Company estimates discounted future cash flows using reasonable and appropriate assumptions including among others, penetration rates; revenue growth rates; operating margins; and capital expenditures. The assumptions are based on the Company's and its peers' historical operating performance adjusted for current and expected competitive and economic factors surrounding the cable industry. The estimates and assumptions made in the Company's valuations are inherently subject to significant uncertainties, many of which are beyond its control, and there is no assurance that these results can be achieved. The primary assumptions for which there is a reasonable possibility of the occurrence of a variation that would significantly affect the measurement value include the assumptions regarding revenue growth, programming expense growth rates, the amount and timing of capital expenditures, actual customer trends and the discount rate utilized.

The Company has determined that it has one reporting unit for purposes of the assessment of goodwill impairment. The fair value of the reporting unit is determined using both an income approach and market approach. The Company's income approach model used for its reporting unit valuation is consistent with that used for its franchise valuation noted above except that cash flows from the entire business enterprise are used for the reporting unit valuation. The Company's market approach model estimates the fair value of the reporting unit based on market prices in actual precedent transactions of similar businesses and market valuations of guideline public companies. Goodwill is tested for impairment as of November 30 of each year, or more frequently as warranted by events or changes in circumstances. Accounting guidance also permits an optional qualitative assessment for goodwill to determine whether it is more likely than not that the carrying value of a reporting unit exceeds its fair value. If, after this qualitative assessment, the Company determines that it is not more likely than not that the fair value of a reporting unit is less than its carrying amount then no further quantitative testing would be necessary. A quantitative assessment is performed if the qualitative assessment results in a more likely than not determination or if a qualitative assessment is not performed. The quantitative assessment considers whether the carrying amount of a reporting unit exceeds its fair value, in which case an impairment charge is recorded to the extent the reporting unit's carrying value exceeds its fair value. As with the Company's franchise impairment testing, in 2019 the Company elected to perform a qualitative goodwill impairment assessment, which incorporated the results of the Appraisal and consideration of the same qualitative factors relevant to the Company's franchise impairment testing. As a result of that assessment, the Company concluded that goodwill is not impaired.

Customer relationships are recorded at fair value as of the date acquired less accumulated amortization. Customer relationships, for valuation purposes, represent the value of the business relationship with existing customers, and are calculated by projecting the discrete future after-tax cash flows from these customers, including the right to deploy and market additional services to these customers. The present value of these after-tax cash flows yields the fair value of the customer relationships. The use of different valuation assumptions or definitions of franchises or customer relationships, such as our inclusion of the value of selling additional services to our current customers within customer relationships versus franchises, could significantly impact our valuations and

any resulting impairment. Customer relationships are amortized on an accelerated sum of years' digits method over useful lives of 8-15 years based on the period over which current customers are expected to generate cash flows. The Company periodically evaluates the remaining useful lives of its customer relationships to determine whether events or circumstances warrant revision to the remaining periods of amortization. Customer relationships are evaluated for impairment upon the occurrence of events or changes in circumstances indicating that the carrying amount of an asset may not be recoverable. Customer relationships are deemed impaired when the carrying value exceeds the projected undiscounted future cash flows associated with the customer relationships. No impairment of customer relationships was recorded in the years ended December 31, 2019, 2018 or 2017.
As of December 31, 2019 and 2018, indefinite-lived and finite-lived intangible assets are presented in the following table:

	December 31,					
	2019			2018		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Indefinite-lived intangible assets:						
Franchises	$ 67,322	$ —	$ 67,322	$ 67,319	$ —	$ 67,319
Goodwill	29,554	—	29,554	29,554	—	29,554
	$ 96,876	$ —	$ 96,876	$ 96,873	$ —	$ 96,873
Finite-lived intangible assets:						
Customer relationships	$ 18,230	$ (10,777)	$ 7,453	$ 18,229	$ (8,664)	$ 9,565
Other intangible assets	405	(122)	283	409	(92)	317
	$ 18,635	$ (10,899)	$ 7,736	$ 18,638	$ (8,756)	$ 9,882

Amortization expense related to customer relationships and other intangible assets for the years ended December 31, 2019, 2018 and 2017 was $2.2 billion, $2.4 billion and $2.7 billion, respectively.

The Company expects amortization expense on its finite-lived intangible assets will be as follows.

2020	$ 1,874
2021	1,599
2022	1,329
2023	1,072
2024	821
Thereafter	1,041
	$ 7,736

Actual amortization expense in future periods could differ from these estimates as a result of new intangible asset acquisitions or divestitures, changes in useful lives, impairments, adoption of new accounting standards and other relevant factors.

6. Investments

Investments consisted of the following as of December 31, 2019 and 2018:

	December 31,	
	2019	2018
Equity-method investments	$ 280	$ 436
Other investments	4	6
Total investments	$ 284	$ 442

The Company’s equity-method investments consist of investments in companies that develop sports programming services, develop applications to improve the security, control and privacy of connected devices in homes and businesses for broadband network operators, distribute multi-video programs to national advertisers and provide programming on a video on demand, pay-per-view and subscription basis.

The Company's equity-method investments balances reflected in the table above includes differences between the acquisition date fair value of certain investments acquired and the underlying equity in the net assets of the investee, referred to as a basis difference. This basis difference is amortized as a component of equity earnings. The remaining unamortized basis difference was $183 million and $387 million as of December 31, 2019 and 2018, respectively.

The Company applies the equity method of accounting to these and other less significant equity-method investments, all of which are recorded in other noncurrent assets in the consolidated balance sheets as of December 31, 2019 and 2018. For the years ended December 31, 2019, 2018 and 2017, net losses from equity-method investments were $131 million, $46 million and $4 million, respectively, which were recorded in other expense, net in the consolidated statements of operations. Net losses from equity-method investments for the years ended December 31, 2019 and 2018 included impairments on equity investments of approximately $121 million and $38 million, respectively.

7. Accounts Payable and Accrued Liabilities

Accounts payable and accrued liabilities consist of the following as ofDecember 31, 2019 and 2018:

	December 31,	
	2019	2018
Accounts payable – trade	$ 727	$ 702
Deferred revenue	460	494
Accrued liabilities:		
Programming costs	2,042	2,044
Labor	939	705
Capital expenditures	1,441	1,472
Interest	1,052	1,045
Taxes and regulatory fees	501	508
Other	796	933
	$ 7,958	$ 7,903

8. Leases

The components of lease related expenses, net are as follows.

	Year Ended December 31, 2019	
Operating lease expense [(a)]	$	374
Finance lease expense:		
Amortization of right-of-use assets		12
Interest on lease liabilities		5
Total finance lease expense		17
Sublease income		(19)
Total lease related expenses, net	$	372

(a) Includes short-term leases and variable leases costs of $120 million for the year ended December 31, 2019.

Supplemental cash flow information related to leases is as follows.

	Year Ended December 31, 2019	
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows from operating leases	$	242
Operating cash flows from finance leases	$	4
Financing cash flows from finance leases	$	6
Right-of-use assets obtained in exchange for lease obligations:		
Operating leases	$	218
Finance leases	$	35

Supplemental balance sheet information related to leases is as follows.

	December 31, 2019
Operating leases:	
Operating lease right-of-use assets	$ 925
Current operating lease liabilities	$ 184
Long-term operating lease liabilities	788
Total operating lease liabilities	$ 972
Finance leases:	
Finance lease right-of-use assets (included within property, plant and equipment, net)	$ 172
Current finance lease liabilities (included within accounts payable and accrued liabilities)	$ 4
Long-term finance lease liabilities (included within other long-term liabilities)	58
Total finance lease liabilities	$ 62
Weighted average remaining lease term	
Operating leases	6.6 years
Finance leases	16.6 years
Weighted average discount rate	
Operating leases	4.4%
Finance leases	5.7%

Maturities of lease liabilities are as follows.

	Operating leases	Finance leases
2020	$ 226	$ 7
2021	218	6
2022	184	6
2023	159	6
2024	122	6
Thereafter	322	64
Undiscounted lease cash flow commitments	1,231	95
Reconciling impact from discounting	(259)	(33)
Lease liabilities on consolidated balance sheet as of December 31, 2019	$ 972	$ 62

The following table presents the Company's unadjusted lease commitments as of December 31, 2018 as a required disclosure for companies adopting the lease standard prospectively without revising comparative period information.

	Operating leases	Capital leases
2019	$ 233	$ 10
2020	215	9
2021	176	9
2022	142	9
2023	119	10
Thereafter	342	64
	$ 1,227	$ 111

9. Long-Term Debt

Long-term debt consists of the following as of December 31, 2019 and 2018:

	December 31,			
	2019		2018	
	Principal Amount	Accreted Value	Principal Amount	Accreted Value
CCO Holdings, LLC:				
5.250% senior notes due March 15, 2021	$ —	$ —	$ 500	$ 498
5.250% senior notes due September 30, 2022	1,250	1,241	1,250	1,238
5.125% senior notes due February 15, 2023	1,000	995	1,000	994
4.000% senior notes due March 1, 2023	500	497	500	496
5.125% senior notes due May 1, 2023	1,150	1,145	1,150	1,144
5.750% senior notes due September 1, 2023	500	497	500	497
5.750% senior notes due January 15, 2024	150	149	1,000	993
5.875% senior notes due April 1, 2024	1,700	1,690	1,700	1,688
5.375% senior notes due May 1, 2025	750	746	750	745
5.750% senior notes due February 15, 2026	2,500	2,471	2,500	2,467
5.500% senior notes due May 1, 2026	1,500	1,491	1,500	1,490
5.875% senior notes due May 1, 2027	800	796	800	795
5.125% senior notes due May 1, 2027	3,250	3,222	3,250	3,219
5.000% senior notes due February 1, 2028	2,500	2,469	2,500	2,466
5.375% senior notes due June 1, 2029	1,500	1,501	—	—
4.750% senior notes due March 1, 2030	3,050	3,041	—	—
Charter Communications Operating, LLC:				
3.579% senior notes due July 23, 2020	2,000	1,997	2,000	1,992
4.464% senior notes due July 23, 2022	3,000	2,987	3,000	2,982
Senior floating rate notes due February 1, 2024	900	902	900	903
4.500% senior notes due February 1, 2024	1,100	1,093	1,100	1,091
4.908% senior notes due July 23, 2025	4,500	4,471	4,500	4,466
3.750% senior notes due February 15, 2028	1,000	987	1,000	986
4.200% senior notes due March 15, 2028	1,250	1,240	1,250	1,240
5.050% senior notes due March 30 2029	1,250	1,241	—	—
6.384% senior notes due October 23, 2035	2,000	1,982	2,000	1,982

5.375% senior notes due April 1, 2038	800	786	800	785
6.484% senior notes due October 23, 2045	3,500	3,467	3,500	3,467
5.375% senior notes due May 1, 2047	2,500	2,506	2,500	2,506
5.750% senior notes due April 1, 2048	2,450	2,391	1,700	1,683
5.125% senior notes due July 1, 2049	1,250	1,240	—	—
4.800% senior notes due March 1, 2050	2,800	2,798	—	—
6.834% senior notes due October 23, 2055	500	495	500	495
Credit facilities	10,427	10,345	10,038	9,959
Time Warner Cable, LLC:				
8.750% senior notes due February 14, 2019	—	—	1,250	1,260
8.250% senior notes due April 1, 2019	—	—	2,000	2,030
5.000% senior notes due February 1, 2020	1,500	1,503	1,500	1,541
4.125% senior notes due February 15, 2021	700	711	700	721
4.000% senior notes due September 1, 2021	1,000	1,021	1,000	1,033
5.750% sterling senior notes due June 2, 2031 [(a)]	828	886	796	855
6.550% senior debentures due May 1, 2037	1,500	1,675	1,500	1,680
7.300% senior debentures due July 1, 2038	1,500	1,772	1,500	1,780
6.750% senior debentures due June 15, 2039	1,500	1,713	1,500	1,719
5.875% senior debentures due November 15, 2040	1,200	1,255	1,200	1,256
5.500% senior debentures due September 1, 2041	1,250	1,258	1,250	1,258
5.250% sterling senior notes due July 15, 2042 [(b)]	861	831	827	798
4.500% senior debentures due September 15, 2042	1,250	1,142	1,250	1,140
Time Warner Cable Enterprises LLC:				
8.375% senior debentures due March 15, 2023	1,000	1,148	1,000	1,191
8.375% senior debentures due July 15, 2033	1,000	1,284	1,000	1,298
Total debt	78,416	79,078	71,961	72,827
Less current portion:				
8.750% senior notes due February 14, 2019	—	—	(1,250)	(1,260)
8.250% senior notes due April 1, 2019	—	—	(2,000)	(2,030)
5.000% senior notes due February 1, 2020	(1,500)	(1,503)	—	—
3.579% senior notes due July 23, 2020	(2,000)	(1,997)	—	—
Long-term debt	$ 74,916	$ 75,578	$ 68,711	$ 69,537

(a) Principal amount includes £625 million valued at $828 million and $796 million as of December 31, 2019 and 2018, respectively, using the exchange rate at that date.

(b) Principal amount includes £650 million valued at $861 million and $827 million as of December 31, 2019 and 2018, respectively, using the exchange rate at that date.

The accreted values presented in the table above represent the principal amount of the debt adjusted for original issue discount or premium at the time of sale, deferred financing costs, and, in regards to the debt assumed in acquisitions, fair value premium adjustments as a result of applying acquisition accounting plus the accretion of those amounts to the balance sheet date. However, the amount that is currently payable if the debt becomes immediately due is equal to the principal amount of the debt. In regards to the fixed-rate British pound sterling denominated notes (the “Sterling Notes”), the principal amount of the debt and any premium or discount is remeasured into US dollars as of each balance sheet date. See Note 11. The Company has availability under the Charter Communications Operating, LLC ("Charter Operating") credit facilities of approximately $4.7 billion as of December 31, 2019.

In 2019, CCO Holdings and CCO Holdings Capital jointly issued $4.55 billion aggregate principal amount of senior unsecured notes at varying rates, prices and maturity dates, and Charter Operating and Charter Communications Operating Capital Corp.

jointly issued $6.05 billion aggregate principal amount of senior secured notes at varying rates, prices and maturity dates. The net proceeds were used to pay related fees and expenses and for general corporate purposes, including distributions to the Company's parent companies to fund buybacks of Charter Class A common stock and Charter Holdings common units as well as repaying certain indebtedness.

During the years ended December 31, 2019 and 2017, the Company repurchased $1.35 billion and $2.8 billion, respectively, of various series of senior notes. Loss on extinguishment of debt consisted of the following for the years ended December 31, 2019 and 2017.

	Year Ended December 31,	
	2019	2017
CCO Holdings notes redemption	$ (22)	$ (33)
Time Warner Cable, LLC notes redemption	—	(1)
Charter Operating credit facility refinancing	(3)	(6)
	$ (25)	$ (40)

CCO Holdings Notes

The CCO Holdings notes are senior debt obligations of CCO Holdings and CCO Holdings Capital and rank equally with all other current and future unsecured, unsubordinated obligations of CCO Holdings and CCO Holdings Capital. They are structurally subordinated to all obligations of subsidiaries of CCO Holdings.

CCO Holdings may redeem some or all of the CCO Holdings notes at any time at a premium. The optional redemption price declines to 100% of the respective series' principal amount, plus accrued and unpaid interest, if any, on or after varying dates in 2020 through 2027.

In addition, at any time prior to varying dates in 2020 through 2022, CCO Holdings may redeem up to 40% of the aggregate principal amount of certain notes at a premium plus accrued and unpaid interest to the redemption date, with the net cash proceeds of one or more equity offerings (as defined in the indenture); provided that certain conditions are met. In the event of specified change of control events, CCO Holdings must offer to purchase the outstanding CCO Holdings notes from the holders at a purchase price equal to 101% of the total principal amount of the notes, plus any accrued and unpaid interest.

High-Yield Restrictive Covenants; Limitation on Indebtedness.

The indentures governing the CCO Holdings notes contain certain covenants that restrict the ability of CCO Holdings, CCO Holdings Capital and all of their restricted subsidiaries to:

- incur additional debt;
- pay dividends on equity or repurchase equity;
- make investments;
- sell all or substantially all of their assets or merge with or into other companies;
- sell assets;
- in the case of restricted subsidiaries, create or permit to exist dividend or payment restrictions with respect to CCO Holdings, guarantee their parent companies debt, or issue specified equity interests;
- engage in certain transactions with affiliates; and
- grant liens.

The above limitations in certain circumstances regarding incurrence of debt, payment of dividends and making investments contained in the indentures of CCO Holdings permit CCO Holdings and its restricted subsidiaries to perform the above, so long as, after giving pro forma effect to the above, the leverage ratio would be below a specified level for the issuer. The leverage ratio under the indentures is 6.0 to 1.0. The leverage ratio was 4.2 as of December 31, 2019.

Charter Operating Notes

The Charter Operating notes are guaranteed by CCO Holdings and substantially all of the operating subsidiaries of Charter Operating. In addition, the Charter Operating notes are secured by a perfected first priority security interest in substantially all of the assets of Charter Operating to the extent such liens can be perfected under the Uniform Commercial Code by the filing of a financing statement and the liens rank equally with the liens on the collateral securing obligations under the Charter Operating credit facilities. Charter Operating may redeem some or all of the Charter Operating notes at any time at a premium.

The Charter Operating notes are subject to the terms and conditions of the indenture governing the Charter Operating notes. The Charter Operating notes contain customary representations and warranties and affirmative covenants with limited negative covenants. The Charter Operating indenture also contains customary events of default.

Charter Operating Credit Facilities

The Charter Operating credit facilities have an outstanding principal amount of $10.4 billion at December 31, 2019 as follows:

- term loan A-2 with a remaining principal amount of approximately $205 million, which is repayable in quarterly installments and aggregating $11 million in each loan year, with the remaining balance due at final maturity on March 31, 2023. Pricing on term loan A-2 is LIBOR plus 1.50%;
- term loan A-4 with a remaining principal amount of approximately $4.0 billion, which is repayable in quarterly installments and aggregating $202 million in each loan year, with the remaining balance due at final maturity on February 1, 2025. Pricing on term loan A-4 is LIBOR plus 1.25%;
- term loan B-1 with a remaining principal amount of approximately $2.4 billion, which is repayable in equal quarterly installments and aggregating $25 million in each loan year, with the remaining balance due at final maturity on April 30, 2025. Pricing on term loan B-1 is LIBOR plus 1.75%;
- term loan B-2 with a remaining principal amount of approximately $3.8 billion, which is repayable in equal quarterly installments and aggregating $38 million in each loan year, with the remaining balance due at final maturity on February 1, 2027. Pricing on term loan B-2 is LIBOR plus 1.75%; and
- a revolving loan allowing for borrowings of up to $4.75 billion, $249 million maturing on March 31, 2023 and $4.5 billion maturing on February 1, 2025. Pricing on the revolving loan is LIBOR plus 1.50% with a commitment fee of 0.30% on the portion maturing in 2023 and LIBOR plus 1.25% with a commitment fee of 0.20% on the portion maturing in 2025. As of December 31, 2019, $36 million of the revolving loan was utilized to collateralize a like principal amount of letters of credit out of $363 million of letters of credit issued on the Company's behalf.

Amounts outstanding under the Charter Operating credit facilities bear interest, at Charter Operating's election, at a base rate or LIBOR (1.73% and 2.50% as of December 31, 2019 and 2018, respectively), as defined, plus an applicable margin.

The Charter Operating credit facilities also allow us to enter into incremental term loans in the future, with amortization as set forth in the notices establishing such term loans. Although the Charter Operating credit facilities allow for the incurrence of a certain amount of incremental term loans subject to pro forma compliance with its financial maintenance covenants, no assurance can be given that the Company could obtain additional incremental term loans in the future if Charter Operating sought to do so or what amount of incremental term loans would be allowable at any given time under the terms of the Charter Operating credit facilities.

The obligations of Charter Operating under the Charter Operating credit facilities are guaranteed by CCO Holdings and substantially all of the operating subsidiaries of Charter Operating. The obligations are also secured by (i) a lien on substantially all of the assets of Charter Operating and its subsidiaries, to the extent such lien can be perfected under the Uniform Commercial Code by the filing of a financing statement, and (ii) a pledge by CCO Holdings of the equity interests owned by it in any of Charter Operating's subsidiaries, as well as intercompany obligations owing to it by any of such entities.

Restrictive Covenants

The Charter Operating credit facilities contain representations and warranties, and affirmative and negative covenants customary for financings of this type. The financial covenants measure performance against standards set for leverage to be tested as of the end of each quarter. The Charter Operating credit facilities contain provisions requiring mandatory loan prepayments under specific

circumstances, including in connection with certain sales of assets, so long as the proceeds have not been reinvested in the business. Additionally, the Charter Operating credit facilities provisions contain an allowance for restricted payments with certain limitations. The Charter Operating credit facilities permit Charter Operating and its subsidiaries to make distributions to pay interest on the currently outstanding subordinated and parent company indebtedness, provided that, among other things, no default has occurred and is continuing under the Charter Operating credit facilities. The Charter Operating credit facilities also contain customary events of default.

Time Warner Cable, LLC Notes and Debentures

The Time Warner Cable, LLC ("TWC, LLC") senior notes and debentures are guaranteed by CCO Holdings and substantially all of the operating subsidiaries of Charter Operating and rank equally with the liens on the collateral securing obligations under the Charter Operating notes and credit facilities. Interest on each series of TWC, LLC senior notes and debentures is payable semi-annually (with the exception of the Sterling Notes, which is payable annually) in arrears.

The TWC, LLC indenture contains customary covenants relating to restrictions on the ability of TWC, LLC or any material subsidiary to create liens and on the ability of TWC, LLC and Time Warner Cable Enterprises LLC ("TWCE") to consolidate, merge or convey or transfer substantially all of their assets. The TWC, LLC indenture also contains customary events of default.

The TWC, LLC senior notes and debentures may be redeemed in whole or in part at any time at TWC, LLC's option at a redemption price equal to the greater of (i) all of the applicable principal amount being redeemed and (ii) the sum of the present values of the remaining scheduled payments on the applicable TWC, LLC senior notes and debentures discounted to the redemption date on a semi-annual basis (with the exception of the Sterling Notes, which are on an annual basis), at a comparable government bond rate plus a designated number of basis points as further described in the indenture and the applicable note or debenture, plus, in each case, accrued but unpaid interest to, but not including, the redemption date.

The Company may offer to redeem all, but not less than all, of the Sterling Notes in the event of certain changes in the tax laws of the U.S. (or any taxing authority in the U.S.). This redemption would be at a redemption price equal to 100% of the principal amount, together with accrued and unpaid interest on the Sterling Notes to, but not including, the redemption date.

TWCE Debentures

The TWCE senior debentures are guaranteed by CCO Holdings, substantially all of the operating subsidiaries of Charter Operating and TWC, LLC and rank equally with the liens on the collateral securing obligations under the Charter Operating notes and credit facilities. Interest on each series of TWCE senior debentures is payable semi-annually in arrears. The TWCE senior debentures are not redeemable before maturity.

The TWCE indenture contains customary covenants relating to restrictions on the ability of TWCE or any material subsidiary to create liens and on the ability of TWC, LLC and TWCE to consolidate, merge or convey or transfer substantially all of their assets. The TWCE indenture also contains customary events of default.

Limitations on Distributions

Distributions by the Company's subsidiaries to a parent company for payment of principal on parent company notes are restricted under the indentures and credit facilities discussed above, unless there is no default under the applicable indenture and credit facilities, and unless each applicable subsidiary's leverage ratio test is met at the time of such distribution. As of December 31, 2019, there was no default under any of these indentures or credit facilities and each subsidiary met its applicable leverage ratio tests based on December 31, 2019 financial results. There can be no assurance that they will satisfy these tests at the time of the contemplated distribution. Distributions by Charter Operating for payment of principal on parent company (CCO Holdings) notes are further restricted by the covenants in its credit facilities.

However, without regard to leverage, during any calendar year or any portion thereof during which the borrower is a flow-through entity for tax purposes, and so long as no event of default exists, the borrower may make distributions to the equity interests of the borrower in an amount sufficient to make permitted tax payments.

In addition to the limitation on distributions under the various indentures, distributions by the Company's subsidiaries may be limited by applicable law, including the Delaware Limited Liability Company Act, under which the Company's subsidiaries may make distributions if they have "surplus" as defined in the act.

Liquidity and Future Principal Payments

The Company continues to have significant amounts of debt, and its business requires significant cash to fund principal and interest payments on its debt, capital expenditures and ongoing operations. As set forth below, the Company has significant future principal payments. The Company continues to monitor the capital markets, and it expects to undertake refinancing transactions and utilize free cash flow and cash on hand to further extend or reduce the maturities of its principal obligations. The timing and terms of any refinancing transactions will be subject to market conditions.

Based upon outstanding indebtedness as of December 31, 2019, the amortization of term loans, and the maturity dates for all senior and subordinated notes, total future principal payments on the total borrowings under all debt agreements are as follows:

Year		Amount
2020	$	3,777
2021		1,977
2022		4,527
2023		4,586
2024		4,115
Thereafter		59,434
	$	78,416

10. Loans Payable - Related Party

Loans payable - related party as of December 31, 2019 and 2018 consists of loans from Charter Communications Holding Company, LLC ("Charter Holdco") to the Company of $699 million and $674 million, respectively, and loans from Charter to the Company of $260 million and $251 million, respectively. Interest accrued on loans payable - related party at LIBOR plus 1.50% during the periods ending December 31, 2019 and 2018.

11. Accounting for Derivative Instruments and Hedging Activities

The Company uses derivative instruments to manage foreign exchange risk on the Sterling Notes, and does not hold or issue derivative instruments for speculative trading purposes.

Cross-currency derivative instruments are used to effectively convert £1.275 billion aggregate principal amount of fixed-rate British pound sterling denominated debt, including annual interest payments and the payment of principal at maturity, to fixed-rate U.S. dollar denominated debt. The cross-currency swaps have maturities of June 2031 and July 2042. The Company is required to post collateral on the cross-currency derivative instruments when the derivative contracts are in a liability position. In April 2019, the Company entered into a collateral holiday agreement for 60% of both the 2031 and 2042 cross-currency swaps, which eliminates the requirement to post collateral for three years, as well as a ten year collateral cap on the remaining 40% of the cross-currency swaps which limits the required collateral posting on that 40% of the cross-currency swaps to $150 million. The fair value of the Company's cross-currency derivatives included in other long-term liabilities on the Company's consolidated balance sheets was $224 million and $237 million as of December 31, 2019 and 2018, respectively.

The Company's derivative instruments are not designated as hedges and are marked to fair value each period, with the impact recorded as a gain or loss on financial instruments, net in the consolidated statements of operations. While these derivative instruments are not designated as hedges for accounting purposes, management continues to believe such instruments are closely correlated with the respective debt, thus managing associated risk.

The effect of financial instruments on the consolidated statements of operations is presented in the table below.

	Year Ended December 31,		
	2019	2018	2017
Gain (Loss) on Financial Instruments, Net:			
Change in fair value of cross-currency derivative instruments	$ 13	$ (212)	$ 226
Foreign currency remeasurement of Sterling Notes to U.S. dollars	(67)	102	(157)
	$ (54)	$ (110)	$ 69

12. Fair Value Measurements

Accounting guidance establishes a three-level hierarchy for disclosure of fair value measurements, based on the transparency of inputs to the valuation of an asset or liability as of the measurement date, as follows:

- Level 1 – inputs to the valuation methodology are quoted prices (unadjusted) for identical assets or liabilities in active markets.
- Level 2 – inputs to the valuation methodology include quoted prices for similar assets and liabilities in active markets, and inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the financial instrument.
- Level 3 – inputs to the valuation methodology are unobservable and significant to the fair value measurement.

Financial Assets and Liabilities

The Company has estimated the fair value of its financial instruments as ofDecember 31, 2019 and 2018 using available market information or other appropriate valuation methodologies. Considerable judgment, however, is required in interpreting market data to develop the estimates of fair value. Accordingly, the estimates presented in the accompanying consolidated financial statements are not necessarily indicative of the amounts the Company would realize in a current market exchange.

The carrying amounts of cash and cash equivalents, receivables, payables and other current assets and liabilities approximate fair value because of the short maturity of those instruments.

Financial instruments accounted for at fair value on a recurring basis and classified within Level 2 of the valuation hierarchy include the Company's cross-currency derivative instruments and were valued at $224 million and $237 million as of December 31, 2019 and 2018, respectively.

The estimated fair value of the Company's senior notes and debentures as ofDecember 31, 2019 and 2018 is based on quoted market prices in active markets and is classified within Level 1 of the valuation hierarchy, while the estimated fair value of the Company's credit facilities is based on quoted market prices in inactive markets and is classified within Level 2.

A summary of the carrying value and fair value of the Company's debt atDecember 31, 2019 and 2018 is as follows:

	December 31,			
	2019		2018	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Debt				
Senior notes and debentures	$ 68,733	$ 74,938	$ 62,868	$ 61,087
Credit facilities	$ 10,345	$ 10,448	$ 9,959	$ 9,608

Non-financial Assets and Liabilities

The Company's nonfinancial assets such as equity-method investments, franchises, property, plant, and equipment, and other intangible assets are not measured at fair value on a recurring basis; however, they are subject to fair value adjustments in certain circumstances, such as when there is evidence that an impairment may exist. When such impairments are recorded, fair values are generally classified within Level 3 of the valuation hierarchy.

13. Operating Costs and Expenses

Operating costs and expenses, exclusive of items shown separately in the consolidated statements of operations, consist of the following for the periods presented:

	Year Ended December 31,		
	2019	2018	2017
Programming	$ 11,290	$ 11,124	$ 10,596
Regulatory, connectivity and produced content	2,366	2,210	2,064
Costs to service customers	7,277	7,327	7,235
Marketing	3,044	3,042	3,036
Mobile	1,246	346	—
Other	4,052	3,842	3,629
	$ 29,275	$ 27,891	$ 26,560

Programming costs consist primarily of costs paid to programmers for basic, premium, digital, video on demand and pay-per-view programming. Regulatory, connectivity and produced content costs represent payments to franchise and regulatory authorities, costs directly related to providing video, Internet and voice services as well as payments for sports, local and news content produced by the Company. Included in regulatory, connectivity and produced content costs is content acquisition costs for the Los Angeles Lakers' basketball games and Los Angeles Dodgers' baseball games, which are recorded as games are exhibited over the applicable season. Costs to service customers include costs related to field operations, network operations and customer care for the Company's residential and small and medium business customers, including internal and third-party labor for the non-capitalizable portion of installations, service and repairs, maintenance, bad debt expense, billing and collection, occupancy and vehicle costs. Marketing costs represent the costs of marketing to current and potential commercial and residential customers including labor costs. Mobile costs represent costs associated with the Company's mobile service such as device and service costs, marketing, sales and commissions, retail stores, personnel costs, taxes, among others. Other includes corporate overhead, advertising sales expenses, indirect costs associated with the Company's enterprise business customers and regional sports and news networks, property tax and insurance expense and stock compensation expense, among others.

14. Other Operating Expenses, Net

Other operating expenses, net consist of the following for the years presented:

	Year Ended December 31,		
	2019	2018	2017
Merger and restructuring costs	$ 10	$ 97	$ 351
Special charges, net	59	48	77
Loss on sale of assets, net	42	85	16
	$ 111	$ 230	$ 444

Merger and restructuring costs

Merger and restructuring costs represent costs incurred in connection with merger and acquisition transactions and related restructuring, such as advisory, legal and accounting fees, employee retention costs and employee termination costs related to

acquisitions. Changes in accruals for merger and restructuring costs from January 1, 2017 throughDecember 31, 2019 are presented below:

	Employee Retention Costs	Employee Termination Costs	Transaction and Advisory Costs	Other Costs	Total
Liability, December 31, 2016	$ 7	$ 244	$ 25	$ —	$ 276
Costs incurred	4	226	4	68	302
Cash paid	(10)	(298)	(12)	(60)	(380)
Liability, December 31, 2017	1	172	17	8	198
Costs incurred	1	64	2	25	92
Cash paid	(1)	(179)	(8)	(27)	(215)
Liability, December 31, 2018	1	57	11	6	75
Costs incurred	—	1	8	1	10
Cash paid	(1)	(51)	(12)	(4)	(68)
Remaining liability, December 31, 2019	$ —	$ 7	$ 7	$ 3	$ 17

In addition to the costs indicated above, the Company recorded $5 million and $49 million of expense related to accelerated vesting of equity awards of terminated employees for the years ended December 31, 2018 and 2017, respectively.

Special charges, net

Special charges, net primarily includes employee termination costs not related to acquisitions and net amounts of litigation settlements. During 2018 and 2017, special charges, net also includes a $22 million and $83 million charge related to the Company's withdrawal liability from a multiemployer pension plan, respectively.

Loss on sale of assets, net

Loss on sale of assets, net represents the net loss recognized on the sales and disposals of fixed assets including a$42 million and $75 million impairment of non-strategic assets during the years ended December 31, 2019 and 2018, respectively.

15. Stock Compensation Plans

Charter's stock incentive plan provides for grants of nonqualified stock options, incentive stock options, stock appreciation rights, dividend equivalent rights, performance units and performance shares, share awards, phantom stock, restricted stock units and restricted stock. Directors, officers and other employees of the Company and its subsidiaries, as well as others performing consulting services for the Company, are eligible for grants under the stock incentive plan. The stock incentive plan allows for the issuance of up to 16 million shares of Charter Class A common stock (or units convertible into Charter Class A common stock).

Charter Stock options and restricted stock units generally cliff vest upon thethree year anniversary of each grant. Certain stock options and restricted stock units vest based on achievement of stock price hurdles. Stock options generally expire ten years from the grant date and restricted stock units have no voting rights. Restricted stock generally vests one year from the date of grant. TWC restricted stock units that were converted into Charter restricted stock units in 2016 generally vest 50% on each of the third and fourth anniversary of the grant date.

As of December 31, 2019, total unrecognized compensation remaining to be recognized in future periods totaled$175 million for stock options, $0.9 million for restricted stock and $205 million for restricted stock units and the weighted average period over which they are expected to be recognized is2 years for stock options, 4 months for restricted stock and2 years for restricted stock units. The Company recorded $315 million, $285 million and $261 million of stock compensation expense for the years ended December 31, 2019, 2018 and 2017, respectively, which is included in operating costs and expenses. The Company also recorded $5 million and $49 million of expense for the years ended December 31, 2018 and 2017, respectively, related to accelerated vesting of equity awards of terminated employees which is recorded in merger and restructuring costs in other operating expenses, net in the consolidated statements of operations.

A summary of the activity for Charter's stock options for the years ended December 31, 2019, 2018 and 2017, is as follows (shares in thousands, except per share data):

	Year Ended December 31,								
	2019			2018			2017		
	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value
Outstanding, beginning of period	10,410	$ 225.53		9,649	$ 201.83		9,592	$ 181.39	
Granted	1,847	$ 298.84		1,507	$ 350.40		1,175	$ 302.87	
Exercised	(1,271)	$ 186.90	$ 247	(577)	$ 133.35	$ 114	(1,044)	$ 124.32	$ 219
Canceled	(437)	$ 270.94		(169)	$ 300.46		(74)	$ 251.63	
Outstanding, end of period	10,549	$ 241.14	$ 2,573	10,410	$ 225.53		9,649	$ 201.83	
Weighted average remaining contractual life	7 years			7 years			8 years		
Options exercisable, end of period	3,119	$ 161.13	$ 1,011	2,194	$ 122.19		1,734	$ 90.56	
Options expected to vest, end of period	7,430	$ 274.74	$ 1,563						
Weighted average fair value of options granted	$ 84.39			$ 94.70			$ 73.67		

A summary of the activity for Charter's restricted stock for the years ended December 31, 2019, 2018 and 2017, is as follows (shares in thousands, except per share data):

	Year Ended December 31,					
	2019		2018		2017	
	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price
Outstanding, beginning of period	10	$ 297.86	10	$ 343.10	10	$ 231.81
Granted	8	$ 359.33	10	$ 297.86	10	$ 343.10
Vested	(10)	$ 297.86	(10)	$ 343.10	(10)	$ 231.81
Canceled	—	$ —	—	$ —	—	$ —
Outstanding, end of period	8	$ 359.33	10	$ 297.86	10	$ 343.10

A summary of the activity for Charter's restricted stock units for the years endedDecember 31, 2019, 2018 and 2017, is as follows (shares in thousands, except per share data):

	Year Ended December 31,					
	2019		2018		2017	
	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price	Shares	Weighted Average Grant Price
Outstanding, beginning of period	2,211	$ 219.61	2,391	$ 192.96	3,313	$ 192.41
Granted	704	$ 298.22	526	$ 348.75	285	$ 302.76
Vested	(729)	$ 206.88	(619)	$ 216.27	(1,159)	$ 216.21
Canceled	(127)	$ 250.85	(87)	$ 286.41	(48)	$ 234.99
Outstanding, end of period	2,059	$ 249.45	2,211	$ 219.61	2,391	$ 192.96

16. Income Taxes

CCO Holdings is a single member limited liability company not subject to income tax. CCO Holdings holds all operations through indirect subsidiaries. The majority of these indirect subsidiaries are limited liability companies that are not subject to income tax. Certain indirect subsidiaries that are required to file separate returns are subject to federal and state tax. CCO Holdings' tax provision reflects the tax provision of the entities required to file separate returns.

Generally, the taxable income, gains, losses, deductions and credits of CCO Holdings are passed through to its indirect members, Charter and Advance/Newhouse Partnership ("A/N"). Charter is responsible for its share of taxable income or loss of CCO Holdings allocated to it in accordance with the Charter Holdings Limited Liability Company Agreement and partnership tax rules and regulations. Charter also records financial statement deferred tax assets and liabilities related to its investment, and its underlying net assets, in CCO Holdings.

Income Tax Expense

For the years ended December 31, 2019, 2018, and 2017, the Company recorded deferred income tax expense as shown below. The tax provision in future periods will vary based on current and future temporary differences, as well as future operating results.

	Year Ended December 31,		
	2019	2018	2017
Current expense:			
Federal income taxes	$ (4)	$ —	$ (1)
State income taxes	(28)	(12)	(15)
Current income tax expense	(32)	(12)	(16)
Deferred expense:			
State income taxes	(57)	(4)	(7)
Deferred income tax expense	(57)	(4)	(7)
Income tax expense	$ (89)	$ (16)	$ (23)

Income tax is recognized primarily through decreases (increases) in deferred tax liabilities, as well as through current state income tax expense and in 2019, an internal entity simplification. The tax provision in future periods will vary based on future operating results, as well as future book versus tax differences.

The Company's effective tax rate differs from that derived by applying the applicable federal income tax rate of 21% for the years ended December 31, 2019 and 2018 and 35% for the year ended December 31, 2017, respectively, as follows:

	Year Ended December 31,		
	2019	2018	2017
Statutory federal income taxes	$ (491)	$ (346)	$ (317)
Statutory state income taxes, net	(85)	(16)	(23)
Income allocated to limited liability companies not subject to income taxes	487	346	317
Income tax expense	$ (89)	$ (16)	$ (23)

Deferred Tax Assets (Liabilities)

The tax effects of these temporary differences that give rise to significant portions of the deferred tax assets at December 31, 2019 and 2018 are presented below.

	December 31,	
	2019	2018
Deferred tax assets:		
Loss carryforwards	$ —	$ 7
Indefinite-lived intangibles	—	3
Accrued and other	5	5
Total gross deferred tax assets	5	15
Deferred tax liabilities:		
Indefinite-lived intangibles	$ (39)	$ —
Property, plant and equipment	(17)	(11)
Other intangibles	(4)	(1)
Deferred tax liabilities	(60)	(12)
Net deferred tax assets (liabilities)	$ (55)	$ 3

Uncertain Tax Positions

The net amount of the unrecognized tax benefits recorded as of December 31, 2019 that could impact the effective tax rate is $134 million. The Company has determined that it is reasonably possible that its existing reserve for uncertain tax positions as of December 31, 2019 could decrease by approximately $31 million during the year ended December 31, 2020 related to various ongoing audits, settlement discussions and expiration of statute of limitations with various state and local agencies; however, various events could cause the Company's current expectations to change in the future. These uncertain tax positions, if ever recognized in the financial statements, would be recorded in the consolidated statements of operations as part of the income tax provision. A reconciliation of the beginning and ending amount of unrecognized tax benefits, exclusive of interest and penalties, included in other long-term liabilities on the accompanying consolidated balance sheets of the Company is as follows:

BALANCE, December 31, 2017	$ 134
Reductions on settlements and expirations with taxing authorities	(15)
BALANCE, December 31, 2018	$ 119
Reductions on settlements and expirations with taxing authorities	(9)
BALANCE, December 31, 2019	$ 110

The Company recognizes interest and penalties accrued on uncertain income tax positions as part of the income tax provision. Interest and penalties included in other long-term liabilities on the accompanying consolidated balance sheets of the Company were $51 million and $43 million as of December 31, 2019 and 2018, respectively.

No tax years for Charter are currently under examination by the Internal Revenue Service ("IRS") for income tax purposes. Charter's 2016 through 2019 tax years remain open for examination and assessment. Charter's short period return dated May 17, 2016 (prior to the TWC and Bright House Networks, LLC transactions) remain subject to examination and assessment. Years prior to 2016 remain open solely for purposes of examination of Charter's loss and credit carryforwards. The IRS is currently examining Charter Holdings' income tax return for 2016. Charter Holdings' 2017 through 2019 tax years remain open for examination and assessment. The IRS is currently examining TWC's income tax returns for 2011 through 2014. TWC's tax year 2015 remains subject to examination and assessment. Prior to TWC's separation from Time Warner Inc. ("Time Warner") in March 2009, TWC was included in the consolidated U.S. federal and certain state income tax returns of Time Warner. The IRS has examined Time Warner's 2008 through 2010 income tax returns and the results are under appeal. The Company does not anticipate that these examinations will have a material impact on the Company's consolidated financial position or results of operations. In addition, the Company is also subject to ongoing examinations of the Company's tax returns by state and local tax authorities for various periods. Activity related to these state and local examinations did not have a material impact on the Company's consolidated financial position or results of operations during the year ended December 31, 2019, nor does the Company anticipate a material impact in the future.

17. Comprehensive Income

The following table sets forth the consolidated statements of comprehensive income for the years endedDecember 31, 2019, 2018 and 2017.

	Year Ended December 31,		
	2019	2018	2017
Consolidated net income	$ 2,252	$ 1,633	$ 883
Net impact of interest rate derivative instruments	—	—	5
Foreign currency translation adjustment	2	(1)	1
Consolidated comprehensive income	2,254	1,632	889
Less: Comprehensive income attributable to noncontrolling interests	(1)	(1)	(1)
Comprehensive income attributable to CCO Holdings member	$ 2,253	$ 1,631	$ 888

18. Related Party Transactions

The following sets forth certain transactions in which the Company and the directors, executive officers, and affiliates of the Company are involved or, in the case of the management arrangements, subsidiaries that are debt issuers that pay certain of their parent companies for services.

Charter is a party to management arrangements with one of its subsidiaries, Spectrum Management and certain of their subsidiaries. Under these agreements, Charter, Spectrum Management and Charter Holdco provide management services for the cable systems owned or operated by their subsidiaries. Costs associated with providing these services are charged directly to the Company's operating subsidiaries. All other costs incurred on behalf of Charter's operating subsidiaries are considered a part of the management fee. These costs are recorded as a component of operating costs and expenses, in the accompanying consolidated financial statements. The management fee charged to the Company's operating subsidiaries approximated the expenses incurred by Spectrum Management, Charter Holdco and Charter on behalf of the Company's operating subsidiaries in 2019, 2018 and 2017.

Liberty Broadband and A/N

Under the terms of the Amended and Restated Stockholders Agreement with Liberty Broadband, A/N and Legacy Charter, dated May 23, 2015, (the "Stockholders Agreement"), the number of Charter's directors is fixed at 13, and includes its CEO. Two designees selected by A/N are members of the board of directors of Charter and three designees selected by Liberty Broadband are members of the board of directors of Charter. The remaining eight directors are not affiliated with either A/N or Liberty Broadband. Each of A/N and Liberty Broadband is entitled to nominate at least one director to each of the committees of Charter's

board of directors, subject to applicable stock exchange listing rules and certain specified voting or equity ownership thresholds for each of A/N and Liberty Broadband, and provided that the Nominating and Corporate Governance Committee and the Compensation and Benefit Committee each have at least a majority of directors independent from A/N, Liberty Broadband and Charter (referred to as the "unaffiliated directors"). Each of the Nominating and Corporate Governance Committee and the Compensation and Benefits Committee is currently comprised of three unaffiliated directors and one designee of each of A/N and Liberty Broadband. A/N and Liberty Broadband also have certain other committee designation and other governance rights. Mr. Thomas Rutledge, the Company's CEO, is the chairman of the board of Charter.

In December 2017, Charter and A/N entered into an amendment to the letter agreement (the "Letter Agreement") that requires A/N to sell to Charter or to Charter Holdings, on a monthly basis, a number of shares of Charter Class A common stock or Charter Holdings common units that represents a pro rata participation by A/N and its affiliates in any repurchases of shares of Charter Class A common stock from persons other than A/N effected by Charter during the immediately preceding calendar month, at a purchase price equal to the average price paid by Charter for the shares repurchased from persons other than A/N during such immediately preceding calendar month. A/N and Charter both have the right to terminate or suspend the pro rata repurchase arrangement on a prospective basis. Pursuant to the TRA between Charter and A/N, Charter must pay to A/N 50% of the tax benefit when realized by Charter from the step-up in tax basis resulting from any future exchange or sale of the preferred and common units.

The Company is aware that Dr. John Malone, a director emeritus of Charter and Chairman of the board of directors and holder of 49.0% of voting interest in Liberty Broadband, may be deemed to have a 39.9% voting interest in Qurate Retail, Inc. ("Qurate") and is on the board of directors of Qurate. Qurate wholly owns HSN, Inc. ("HSN") and QVC, Inc. ("QVC"). The Company has programming relationships with HSN and QVC. For the years ended December 31, 2019, 2018 and 2017, the Company recorded revenue in aggregate of approximately $50 million, $73 million and $77 million, respectively, from HSN and QVC as part of channel carriage fees and revenue sharing arrangements for home shopping sales made to customers in the Company's footprint.

Dr. Malone and Mr. Steven Miron, a member of Charter's board of directors, also serve on the board of directors of Discovery Communications, Inc., ("Discovery"). The Company is aware that Dr. Malone owns 1.2% of the series A common stock, 93.6% of the series B common stock and 2.6% of the series C common stock of Discovery and has a 28.2% voting interest in Discovery for the election of directors. The Company is aware that Advance/Newhouse Programming Partnership ("A/N PP"), an affiliate of A/N and in which Mr. Miron is the CEO, owns 100% of the Series A-1 preferred stock of Discovery and 100% of the Series C-1 preferred stock of Discovery and has a 24.1% voting interest for matters other than the election of directors. A/N PP also has the right to appoint three directors out of a total of twelve directors to Discovery's board. The Company purchases programming from Discovery pursuant to agreements entered into prior to Dr. Malone and Mr. Miron joining Charter's board of directors. Based on publicly available information, the Company does not believe that Discovery would currently be considered a related party. The amount paid to Discovery represents less than 3% of total operating costs and expenses for the years ended December 31, 2019, 2018 and 2017.

Equity Investments

The Company and its parent companies have agreements with certain equity investees (see Note 6) pursuant to which the Company has made or received related party transaction payments. The Company and its parent companies recorded payments to equity investees totaling $314 million, $361 million and $317 million during the years ended December 31, 2019, 2018 and 2017, respectively.

19. Commitments and Contingencies

Commitments

The following table summarizes the Company's and its parent companies' payment obligations as ofDecember 31, 2019 for its contractual obligations.

	Total	2020	2021	2022	2023	2024	Thereafter
Programming Minimum Commitments [(a)]	$ 276	$ 216	$ 37	$ 12	$ 11	$ —	$ —
Other [(b)]	12,658	2,536	2,598	436	366	526	6,196
	$ 12,934	$ 2,752	$ 2,635	$ 448	$ 377	$ 526	$ 6,196

(a) The Company pays programming fees under multi-year contracts ranging from three to ten years, typically based on a flat fee per customer, which may be fixed for the term, or may in some cases escalate over the term. Programming costs included in the statement of operations were 11.3 billion, 11.1 billion and 10.6 billion for the years ended December 31, 2019, 2018 and 2017 respectively. Certain of the Company's programming agreements are based on a flat fee per month or have guaranteed minimum payments. The table sets forth the aggregate guaranteed minimum commitments under the Company's programming contracts.

(b) "Other" represents other guaranteed minimum commitments, including rights negotiated directly with content owners for distribution on company-owned channels or networks, commitments related to our role as an advertising and distribution sales agent for third party-owned channels or networks, commitments to our customer premise equipment and device vendors and contractual obligations related to third-party network augmentation.

The following items are not included in the contractual obligation table due to various factors discussed below. However, the Company incurs these costs as part of its operations:

- The Company rents utility poles used in its operations. Generally, pole rentals are cancelable on short notice, but the Company anticipates that such rentals will recur. Rent expense incurred for pole rental attachments for the years ended December 31, 2019, 2018 and 2017 was $180 million, $171 million and $167 million, respectively.
- The Company pays franchise fees under multi-year franchise agreements based on a percentage of revenues generated from video service per year. The Company also pays other franchise related costs, such as public education grants, under multi-year agreements. Franchise fees and other franchise-related costs included in the accompanying statement of operations were $750 million, $747 million and $705 million for the years ended December 31, 2019, 2018 and 2017 respectively.
- The Company has $363 million in letters of credit, of which $36 million is secured under the Charter Operating credit facility, primarily to its various casualty carriers as collateral for reimbursement of workers' compensation, auto liability and general liability claims.
- Minimum pension funding requirements have not been presented in the table above as such amounts have not been determined beyond2019. The Company made no cash contributions to the qualified pension plans in 2019; however, the Company is permitted to make discretionary cash contributions to the qualified pension plans in 2020. For the nonqualified pension plan, the Company contributed $4 million during 2019 and will continue to make contributions in 2020 to the extent benefits are paid.

Legal Proceedings

In August 2015, a purported stockholder of Charter, Matthew Sciabacucchi, filed a lawsuit in the Delaware Court of Chancery, on behalf of a putative class of Charter stockholders, challenging the transactions involving Charter, TWC, A/N, and Liberty Broadband announced by Charter on May 26, 2015. The lawsuit, which named as defendants Charter and its board of directors, alleged that the transactions resulted from breaches of fiduciary duty by Charter's directors and that Liberty Broadband improperly benefited from the challenged transactions at the expense of other Charter stockholders. The lawsuit has proceeded to the discovery phase. Charter denies any liability, believes that it has substantial defenses, and is vigorously defending this lawsuit. Although Charter is unable to predict the outcome of this lawsuit, it does not expect the outcome will have a material effect on its operations, financial condition or cash flows.

The California Attorney General and the Alameda County, California District Attorney are investigating whether certain of Charter's waste disposal policies, procedures and practices are in violation of the California Business and Professions Code and the California Health and Safety Code. That investigation was commenced in January 2014. A similar investigation involving TWC was initiated in February 2012. Charter is cooperating with these investigations. While the Company is unable to predict the outcome of these investigations, it does not expect that the outcome will have a material effect on its operations, financial condition, or cash flows.

On December 19, 2011, Sprint Communications Company L.P. ("Sprint") filed a complaint in the U.S. District Court for the District of Kansas alleging that TWC infringed certain U.S. patents purportedly relating to Voice over Internet Protocol ("VoIP") services. At the trial, the jury returned a verdict of $140 million against TWC and further concluded that TWC had willfully infringed Sprint's patents. The court subsequently declined to enhance the damage award as a result of the purported willful infringement and awarded Sprint an additional $6 million, representing pre-judgment interest on the damages award. The Company appealed the case to the United States Court of Appeals for the Federal Circuit where the Company lost the appeal. The Company filed a petition for writ of certiorari with the United States Supreme Court which was denied on November 4, 2019. The Company has now paid the verdict, interest and costs in full. The Company continues to pursue indemnity from one of its vendors and has brought a patent suit against Sprint (TC Tech, LLC v. Sprint) in the U.S. District Court for the District of Delaware implicating Sprint's LTE technology. The ultimate outcomes of the pursuit of indemnity against the Company's vendor and the TC Tech litigation cannot be predicted. The Company does not expect the outcome of its indemnity claim nor the outcome of the TC Tech litigation will have a material adverse effect on its operations or financial condition.

Sprint filed a second suit against Charter and Bright House Networks, LLC on December 2, 2017 in the United States District Court for the District of Delaware. This suit alleges infringement of 15 patents related to the Company's provision of Voice over Internet Protocol ("VoIP") services (ten of which were asserted against Legacy TWC in the matter described above). Charter is vigorously defending this case. While the Company is unable to predict the outcome of this Sprint suit, it does not expect that this litigation will have a material effect on its operations, financial condition, or cash flows.

Sprint filed a third suit against Charter on May 17, 2018 in the United States District Court for the Eastern District of Virginia. This suit alleges infringement of three patents related to the Company's video on demand services. The Company is vigorously defending this case. The court transferred this case to the United States District Court for the District of Delaware on December 20, 2018 pursuant to an agreement between the parties. While the Company is unable to predict the outcome of this litigation, it does not expect that this litigation will have a material effect on its operations, financial condition, or cash flows.

In addition to the Sprint litigation described above, the Company and its parent companies are defendants or co-defendants in several additional lawsuits involving alleged infringement of various intellectual property relating to various aspects of their businesses. Other industry participants are also defendants in certain of these cases. In the event that a court ultimately determines that the Company infringes on any intellectual property, the Company may be subject to substantial damages and/or an injunction that could require the Company or its vendors to modify certain products and services the Company offers to its subscribers, as well as negotiate royalty or license agreements with respect to the intellectual property at issue. While the Company believes the lawsuits are without merit and intends to defend the actions vigorously, no assurance can be given that any adverse outcome would not be material to the Company's consolidated financial condition, results of operations, or liquidity. The Company cannot predict the outcome of any such claims nor can it reasonably estimate a range of possible loss.

The Company and its parent companies are party to other lawsuits, claims and regulatory inquiries that arise in the ordinary course of conducting their business. The ultimate outcome of these other legal matters pending against the Company cannot be predicted, and although such lawsuits and claims are not expected individually to have a material adverse effect on the Company's consolidated financial condition, results of operations or liquidity, such lawsuits could have, in the aggregate, a material adverse effect on the Company's consolidated financial condition, results of operations or liquidity. Whether or not the Company ultimately prevails in any particular lawsuit or claim, litigation can be time consuming and costly and injure the Company's reputation.

20. Employee Benefit Plans

Pension Plans

The Company sponsors three qualified defined benefit pension plans and one nonqualified defined benefit pension plan that provide pension benefits to a majority of employees who were employed by TWC before the merger with TWC.

Changes in the projected benefit obligation, fair value of plan assets and funded status of the pension plans from January 1 through December 31 are presented below:

	2019	2018
Projected benefit obligation at beginning of year	$ 3,041	$ 3,569
Interest cost	129	128
Actuarial (gain) loss	499	(438)
Settlement	(257)	(169)
Benefits paid	(51)	(49)
Projected benefit obligation at end of year[a]	$ 3,361	$ 3,041
Accumulated benefit obligation at end of year[a]	$ 3,361	$ 3,041
Fair value of plan assets at beginning of year	$ 2,943	$ 3,273
Actual return on plan assets	559	(118)
Employer contributions	4	6
Settlement	(257)	(169)
Benefits paid	(51)	(49)
Fair value of plan assets at end of year[b]	$ 3,198	$ 2,943
Funded status	$ (163)	$ (98)

(a) As of December 31, 2019 and 2018, qualified pension plans represented $3.3 billion and $3.0 billion, respectively, of both the projected benefit obligation and accumulated benefit obligation while the Company's nonqualified pension plan represented $35 million and $34 million, respectively.

(b) The fair value of plan assets consists entirely of the Company's qualified pension plans.

Pretax amounts recognized in the consolidated balance sheet as of December 31, 2019 and 2018 consisted of the following:

	December 31,	
	2019	2018
Noncurrent asset	$ 1	$ 1
Current liability	(4)	(4)
Long-term liability	(160)	(95)
Net amounts recognized in consolidated balance sheet	$ (163)	$ (98)

The components of net periodic benefit (cost) for the years ended December 31, 2019, 2018 and 2017 consisted of the following:

	Year Ended December 31,		
	2019	2018	2017
Interest cost	$ (129)	$ (128)	$ (133)
Expected return on plan assets	164	198	189
Remeasurement gain (loss)	(104)	122	(55)
Net periodic pension benefit (cost)	$ (69)	$ 192	$ 1

The remeasurement gains (losses) recorded during the years ended December 31, 2019, 2018 and 2017 were primarily driven by changes in the discount rate as well as gains or losses to record pension assets to fair value. The remeasurement loss recorded

during the year ended December 31, 2017 was also impacted by the adoption of the revised lump sum conversion mortality tables published by the IRS effective January 1, 2018.

The discount rates used to determine benefit obligations as of December 31, 2019 and 2018 were 3.48% and 4.37%, respectively. The Company utilized the RP 2015/MP2015 mortality tables published by the Society of Actuaries to measure the benefit obligations as of December 31, 2019 and 2018.

Weighted average assumptions used to determine net periodic benefit costs consisted of the following:

	Year ended December 31,		
	2019	2018	2017
Expected long-term rate of return on plan assets	5.75%	5.75%	6.50%
Discount rate	4.37%	4.24%	3.88%

In developing the expected long-term rate of return on plan assets, the Company considered the pension portfolio's composition, past average rate of earnings and the Company's future asset allocation targets. The weighted average expected long-term rate of return on plan assets and discount rate used to determine net periodic pension benefit for the year ended December 31, 2020 are expected to be 5.00% and 3.48%, respectively. The Company determined the discount rates used to determine benefit obligations and net periodic pension benefit based on the yield of a large population of high quality corporate bonds with cash flows sufficient in timing and amount to settle projected future defined benefit payments.

Pension Plan Assets

The assets of the qualified pension plans are held in a master trust in which the qualified pension plans are the only participating plans (the "Master Trust"). The investment policy for the qualified pension plans is to manage the assets of the Master Trust with the objective to provide for pension liabilities to be met, maintaining retirement income security for the participants of the plans and their beneficiaries. The investment portfolio is a mix of pooled funds invested in fixed income securities, equity securities and certain alternative investments with the objective of matching plan liability performance, diversifying risk and achieving a target investment return. Pension assets are managed in a balanced portfolio comprised of two major components: a return-seeking portion and a liability-matching portion.

The Company uses an investment strategy designed to increase the fixed income allocation as the funded status of the qualified pension plans improves. As the qualified pension plans reach set funded status milestones, the assets will be rebalanced to shift more assets from equity to fixed income. Based on the progress with this strategy, the target investment allocation for pension fund assets is permitted to vary within specified ranges subject to Investment Committee approval for return-seeking securities and liability-matching securities. The target and actual investment allocation of the qualified pension plans by asset category consisted of the following:

	December 31, 2019		December 31, 2018	
	Target Allocation	Actual Allocation	Target Allocation	Actual Allocation
Return-seeking securities	60.0%	56.2%	60.0%	54.6%
Liability-matching securities	40.0%	43.7%	40.0%	45.1%
Other investments	—%	0.1%	—%	0.3%

The following tables set forth the investment assets of the qualified pension plans by level within the fair value hierarchy as of December 31, 2019 and 2018:

	December 31, 2019			December 31, 2018		
	Fair Value	Level 1	Level 2	Fair Value	Level 1	Level 2
Cash	$ 4	$ 4	$ —	$ 4	$ 4	$ —
Commingled bond funds[a]	1,335	—	1,335	1,270	—	1,270
Commingled equity funds[a]	1,135	—	1,135	952	—	952
Collective trust funds[b]	139	—	139	113	—	113
Total investment assets	2,613	$ 4	$ 2,609	2,339	$ 4	$ 2,335
Accrued investment income and other receivables	1			11		
Investments measured at net asset value[c]	584			593		
Fair value of plan assets	$ 3,198			$ 2,943		

(a) Commingled funds include bond funds with corporate and U.S. treasury debt securities and equity funds with global equity index, infrastructure and real estate securities that have a readily determinable fair value and are valued using the net assets provided by the administrator of the fund. The value of each fund is based on the fair value of underlying securities in the portfolio, which represents the amount that the fund might reasonably expect to receive for the securities upon a sale, less liabilities, and then divided by the number of units outstanding. Equity securities within the funds are valued using observable inputs on either a daily or weekly basis and the resulting per share value serves as a basis for current redemption value. Debt securities within the funds are valued based on observable prices from the new issue market, benchmark quotes, secondary trading and dealer quotes.

(b) Collective trust funds consist of short-term investment strategies comprised of instruments issued or fully guaranteed by the U.S. government and/or its agencies and multi-strategy funds, which are valued using the net assets provided by the administrator of the fund. The value of each fund is based on the readily determinable fair value of the underlying assets owned by the fund, less liabilities, and then divided by the number of units outstanding.

(c) As a practical expedient, certain investment classes which hold securities that are not readily available for redemption and are measured at fair value using the net asset value ("NAV") per share (or its equivalent) have not been classified in the fair value hierarchy.

Investments Measured at Net Asset Value per Share Practical Expedient

The following table summarizes the investment classes for which fair value is measured using the NAV per share (or its equivalent) practical expedient as of December 31, 2019 and 2018. These investment classes are not readily available for redemption. The NAV of each fund is based on the fair value of underlying assets in the portfolio. Certain investments report NAV per share on a month or quarter lag. There are no material unfunded commitments with respect to these investment classes.

	Fair Value			
	December 31,			
	2019	2018	Redemption Frequency (if currently eligible)	Redemption Notice Period
Alternative funds[a]	$ 271	$ 301	weekly, monthly, quarterly	1-180 days
Fixed income funds[b]	177	164	daily, monthly	10-40 days
Real estate funds[c]	136	128	quarterly	45-90 days
Investments measured at NAV	$ 584	$ 593		

(a) The alternative fund investment class includes funds with various securities selected to provide complimentary sources of return with our equity and bond portfolios that better manage risk. The Company's alternative fund investments include

holdings such as public equities, exchange traded derivatives, and corporate bonds, among others. A portion of the alternative funds cannot be redeemed until the one year anniversary of the purchase date.

(b) Fixed income funds invest in residential and commercial mortgages, as well as global sovereign securities.

(c) Real estate funds are not publicly traded and invest primarily in unlisted direct core real estate, including super-regional malls, shopping centers, and commercial real estate (e.g. education, healthcare and storage).

Pension Plan Contributions

The Company made no cash contributions to the qualified pension plans during the years ended December 31, 2019, 2018 and 2017; however, the Company may make discretionary cash contributions to the qualified pension plans in the future. Such contributions will be dependent on a variety of factors, including current and expected interest rates, asset performance, the funded status of the qualified pension plans and management's judgment. For the nonqualified unfunded pension plan, the Company will continue to make contributions during 2020 to the extent benefits are paid.

Benefit payments for the pension plans are expected to be $183 million in 2020, $186 million in 2021, $188 million in 2022, $190 million in 2023, $190 million in 2024 and $929 million in 2025 to 2029.

Multiemployer Plans

The Company contributes to multiemployer plans under the terms of collective-bargaining agreements that cover its union-represented employees. Such multiemployer plans provide medical, pension and retirement savings benefits to active employees and retirees. The Company made contributions to multiemployer plans of $9 million, $9 million and $18 million for the years ended December 31, 2019, 2018 and 2017, respectively. As of December 31, 2019 and 2018, other long-term liabilities includes approximately $101 million and $104 million, respectively, related to the Company's withdrawal from a multiemployer pension plan.

Defined Contribution Benefit Plans

The Company's employees may participate in the Charter Communications, Inc. 401(k) Savings Plan (the "401(k) Plan"). Employees that qualify for participation can contribute up to 50% of their salary, on a pre-tax basis, subject to a maximum contribution limit as determined by the Internal Revenue Service. The Company's matching contribution is discretionary and is equal to 100% of the amount of the salary reduction the participant elects to defer (up to 6% of the participant's eligible compensation), excluding any catch-up contributions and is paid by the Company on a per pay period basis. The Company made contributions to the 401(k) plan totaling $303 million, $290 million and $274 million for the years ended December 31, 2019, 2018 and 2017, respectively.

For employees who are not eligible to participate in the Company's long-term incentive plan and who are not covered by a collective bargaining agreement, the Company offers a contribution to the Retirement Accumulation Plan ("RAP"), equal to 3% of eligible pay. The Company made contributions to the RAP totaling $152 million, $151 million and $139 million for the years ended December 31, 2019, 2018 and 2017, respectively.

21. Recently Issued Accounting Standards

Accounting Standards Adopted in Prior Periods

ASU No. 2014-09, Revenue from Contracts with Customers ("ASU 2014-09")

Upon adoption of ASU 2014-09, the Company recorded a cumulative-effect adjustment which included an increase to total member's equity of $49 million as of January 1, 2018.

ASU No. 2016-16, Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory ("ASU 2016-16")

The Company identified a $38 million increase to total member's equity and corresponding increase to deferred tax assets related to the adoption of ASU 2016-16, which was recorded during the year ended December 31, 2018.

Accounting Standards Adopted January 1, 2019

ASU No. 2016-02, Leases ("ASU 2016-02")

In February 2016, the FASB issued ASU 2016-02 which requires lessees to recognize almost all leases on their balance sheet as a lease asset and a lease liability. For income statement purposes, the FASB retained a dual model, requiring leases to be classified as either operating or finance. Classification is based on criteria largely similar to the criteria applied under legacy lease accounting, but without explicit bright lines.

The Company adopted ASU 2016-02 using the modified retrospective approach with a cumulative-effect adjustment recorded at the beginning of the period of adoption (January 1, 2019). Therefore, the Company recognized and measured operating leases on the consolidated balance sheet without revising comparative period information or disclosure. At transition, the Company elected the package of practical expedients permitted under the transition guidance within the standard, which eliminates the reassessment of past leases, classification and initial direct costs. The Company did not elect to use hindsight to reassess lease terms or impairment at the adoption date. The Company elected the land easements practical expedient which allows the Company not to retrospectively treat land easements as leases; however, must apply lease accounting prospectively to land easements if they meet the definition of a lease.

The Company implemented internal controls and key system functionality to enable the preparation of financial information on adoption. The new standard resulted in the recording of leased assets and lease liabilities for the Company's operating leases of approximately $963 million and $990 million, respectively, as of January 1, 2019. The difference between the leased assets and lease liabilities primarily represents the prior year end deferred rent liabilities balance, resulting from historical straight-lining of operating leases, which was effectively reclassified upon adoption to reduce the measurement of the leased assets. The adoption of the standard did not have an impact on the Company's member's equity, results from operations and cash flows. The adoption of the new standard resulted in additional interim and annual lease disclosures. See Note 8.

ASU No. 2018-13, Changes to the Disclosure Requirements for Fair Value Measurement ("ASU 2018-13")

In August 2018, the FASB issued ASU 2018-13 which amends fair value measurement disclosure requirements to eliminate, add and modify certain disclosures to improve the effectiveness of such disclosure in the notes to the financial statements. ASU 2018-13 will be effective for interim and annual periods beginning after December 15, 2019. Early adoption is permitted. The Company early adopted ASU 2018-13 on January 1, 2019. The adoption of ASU 2018-13 did not have a material impact to the Company's consolidated financial statements.

ASU No. 2018-14, Changes to the Disclosure Requirements for Defined Benefit Plans ("ASU 2018-14")

In August 2018, the FASB issued ASU 2018-14 which amends defined benefit plan disclosure requirements to eliminate, add and modify certain disclosures to improve the effectiveness of such disclosure in the notes to the financial statements. ASU 2018-14 will be effective for interim and annual periods beginning after December 15, 2021. Early adoption is permitted. The Company early adopted ASU 2018-14 on January 1, 2019. The adoption of ASU 2018-14 did not have a material impact to the Company's consolidated financial statements.

ASU No. 2017-04, Simplifying the Test for Goodwill Impairment ("ASU 2017-04")

In January 2017, the FASB issued ASU 2017-04 which eliminates step two from the goodwill impairment test. Under the new standard, to the extent the carrying amount of a reporting unit exceeds the fair value, the Company will record an impairment charge equal to the difference. ASU 2017-04 will be effective for interim and annual periods beginning after December 15, 2019. The Company elected to early adopt ASU 2017-04 in connection with the completion of its November 30, 2019 annual impairment assessment. The adoption of ASU 2017-04 did not have a material impact to the Company's consolidated financial statements.

Accounting Standards Adopted January 1, 2020

ASU No. 2016-13, Measurement of Credit Losses on Financial Instruments ("ASU 2016-13")

In June 2016, the FASB issued ASU 2016-13, which requires a financial asset (or a group of financial assets) measured at amortized cost basis to be assessed for impairment under the current expected credit loss model rather than an incurred loss model. The measurement of expected credit losses is based on relevant information about past events, including historical experience, current conditions and reasonable and supportable forecasts that affect the collectability of the reported amount. The primary financial assets of the Company in scope of ASU 2016-13 include accounts receivables and equipment installment plan notes receivables. The Company adopted ASU 2016-13 on January 1, 2020. The adoption of ASU 2016-13 did not have a material impact to the Company's consolidated financial statements.

ASU No. 2018-15, Customer's Accounting for Implementation Costs in a Cloud Computing Arrangement That Is a Service Contract ("ASU 2018-15")

In August 2018, the FASB issued ASU 2018-15 which requires upfront implementation costs incurred in a cloud computing arrangement (or hosting arrangement) that is a service contract to be amortized to hosting expense over the term of the arrangement, beginning when the module or component of the hosting arrangement is ready for its intended use. The Company adopted ASU 2018-15 on January 1, 2020. The adoption of ASU 2018-15 did not have a material impact to the Company's consolidated financial statements.

ASU No. 2019-02, Improvements to Accounting for Costs of Films and License Agreements for Program Materials ("ASU 2019-02")

In March 2019, the FASB issued ASU 2019-02 which aligns the accounting for production costs of an episodic television series with the accounting for production costs of films regarding cost capitalization, amortization, impairment, presentation and disclosure. The Company adopted ASU 2019-02 on January 1, 2020. The adoption of ASU 2019-02 did not have a material impact to the Company's consolidated financial statements.

Accounting Standards Not Yet Adopted

ASU No. 2019-12, Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes ("ASU 2019-12")

In December 2019, the FASB issued ASU 2019-12, which is intended to simplify various aspects related to accounting for income taxes. ASU 2019-12 removes certain exceptions to the general principles in Topic 740 and also clarifies and amends existing guidance to improve consistent application. ASU 2019-12 will be effective for interim and annual periods beginning after December 15, 2020 (January 1, 2021 for the Company). Early adoption is permitted. The Company is currently evaluating the impact the adoption of ASU 2019-12 will have on its consolidated financial statements.

22. Consolidating Schedules

Each of Charter Operating, TWC, LLC, TWCE, CCO Holdings and certain subsidiaries jointly, severally, fully and unconditionally guarantee the outstanding debt securities of the others (other than the CCO Holdings notes) on an unsecured senior basis and the condensed consolidating financial information has been prepared and presented pursuant to SEC Regulation S-X Rule 3-10, *Financial Statements of Guarantors and Issuers of Guaranteed Securities Registered or Being Registered.* Certain Charter Operating subsidiaries that are regulated telephone entities only become guarantor subsidiaries upon approval by regulators. This information is not intended to present the financial position, results of operations and cash flows of the individual companies or groups of companies in accordance with generally accepted accounting principles.

The "Charter Operating and Restricted Subsidiaries" column is presented to comply with the terms of the Credit Agreement.

Condensed consolidating financial statements as of December 31, 2019 and 2018 and for the years ended December 31, 2019, 2018 and 2017 follow.

CCO HOLDINGS, LLC AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2019, 2018 AND 2017
(dollars in millions, except where indicated)

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Balance Sheet

As of December 31, 2019

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
ASSETS				
CURRENT ASSETS:				
Cash and cash equivalents	$ 500	$ 2,749	$ —	$ 3,249
Accounts receivable, net	—	2,195	—	2,195
Receivables from related party	59	—	(59)	—
Prepaid expenses and other current assets	—	711	—	711
Total current assets	559	5,655	(59)	6,155
INVESTMENT IN CABLE PROPERTIES:				
Property, plant and equipment, net	—	33,908	—	33,908
Customer relationships, net	—	7,453	—	7,453
Franchises	—	67,322	—	67,322
Goodwill	—	29,554	—	29,554
Total investment in cable properties, net	—	138,237	—	138,237
INVESTMENT IN SUBSIDIARIES	76,409	—	(76,409)	—
OPERATING LEASE RIGHT-OF-USE ASSETS	—	925	—	925
LOANS RECEIVABLE – RELATED PARTY	545	—	(545)	—
OTHER NONCURRENT ASSETS	—	1,426	—	1,426
Total assets	$ 77,513	$ 146,243	$ (77,013)	$ 146,743
LIABILITIES AND MEMBER'S EQUITY				
CURRENT LIABILITIES:				
Accounts payable and accrued liabilities	$ 296	$ 7,662	$ —	$ 7,958
Operating lease liabilities	—	184	—	184
Payables to related party	—	357	(59)	298
Current portion of long-term debt	—	3,500	—	3,500
Total current liabilities	296	11,703	(59)	11,940
LONG-TERM DEBT	21,951	53,627	—	75,578
LOANS PAYABLE – RELATED PARTY	—	1,504	(545)	959
DEFERRED INCOME TAXES	—	55	—	55
LONG-TERM OPERATING LEASE LIABILITIES	—	788	—	788
OTHER LONG-TERM LIABILITIES	—	2,134	—	2,134
MEMBER'S EQUITY				
Controlling interest	55,266	76,409	(76,409)	55,266
Noncontrolling interests	—	23	—	23
Total member's equity	55,266	76,432	(76,409)	55,289
Total liabilities and member's equity	$ 77,513	$ 146,243	$ (77,013)	$ 146,743

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Balance Sheet

As of December 31, 2018

		Guarantor Subsidiaries		
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
ASSETS				
CURRENT ASSETS:				
Cash and cash equivalents	$ —	$ 300	$ —	$ 300
Accounts receivable, net	—	1,699	—	1,699
Receivables from related party	57	—	(57)	—
Prepaid expenses and other current assets	—	400	—	400
Total current assets	57	2,399	(57)	2,399
INVESTMENT IN CABLE PROPERTIES:				
Property, plant and equipment, net	—	34,658	—	34,658
Customer relationships, net	—	9,565	—	9,565
Franchises	—	67,319	—	67,319
Goodwill	—	29,554	—	29,554
Total investment in cable properties, net	—	141,096	—	141,096
INVESTMENT IN SUBSIDIARIES	78,960	—	(78,960)	—
LOANS RECEIVABLE – RELATED PARTY	526	—	(526)	—
OTHER NONCURRENT ASSETS	—	1,403	—	1,403
Total assets	$ 79,543	$ 144,898	$ (79,543)	$ 144,898
LIABILITIES AND MEMBER'S EQUITY				
CURRENT LIABILITIES:				
Accounts payable and accrued liabilities	$ 283	$ 7,620	$ —	$ 7,903
Payables to related party	—	602	(57)	545
Current portion of long-term debt	—	3,290	—	3,290
Total current liabilities	283	11,512	(57)	11,738
LONG-TERM DEBT	18,730	50,807	—	69,537
LOANS PAYABLE – RELATED PARTY	—	1,451	(526)	925
OTHER LONG-TERM LIABILITIES	—	2,144	—	2,144
MEMBER'S EQUITY				
Controlling interest	60,530	78,960	(78,960)	60,530
Noncontrolling interests	—	24	—	24
Total member's equity	60,530	78,984	(78,960)	60,554
Total liabilities and member's equity	$ 79,543	$ 144,898	$ (79,543)	$ 144,898

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Operations

For the year ended December 31, 2019

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
REVENUES	$ —	$ 45,756	$ —	$ 45,756
COSTS AND EXPENSES:				
Operating costs and expenses (exclusive of items shown separately below)	—	29,275	—	29,275
Depreciation and amortization	—	9,911	—	9,911
Other operating expenses, net	—	111	—	111
	—	39,297	—	39,297
Income from operations	—	6,459	—	6,459
OTHER INCOME (EXPENSES):				
Interest expense, net	(1,067)	(2,772)	—	(3,839)
Loss on extinguishment of debt	(22)	(3)	—	(25)
Loss on financial instruments, net	—	(54)	—	(54)
Other pension costs, net	—	(69)	—	(69)
Other expense, net	—	(131)	—	(131)
Equity in income of subsidiaries	3,340	—	(3,340)	—
	2,251	(3,029)	(3,340)	(4,118)
Income before income taxes	2,251	3,430	(3,340)	2,341
Income tax expense	—	(89)	—	(89)
Consolidated net income	2,251	3,341	(3,340)	2,252
Less: Net income attributable to noncontrolling interests	—	(1)	—	(1)
Net income	$ 2,251	$ 3,340	$ (3,340)	$ 2,251

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Operations

For the year ended December 31, 2018

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
REVENUES	$ —	$ 43,620	$ —	$ 43,620
COSTS AND EXPENSES:				
Operating costs and expenses (exclusive of items shown separately below)	—	27,891	—	27,891
Depreciation and amortization	—	10,307	—	10,307
Other operating expenses, net	—	230	—	230
	—	38,428	—	38,428
Income from operations	—	5,192	—	5,192
OTHER INCOME (EXPENSES):				
Interest expense, net	(1,016)	(2,563)	—	(3,579)
Loss on financial instruments, net	—	(110)	—	(110)
Other pension benefits, net	—	192	—	192
Other expense, net	—	(46)	—	(46)
Equity in income of subsidiaries	2,648	—	(2,648)	—
	1,632	(2,527)	(2,648)	(3,543)
Income before income taxes	1,632	2,665	(2,648)	1,649
Income tax expense	—	(16)	—	(16)
Consolidated net income	1,632	2,649	(2,648)	1,633
Less: Net income attributable to noncontrolling interests	—	(1)	—	(1)
Net income	$ 1,632	$ 2,648	$ (2,648)	$ 1,632

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Operations

For the year ended December 31, 2017

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
REVENUES	$ —	$ 41,578	$ —	$ 41,578
COSTS AND EXPENSES:				
Operating costs and expenses (exclusive of items shown separately below)	—	26,560	—	26,560
Depreciation and amortization	—	10,579	—	10,579
Other operating expenses, net	—	444	—	444
	—	37,583	—	37,583
Income from operations	—	3,995	—	3,995
OTHER INCOME (EXPENSES):				
Interest expense, net	(883)	(2,232)	—	(3,115)
Loss on extinguishment of debt	(34)	(6)	—	(40)
Gain on financial instruments, net	—	69	—	69
Other pension benefits	—	1	—	1
Other expense, net	—	(4)	—	(4)
Equity in income of subsidiaries	1,799	—	(1,799)	—
	882	(2,172)	(1,799)	(3,089)
Income before income taxes	882	1,823	(1,799)	906
Income tax expense	—	(23)	—	(23)
Consolidated net income	882	1,800	(1,799)	883
Less: Net income attributable to noncontrolling interests	—	(1)	—	(1)
Net income	$ 882	$ 1,799	$ (1,799)	$ 882

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Statement of Comprehensive Income
For the year ended December 31, 2019

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
Consolidated net income	$ 2,251	$ 3,341	$ (3,340)	$ 2,252
Foreign currency translation adjustment	2	2	(2)	2
Consolidated comprehensive income	2,253	3,343	(3,342)	2,254
Less: Comprehensive income attributable to noncontrolling interests	—	(1)	—	(1)
Comprehensive income	$ 2,253	$ 3,342	$ (3,342)	$ 2,253

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Statement of Comprehensive Income
For the year ended December 31, 2018

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
Consolidated net income	$ 1,632	$ 2,649	$ (2,648)	$ 1,633
Foreign currency translation adjustment	(1)	(1)	1	(1)
Consolidated comprehensive income	1,631	2,648	(2,647)	1,632
Less: Comprehensive income attributable to noncontrolling interests	—	(1)	—	(1)
Comprehensive income	$ 1,631	$ 2,647	$ (2,647)	$ 1,631

CCO Holdings, LLC and Subsidiaries
Condensed Consolidating Statement of Comprehensive Income
For the year ended December 31, 2017

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
Consolidated net income	$ 882	$ 1,800	$ (1,799)	$ 883
Net impact of interest rate derivative instruments	5	5	(5)	5
Foreign currency translation adjustment	1	1	(1)	1
Consolidated comprehensive income	888	1,806	(1,805)	889
Less: Comprehensive income attributable to noncontrolling interests	—	(1)	—	(1)
Comprehensive income	$ 888	$ 1,805	$ (1,805)	$ 888

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Cash Flows

For the year ended December 31, 2019

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	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
NET CASH FLOWS FROM OPERATING ACTIVITIES	$ (1,051)	$ 12,759	$ —	$ 11,708
CASH FLOWS FROM INVESTING ACTIVITIES:				
Purchases of property, plant and equipment	—	(7,195)	—	(7,195)
Change in accrued expenses related to capital expenditures	—	55	—	55
Contribution to subsidiaries	(2,860)	—	2,860	—
Distributions from subsidiaries	9,068	—	(9,068)	—
Other, net	—	54	—	54
Net cash flows from investing activities	6,208	(7,086)	(6,208)	(7,086)
CASH FLOWS FROM FINANCING ACTIVITIES:				
Borrowings of long-term debt	4,584	15,101	—	19,685
Repayments of long-term debt	(1,366)	(11,943)	—	(13,309)
Payment for debt issuance costs	(43)	(60)	—	(103)
Distributions to noncontrolling interest	—	(2)	—	(2)
Contributions from parent	59	2,860	(2,860)	59
Distributions to parent	(7,891)	(9,068)	9,068	(7,891)
Other, net	—	(112)	—	(112)
Net cash flows from financing activities	(4,657)	(3,224)	6,208	(1,673)
NET INCREASE IN CASH AND CASH EQUIVALENTS	500	2,449	—	2,949
CASH AND CASH EQUIVALENTS, beginning of period	—	300	—	300
CASH AND CASH EQUIVALENTS, end of period	$ 500	$ 2,749	$ —	$ 3,249

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Cash Flows

For the year ended December 31, 2018

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
NET CASH FLOWS FROM OPERATING ACTIVITIES	$ (1,009)	$ 12,666	$ —	$ 11,657
CASH FLOWS FROM INVESTING ACTIVITIES:				
Purchases of property, plant and equipment	—	(9,109)	—	(9,109)
Change in accrued expenses related to capital expenditures	—	(470)	—	(470)
Contribution to subsidiaries	(142)	—	142	—
Distributions from subsidiaries	6,187	—	(6,187)	—
Other, net	—	(100)	—	(100)
Net cash flows from investing activities	6,045	(9,679)	(6,045)	(9,679)
CASH FLOWS FROM FINANCING ACTIVITIES:				
Borrowings of long-term debt	—	13,820	—	13,820
Repayments of long-term debt	—	(10,769)	—	(10,769)
Borrowings of loans payable - related parties	—	12	—	12
Payment for debt issuance costs	—	(29)	—	(29)
Distributions to noncontrolling interest	—	(1)	—	(1)
Contributions from parent	142	142	(142)	142
Distributions to parent	(5,178)	(6,187)	6,187	(5,178)
Other, net	—	(5)	—	(5)
Net cash flows from financing activities	(5,036)	(3,017)	6,045	(2,008)
NET DECREASE IN CASH AND CASH EQUIVALENTS	—	(30)	—	(30)
CASH AND CASH EQUIVALENTS, beginning of period	—	330	—	330
CASH AND CASH EQUIVALENTS, end of period	$ —	$ 300	$ —	$ 300

CCO Holdings, LLC and Subsidiaries

Condensed Consolidating Statement of Cash Flows

For the year ended December 31, 2017

	Guarantor Subsidiaries			
	CCO Holdings	Charter Operating and Restricted Subsidiaries	Eliminations	CCO Holdings Consolidated
NET CASH FLOWS FROM OPERATING ACTIVITIES:	$ (814)	$ 12,422	$ —	$ 11,608
CASH FLOWS FROM INVESTING ACTIVITIES:				
Purchases of property, plant and equipment	—	(8,681)	—	(8,681)
Change in accrued expenses related to capital expenditures	—	820	—	820
Contribution to subsidiaries	(693)	—	693	—
Distributions from subsidiaries	9,598	—	(9,598)	—
Other, net	—	(132)	—	(132)
Net cash flows from investing activities	8,905	(7,993)	(8,905)	(7,993)
CASH FLOWS FROM FINANCING ACTIVITIES:				
Borrowings of long-term debt	6,231	19,045	—	25,276
Repayments of long-term debt	(775)	(15,732)	—	(16,507)
Borrowings of loans payable - related parties	—	234	—	234
Payment for debt issuance costs	(59)	(52)	—	(111)
Distributions to noncontrolling interest	—	(2)	—	(2)
Contributions from parent	—	693	(693)	—
Distributions to parent	(13,488)	(9,598)	9,598	(13,488)
Other, net	—	(11)	—	(11)
Net cash flows from financing activities	(8,091)	(5,423)	8,905	(4,609)
NET DECREASE IN CASH AND CASH EQUIVALENTS	—	(994)	—	(994)
CASH AND CASH EQUIVALENTS, beginning of period	—	1,324	—	1,324
CASH AND CASH EQUIVALENTS, end of period	$ —	$ 330	$ —	$ 330

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

The Manager and the Member of
CCO Holdings, LLC and CCO Holdings Capital Corp.:

We consent to the incorporation by reference in the registration statement No. 333-222241 on Form S-3 of CCO Holdings, LLC and CCO Holdings Capital Corp. of our report dated February 7, 2020, with respect to the consolidated balance sheets of CCO Holdings, LLC as of December 31, 2019 and 2018, the related consolidated statements of operations, changes in member's equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes, which report appears in the December 31, 2019 annual report on Form 10-K of CCO Holdings, LLC and CCO Holdings Capital Corp.

Our report refers to a change in the method of accounting for leases as of January 1, 2019 due to the adoption of Accounting Standards Codification Topic 842, *Leases*.

(signed) KPMG LLP

St. Louis, Missouri
February 7, 2020

Exhibit 31.1

I, Thomas M. Rutledge, certify that:

1. I have reviewed this Annual Report on Form 10-K of CCO Holdings, LLC and CCO Holdings Capital Corp.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant’s other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    (c) Evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

5. The registrant’s other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of the registrant’s board of directors (or persons performing the equivalent functions):

    (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and

    (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant’s internal control over financial reporting.

Date: February 7, 2020

/s/ Thomas M. Rutledge

Thomas M. Rutledge
Chairman and Chief Executive Officer

Exhibit 31.2

I, Christopher L. Winfrey, certify that:

1. I have reviewed this Annual Report on Form 10-K of CCO Holdings, LLC and CCO Holdings Capital Corp.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 7, 2020

/s/ Christopher L. Winfrey

Christopher L. Winfrey
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER REGARDING PERIODIC REPORT CONTAINING FINANCIAL STATEMENTS

I, Thomas M. Rutledge, the Chairman and Chief Executive Officer of CCO Holdings, LLC and CCO Holdings Capital Corp. (the "Company") in compliance with 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, hereby certify that, the Company's Annual Report on Form 10-K for the year ended December 31, 2019 (the "Report") filed with the Securities and Exchange Commission:

- fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934; and
- the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Thomas M. Rutledge
Thomas M. Rutledge
Chairman and Chief Executive Officer
February 7, 2020

Exhibit 32.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER REGARDING PERIODIC REPORT CONTAINING FINANCIAL STATEMENTS

I, Christopher L. Winfrey, the Chief Financial Officer of CCO Holdings, LLC and CCO Holdings Capital Corp. (the "Company"), in compliance with 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, hereby certify that, the Company's Annual Report on Form 10-K for the year ended December 31, 2019 (the "Report") filed with the Securities and Exchange Commission:

- fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934; and
- the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Christopher L. Winfrey
Christopher L. Winfrey
Chief Financial Officer
(Principal Financial Officer)
February 7, 2020

Attachment 8

AFFIDAVIT

STATE OF MICHIGAN
COUNTY OF GRAND TRAVERSE, to wit.

David M. Slowik, being duly sworn, deposes and says as follows:

1. I am an Area Vice President for Charter Communications, Inc., a publicly-held Delaware corporation with a principal place of business at 400 Atlantic Street, Stamford, CT 06901 ("Charter"). I have personal knowledge of the facts set forth in this affidavit.

2. Charter is a provider of broadband internet services, among other products, and owns the cable system that provisions broadband/high speed internet access (the "System") in Michigan operated by Spectrum Mid-America, LLC, a Delaware limited liability company with a principal place of business in Missouri.

3. I am familiar with the System and hereby declare and confirm that, based on information and belief, the System is deployed in and architected, designed and constructed to deliver residential internet with a connection of up to 1 Gig (and speeds of up to 940 Mbps download/35 Mbps upload) within Michigan, and that hybrid coax/fiber buildout proposed in Charter's Application will have the same capabilities.

4. I further state upon information and belief that Charter will continue to offer services at or above the speeds described in this Application for the next three years.

Further this affiant sayeth not.

[SIGNATURE PAGE FOLLOWS]

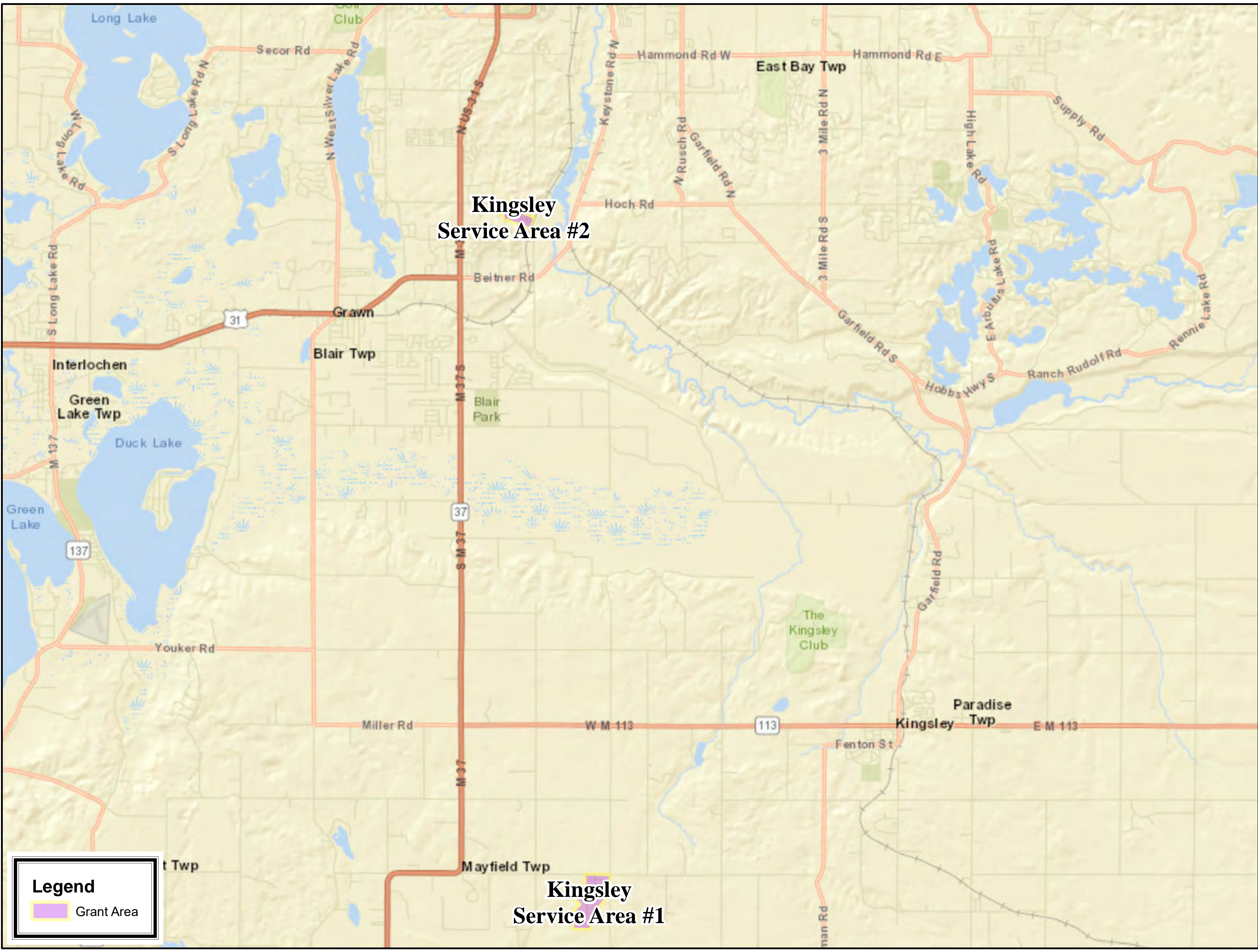
Subscribed and sworn before me, a notary public of and for the jurisdiction aforesaid, this 21 day of December, 2020, by David M. Slowik as Area Vice President, Field Operations for Charter Communications, Inc., who affirmed that all of his declarations contained in the above affidavit are true and correct.

David M. Slowik,
Area Vice President for Charter Communications, Inc.

[SEAL]

Notary Public
My commission expires: 6/25/2025

COLETTE M DECKER
Notary Public, State of Michigan
County of Grand Traverse
My Commission Expires 06-25-2025
Acting in the County of Grand Traverse



Kingsley
Service Area #2
Kingsley
Service Area #1
Legend
Grant Area
Long Lake
Secor Rd
East Bay Twp
Hammond Rd W
Hammond Rd E
Supply Rd
Hoch Rd
Beitner Rd
Grawn
Blair Twp
Interlochen
Green Lake Twp
Duck Lake
Green Lake
Blair Park
Youker Rd
Miller Rd
W M 113
E M 113
Kingsley
Paradise Twp
Fenton St
The Kingsley Club
Mayfield Twp
Ranch Rudolf Rd
Hobbs Hwy S
Garfield Rd S
Garfield Rd N
Garfield Rd
3 Mile Rd S
3 Mile Rd N
N Rusch Rd
Keystone Rd N
High Lake Rd
E Arbutus Lake Rd
Rennie Lake Rd
N US-31 S
M 37 S
S M 37
M 37
S Long Lake Rd
S Long Lake Rd N
W Long Lake Rd
N West Silver Lake Rd
M 137
31
37
113
137

W Center Rd

REDACTED

W Center Rd

Laredo Dr

Center Place Dr

Schichtel Rd

Pebblebrook Dr

Remington Dr

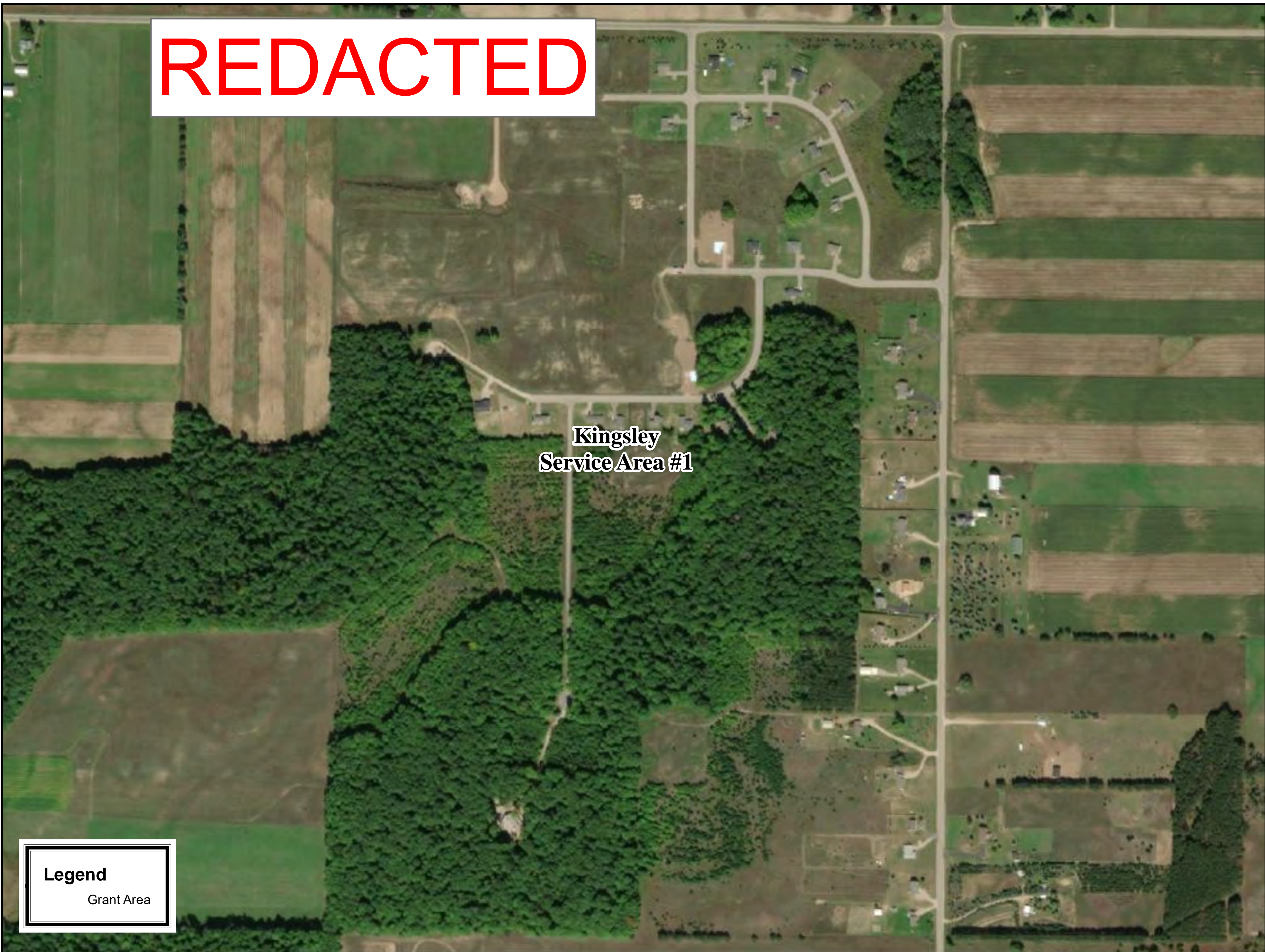
Kingsley
Service Area #1

Hollowbrook Trl

Schichtel Rd

Legend

Grant Area



REDACTED
Kingsley
Service Area #1
Legend
Grant Area

REDACTED

chool Rd

Elmer's

Garfield Twp

Rennie School Rd

Kingsley
Service Area #2

Rennie School Rd

illiams Rd

Legend

Grant Area

REDACTED
Kingsley
Service Area #2
Legend
Grant Area

INSTRUCTIONS FOR UNIFORM VIDEO SERVICE LOCAL FRANCHISE AGREEMENT

Pursuant to 2006 Public Act 480, MCL 484.3301 *et seq*, any Video Service Provider seeking to provide video service in one or more service areas in the state of Michigan after January 30, 2007, shall file an application for a Uniform Video Service Local Franchise Agreement with the Local Unit of Government ("Franchising Entity") that the Provider wishes to service. Pursuant to Section 2(2) of 2006 PA 480, "Except as otherwise provided by this Act, a person shall not provide video services in any local unit of government without first obtaining a uniform video service local franchise as provided under Section 3." Procedures applicable to incumbent video service providers are set forth below.

As of the effective date (January 1, 2007) of the Act, no existing franchise agreement with a Franchising Entity shall be renewed or extended upon the expiration date of the agreement. The incumbent video Provider, at its option, may continue to provide video services to the Franchising Entity by electing to do one of the following:

1. Terminate the existing franchise agreement before the expiration date of the agreement and enter into a new franchise under a uniform video service local franchise agreement.

2. Continue under the existing franchise agreement amended to include only those provisions required under a uniform video service local franchise.

3. Continue to operate under the terms of an expired franchise until a uniform video service local franchise agreement takes effect. An incumbent video Provider with an expired franchise on the effective date has 120 days after the effective date of the Act to file for a uniform video service local franchise agreement.

On the effective date (January 1, 2007) of the Act, any provisions of an existing Franchise that are inconsistent with or in addition to the provisions of a uniform video service local Franchise Agreement are unreasonable and unenforceable by the Franchising Entity.

If, at a subsequent date, the Provider would like to provide video service to an additional Local Unit of Government, the Provider must file an additional application with that Local Unit of Government.

The forms shall meet the following requirements:

- The Provider must complete both the "Uniform Video Service Local Franchise Agreement" and "Attachment 1 - Uniform Video Service Local Franchise Agreement" forms if they are seeking a new/renewed Franchise Agreement, and send the forms by mail (certified, registered, first-class, return receipt requested, or by a nationally recognized overnight delivery service) to the appropriate Franchising Entity. Until otherwise officially notified by the Franchising Entity, the forms shall be sent to the Clerk or any official with the responsibilities or functions of the Clerk in the Franchising Entity. **"Attachment 2 - Uniform Video Service Local Franchise Agreement" is not required to be filed at this time *unless* it is being used regarding amendments, terminations, or transfers pertaining to an existing Uniform Video Service Local Franchise Agreement. (Refer to Sections X to XII of the Agreement, as well as Section 3(4-6) of the Act.)**

- Pursuant to Section 11 of the Act: Except under the terms of a mandatory protective order, trade secrets and commercial or financial information designated as such and submitted under the Act to the Franchising Entity or Commission are exempt from the Freedom of Information Act, 1976 PA 442, MCL 15.231 to 15.246 and MUST BE KEPT CONFIDENTIAL.

    1. The Provider may specify which items of information should be deemed "confidential." It is the responsibility of the provider to clearly identify and segregate any confidential information submitted to the franchising entity with the following information:

        "[insert PROVIDER'S NAME]
        [CONFIDENTIAL INFORMATION]"

2. The Franchising Entity receiving the information so designated as confidential is required (a) to protect such information from public disclosure, (b) exempt such information from any response to a FOIA request, and (c) make the information available only to and for use only by such local officials as are necessary to approve the franchise agreement or perform any other task for which the information is submitted.

3. Any Franchising Entity which disputes whether certain information submitted to it by a provider is entitled to confidential treatment under the Act may apply to the Commission for resolution of such a dispute. Unless and until the Commission determines that part or all of the information is not entitled to confidential treatment under the Act, the Franchising Entity shall keep the information confidential.

- Responses to all questions must be provided and must be amended appropriately when changes occur.
- All responses must be printed out, typed, signed/dated (where appropriate), and mailed (certified, registered, first class, return receipt requested, or by a national recognized overnight delivery service) to the appropriate party.
- The Agreement and Attachments are templates. Tab through the documents and fill in as appropriate, use the appropriate "dropdown box" (City/Village/Township) when indicated.
- For sections that need explanation, if the Provider runs out of space, the Provider should then submit the application with typed attachments that are clearly identified.
- The Franchising Entity shall notify the Provider as to whether the submitted Franchise Agreement is complete as required by this Act within 15 business days after the date that the Franchise Agreement is filed. If the Franchise Agreement is not complete, the Franchising Entity shall state in its notice the reasons the franchise agreement is incomplete. The Franchising Entity cannot declare an application to be incomplete because it may dispute whether or not the applicant has properly classified certain material as "confidential."
- A Franchising Entity shall have 30 days after the submission date of a complete Franchise Agreement to approve the agreement. If the Franchising Entity does not notify the Provider regarding the completeness of the Franchise Agreement or approve the Franchise Agreement within the time periods required under this subsection, the franchise agreement shall be considered complete and the Franchise Agreement approved. The Provider shall notify both the Franchising Entity and the Michigan Public Service Commission of such an approved and completed Agreement by completing **Attachment 3 - Uniform Video Service Local Franchise Agreement**.
- For changes to an existing Uniform Video Service Local Franchise Agreement (amendments, transfers, or terminations), the Provider must complete the "**Attachment 2 - Uniform Video Service Local Franchising Entity**" form, and send the form to the appropriate Franchising Entity.
- For information that is to be submitted to the Michigan Public Service Commission, please use the following address:

Michigan Public Service Commission
Attn: Video Franchising
P.O. Box 30221
Lansing, MI 48909

Fax: (517) 284-8200

Questions should be directed to the Telecommunications Division, Michigan Public Service Commission at (517) 284-8190.

UNIFORM VIDEO SERVICE LOCAL FRANCHISE AGREEMENT

THIS UNIFORM VIDEO SERVICE LOCAL FRANCHISE AGREEMENT ("Agreement") is made, pursuant to 2006 PA 480, MCL 484.3301 *et seq*, (the "Act") by and between the Township of Mayfield, a Michigan municipal corporation (the "Franchising Entity"), and CC Michigan, a Delaware Limited Liability corporation doing business as Charter Communications.

I. Definitions

For purposes of this Agreement, the following terms shall have the following meanings as defined in the Act:

A. "Cable Operator" means that terms as defined in 47 USC 522(5).
B. "Cable Service" means that terms as defined in 47 USC 522(6).
C. "Cable System" means that term as defined in 47 USC 522(7).
D. "Commission" means the Michigan Public Service Commission.
E. "Franchising Entity" means the local unit of government in which a provider offers video services through a franchise.
F. "FCC" means the Federal Communications Commission.
G. "Gross Revenue" means that term as described in Section 6(4) of the Act and in Section VI(D) of the Agreement.
H. "Household" means a house, an apartment, a mobile home, or any other structure or part of a structure intended for residential occupancy as separate living quarters.
I. "Incumbent video provider" means a cable operator serving cable subscribers or a telecommunication provider providing video services through the provider's existing telephone exchange boundaries in a particular franchise area within a local unit of government on the effective date of this act.
J. "IPTV" means internet protocol television.
K. "Local unit of government" means a city, village, or township.
L. "Low-income household" means a household with an average annual household income of less than $35,000.00 as determined by the most recent decennial census.
M. "METRO Act" means the Metropolitan Extension Telecommunications Rights-of-Way Oversight Act, 2002 PA 48, MCL 484.3101 *et seq*.
N. "Open video system" or "OVS" means that term as defined in 47 USC 573.
O. "Person" means an individual, corporation, association, partnership, governmental entity, or any other legal entity.
P. "Public rights-of-way" means the area on, below, or above a public roadway, highway, street, public sidewalk, alley, waterway, or utility easements dedicated for compatible uses.
Q. "Term" means the period of time provided for in Section V of this Agreement.
R. "Uniform video service local franchise agreement" or "franchise agreement" means the franchise agreement required under the Act to be the operating agreement between each franchising entity and video provider in this state.
S. "Video programming" means that term as defined in 47 USC 522(20).
T. "Video service" means video programming, cable services, IPTV, or OVS provided through facilities located at least in part in the public rights-of-way without regard to delivery technology, including internet protocol technology. This definition does not include any video programming provided by a commercial mobile service provider defined in 47 USC 332(d) or provided solely as part of, and via, a service that enables users to access content, information, electronic mail, or other services offered over the public internet.
U. "Video service provider" or "Provider" means a person authorized under the Act to provide video service.
V. "Video service provider fee" means the amount paid by a video service provider or incumbent video provider under Section 6 of the Act and Section VI of this Agreement.

II. Requirements of the Provider

A. An unfranchised Provider will not provide video services in any local unit of government without first obtaining a uniform video service local franchise agreement as provided under **Section 3 of the Act** (except as otherwise provided by the Act).
B. The Provider shall file in a timely manner with the Federal Communications Commission all forms required by that agency in advance of offering video service in Michigan.
C. The Provider agrees to comply with all valid and enforceable federal and state statutes and regulations.
D. The Provider agrees to comply with all valid and enforceable local regulations regarding the use and occupation of public rights-of-way in the delivery of the video service, including the police powers of the Franchising Entity.
E. The Provider shall comply with all Federal Communications Commission requirements involving the distribution and notification of federal, state, and local emergency messages over the emergency alert system applicable to cable operators.
F. The Provider shall comply with the public, education, and government programming requirements of Section 4 of the Act.
G. The Provider shall comply with all customer service rules of the Federal Communications Commission under 47 CFR 76.309 (c) applicable to cable operators and applicable provisions of the Michigan Consumer Protection Act, 1976 PA 331, MCL 445.901 to 445.922.
    i. Including but not limited to: MCL 445.902; MCL 445.903 (1)(a) through 445.903(1)(cc); MCL 445.903(1)(ff) through (jj); MCL 445.903(2); MCL 445.905; MCL 445.906; MCL 445.907; MCL 445.908; MCL 445.910; MCL 445.911; MCL 445.914; MCL 445.915; MCL 445.916; MCL 445.918.
H. The Provider agrees to comply with in-home wiring and consumer premises wiring rules of the Federal Communications Commission applicable to cable operators.
I. The Provider shall comply with the Consumer Privacy Requirements of 47 USC 551 applicable to cable operators.
J. If the Provider is an incumbent video provider, it shall comply with the terms which provide insurance for right-of-way related activities that are contained in its last cable franchise or consent agreement from the Franchising Entity entered before the effective date of the Act.
K. The Provider agrees that before offering video services within the boundaries of a local unit of government, the video Provider shall enter into a Franchise Agreement with the local unit of government as required by the Act.
L. The Provider understands that as the effective date of the Act, no existing Franchise Agreement with a Franchising Entity shall be renewed or extended upon the expiration date of the Agreement.
M. The Provider provides an exact description of the video service area footprint to be served, pursuant to **Section 2(3)(e) of the Act**. If the Provider is not an incumbent video Provider, the date on which the Provider expects to provide video services in the area identified under **Section 2(3)(e) of the Act** must be noted. The Provider will provide this information in Attachment 1 - Uniform Video Service Local Franchise Agreement.
N. The Provider is required to pay the Provider fees pursuant to **Section 6 of the Act**.

III. Provider Providing Access

A. The Provider shall not deny access to service to any group of potential residential subscribers because of the race or income of the residents in the local area in which the group resides.
B. It is a defense to an alleged violation of Paragraph A if the Provider has met either of the following conditions:
    i. Within 3 years of the date it began providing video service under the Act and the Agreement; at least 25% of households with access to the Provider's video service are low-income households.
    ii. Within 5 years of the date it began providing video service under the Act and Agreement and from that point forward, at least 30% of the households with access to the Provider's video service are low-income households.
C. **[If the Provider is using telecommunication facilities]** to provide video services and has more than 1,000,000 telecommunication access lines in Michigan, the Provider shall provide access to its video service to a number of households equal to at least 25% of the households in the provider's telecommunication

service area in Michigan within 3 years of the date it began providing video service under the Act and Agreement and to a number not less than 50% of these households within 6 years. **The video service Provider is not required to meet the 50% requirement in this paragraph until 2 years after at least 30% of the households with access to the Provider's video service subscribe to the service for 6 consecutive months.**

D. The Provider may apply to the Franchising Entity, and in the case of paragraph C, the Commission, for a waiver of or for an extension of time to meet the requirements of this section if 1 or more of the following apply:
   i. The inability to obtain access to public and private rights-of-way under reasonable terms and conditions.
   ii. Developments or buildings not being subject to competition because of existing exclusive service arrangements.
   iii. Developments or buildings being inaccessible using reasonable technical solutions under commercial reasonable terms and conditions.
   iv. Natural disasters
   v. Factors beyond the control of the Provider

E. The Franchising Entity or Commission may grant the waiver or extension only if the Provider has made substantial and continuous effort to meet the requirements of this section. If an extension is granted, the Franchising Entity or Commission shall establish a new compliance deadline. If a waiver is granted, the Franchising Entity or Commission shall specify the requirement or requirements waived.

F. The Provider shall file an annual report with the Franchising Entity and the Commission regarding the progress that has been made toward compliance with paragraphs B and C.

G. Except for satellite service, the provider may satisfy the requirements of this paragraph and Section 9 of the Act through the use of alternative technology that offers service, functionality, and content, which is demonstrably similar to that provided through the provider's video service system and may include a technology that does not require the use of any public right-of-way. The technology utilized to comply with the requirements of this section shall include local public, education, and government channels and messages over the emergency alert system as required under Paragraph II(E) of this Agreement.

IV. Responsibility of the Franchising Entity

A. The Franchising Entity hereby grants authority to the Provider to provide Video Service in the Video Service area footprint, as described in this Agreement and Attachments, as well as the Act.

B. The Franchising Entity hereby grants authority to the Provider to use and occupy the Public Rights-of-way in the delivery of Video Service, subject to the laws of the state of Michigan and the police powers of the Franchising Entity.

C. The Franchising Entity shall notify the Provider as to whether the submitted Franchise Agreement is complete as required by the Act within 15 business days after the date that the Franchise Agreement is filed. If the Franchise Agreement is not complete, the Franchising Entity shall state in its notice the reasons the Franchise Agreement is incomplete. The Franchising Entity cannot declare an application to be incomplete because it may dispute whether or not the applicant has properly classified certain material as "confidential."

D. The Franchising Entity shall have 30 days after the submission date of a complete Franchise Agreement to approve the agreement. If the Franchising Entity does not notify the Provider regarding the completeness of the Franchise Agreement or approve the Franchise Agreement within the time periods required under **Section 3(3) of the Act**, the Franchise Agreement shall be considered complete and the Franchise Agreement approved.
   i. If time has expired for the Franchising Entity to notify the Provider, The Provider shall send (via mail: certified or registered, or by fax) notice to the Franchising Entity and the Commission, using Attachment 3 of this Agreement.

E. The Franchising Entity shall allow a Provider to install, construct, and maintain a video service or communications network within a public right-of-way and shall provide the provider with open, comparable, nondiscriminatory, and competitively neutral access to the public right-of-way.

F. The Franchising Entity may not discriminate against a video service provider to provide video service for any of the following:
   i. The authorization or placement of a video service or communications network in public right-of-way.
   ii. Access to a building owned by a governmental entity.
   iii. A municipal utility pole attachment.

G. The Franchising Entity may impose on a Provider a permit fee only to the extent it imposes such a fee on incumbent video providers, and any fee shall not exceed the actual, direct costs incurred by the Franchising Entity for issuing the relevant permit. A fee under this section shall not be levied if the Provider already has

paid a permit fee of any kind in connection with the same activity that would otherwise be covered by the permit fee under this section or is otherwise authorized by law or contract to place the facilities used by the Provider in the public right-of-way or for general revenue purposes.

H. The Franchising Entity shall not require the provider to obtain any other franchise, assess any other fee or charge, or impose any other franchise requirement than is allowed under the Act and this Agreement. For purposes of this Agreement, a franchise requirement includes but is not limited to, a provision regulating rates charged by video service providers, requiring the video service providers to satisfy any build-out requirements, or a requirement for the deployment of any facilities or equipment.

I. Notwithstanding any other provision of the Act, the Provider shall not be required to comply with, and the Franchising Entity may not impose or enforce, any mandatory build-out or deployment provisions, schedules, or requirements except as required by **Section 9 of the Act.**

J. The Franchising Entity is subject to the penalties provided for under Section 14 of the Act.

V. Term

A. This Franchise Agreement shall be for a period of 10 years from the date it is issued. The date it is issued shall be calculated either by **(a)** the date the Franchising Entity approved the Agreement, provided it did so within 30 days after the submission of a complete franchise agreement, or **(b)** the date the Agreement is deemed approved pursuant to **Section 3(3) of the Act**, if the Franchising Entity either fails to notify the Provider regarding the completeness of the Agreement or approve the Agreement within the time periods required under that subsection.

B. Before the expiration of the initial Franchise Agreement or any subsequent renewals, the Provider may apply for an additional 10-year renewal under **Section 3(7) of the Act.**

VI. Fees

A. A video service Provider shall calculate and pay an annual video service provider fee to the Franchising Entity. The fee shall be 1 of the following:
   - i. If there is an existing Franchise Agreement, an amount equal to the percentage of gross revenue paid to the Franchising Entity by the incumbent video Provider with the largest number of subscribers in the Franchising Entity.
   - ii. At the expiration of an existing Franchise Agreement or if there is no existing Franchise Agreement, an amount equal to the percentage of gross revenue as established by the Franchising Entity of 3 % (percentage amount to be inserted by Franchising Entity which shall not exceed 5%) and shall be applicable to all providers

B. The fee shall be due on a quarterly basis and paid within 45 days after the close of the quarter. Each payment shall include a statement explaining the basis for the calculation of the fee.

C. The Franchising Entity shall not demand any additional fees or charges from a provider and shall not demand the use of any other calculation method other than allowed under the Act.

D. For purposes of this Section, "gross revenues" means all consideration of any kind or nature, including, without limitation, cash, credits, property, and in-kind contributions received by the provider from subscribers for the provision of video service by the video service provider within the jurisdiction of the franchising entity.

1. **Gross revenues shall include all of the following:**
   - i. All charges and fees paid by subscribers for the provision of video service, including equipment rental, late fees, insufficient funds fees, fees attributable to video service when sold individually or as part of a package or bundle, or functionally integrated, with services other than video service.
   - ii. Any franchise fee imposed on the Provider that is passed on to subscribers.
   - iii. Compensation received by the Provider for promotion or exhibition of any products or services over the video service.
   - iv. Revenue received by the Provider as compensation for carriage of video programming on that Provider's video service.
   - v. All revenue derived from compensation arrangements for advertising to the local franchise area.
   - vi. Any advertising commissions paid to an affiliated third party for video service advertising.

2. **Gross revenues do not include any of the following:**
   - i. Any revenue not actually received, even if billed, such as bad debt net of any recoveries of bad debt.
   - ii. Refunds, rebates, credits, or discounts to subscribers or a municipality to the extent not already offset by subdivision (D)(i) and to the extent the refund, rebate, credit, or discount is attributable to the video service.

iii. Any revenues received by the Provider or its affiliates from the provision of services or capabilities other than video service, including telecommunications services, information services, and services, capabilities, and applications that may be sold as part of a package or bundle, or functionality integrated, with video service.
iv. Any revenues received by the Provider or its affiliates for the provision of directory or internet advertising, including yellow pages, white pages, banner advertisement, and electronic publishing.
v. Any amounts attributable to the provision of video service to customers at no charge, including the provision of such service to public institutions without charge.
vi. Any tax, fee, or assessment of general applicability imposed on the customer or the transaction by a federal, state, or local government or any other governmental entity, collected by the Provider, and required to be remitted to the taxing entity, including sales and use taxes.
vii. Any forgone revenue from the provision of video service at no charge to any person, except that any forgone revenue exchanged for trades, barters, services, or other items of value shall be included in gross revenue.
viii. Sales of capital assets or surplus equipment.
ix. Reimbursement by programmers of marketing costs actually incurred by the Provider for the introduction of new programming.
x. The sale of video service for resale to the extent the purchaser certifies in writing that it will resell the service and pay a franchise fee with respect to the service.

E. In the case of a video service that is bundled or integrated functionally with other services, capabilities, or applications, the portion of the video Provider's revenue attributable to the other services, capabilities, or applications shall be included in gross revenue unless the Provider can reasonably identify the division or exclusion of the revenue from its books and records that are kept in the regular course of business.

F. Revenue of an affiliate shall be included in the calculation of gross revenues to the extent the treatment of the revenue as revenue of the affiliate has the effect of evading the payment of franchise fees which would otherwise be paid for video service.

G. The Provider is entitled to a credit applied toward the fees due under **Section 6(1) of the Act** for all funds allocated to the Franchising Entity from annual maintenance fees paid by the provider for use of public rights-of-way, minus any property tax credit allowed under **Section 8 of the Metropolitan Extension Telecommunications Rights-of-Way Oversight Act (METRO Act)**, 2002 PA 48, MCL 484.3108. The credits shall be applied on a monthly pro rata basis beginning in the first month of each calendar year in which the Franchising Entity receives its allocation of funds. The credit allowed under this subsection shall be calculated by multiplying the number of linear feet occupied by the Provider in the public rights-of-way of the Franchising Entity by the lesser of 5 cents or the amount assessed under the **METRO Act**. The Provider is not eligible for a credit under this section unless the provider has taken all property tax credits allowed under the **METRO Act**.

H. All determinations and computations made under this section shall be pursuant to generally accepted accounting principles.

I. Any claims by a Franchising Entity that fees have not been paid as required under **Section 6 of the Act**, and any claims for refunds or other corrections to the remittance of the Provider shall be made within 3 years from the date the compensation is remitted.

J. The Provider may identify and collect as a separate line item on the regular monthly bill of each subscriber an amount equal to the percentage established under **Section 6(1) of the Act**, applied against the amount of the subscriber's monthly bill.

K. The Franchising Entity shall not demand any additional fees or charges from a Provider and shall not demand the use of any other calculation method other than allowed under the Act.

VII. Public, Education, and Government (PEG) Channels

A. The video service Provider shall designate a sufficient amount of capacity on its network to provide for the same number of public, education, and government access channels that are in actual use on the incumbent video provider system on the **effective date of the Act** or as provided under **Section 4(14) of the Act.**

B. Any public, education, or government channel provided under this section that is not utilized by the Franchising Entity for at least 8 hours per day for 3 consecutive months may no longer be made available to the Franchising Entity and may be programmed at the Provider's discretion. At such a time as the Franchising Entity can certify a schedule for at least 8 hours of daily programming for a period of 3 consecutive months, the Provider shall restore the previously reallocated channel.

C. The Franchising Entity shall ensure that all transmissions, content, or programming to be retransmitted by a video service Provider is provided in a manner or form that is capable of being accepted and retransmitted by a Provider, without requirement for additional alteration or change in the content by the Provider, over the

particular network of the Provider, which is compatible with the technology or protocol utilized by the Provider to deliver services.

D. The person producing the broadcast is solely responsible for all content provided over designated public, education, or government channels. The video service Provider *shall not* exercise any editorial control over any programming on any channel designed for public, education, or government use.

E. The video service Provider is not subject to any civil or criminal liability for any program carried on any channel designated for public, education, or government use.

F. If a Franchising Entity seeks to utilize capacity pursuant to **Section 4(1) of the Act** or an agreement under **Section 13 of the Act** to provide access to video programming over one or more PEG channels, the Franchising Entity shall give the Provider a written request specifying the number of channels in actual use on the incumbent video provider's system or specified in the agreement entered into under **Section 13 of the Act**. The video service Provider shall have 90 days to begin providing access as requested by the Franchising Entity. The number and designation of PEG access channels shall be set forth in an addendum to this agreement effective 90 days after the request is submitted by the Franchising Entity.

G. A PEG channel shall only be used for noncommercial purposes.

VIII. PEG Fees

A. The video service Provider shall also pay to the Franchising Entity as support for the cost of PEG access facilities and services an annual fee equal to one of the following options:

1. If there is an existing Franchise on the effective date of the Act, the fee (enter the fee amount ____0____) paid to the Franchising Entity by the incumbent video Provider with the largest number of cable service subscribers in the Franchising Entity as determined by the existing Franchise Agreement;
2. At the expiration of the existing Franchise Agreement, the amount required under (1) above, which is __0__% of gross revenues. (The amount under (1) above is not to exceed 2% of gross revenues);
3. If there is no existing Franchise Agreement, a percentage of gross revenues as established by the Franchising Entity and to be determined by a community need assessment, is __0__% of gross revenues. (The percentage that is established by the Franchising Entity is not to exceed 2% of gross revenues.); and
4. An amount agreed to by the Franchising Entity and the video service Provider.

B. The fee required by this section shall be applicable to all providers, pursuant to Section 6(9) of the Act.

C. The fee shall be due on a quarterly basis and paid within 45 days after the close of the quarter. Each payment shall include a statement explaining the basis for the calculation of the fee.

D. All determinations and computations made under this section shall be pursuant to generally accepted accounting principles.

E. Any claims by a Franchising Entity that fees have not been paid as required under **Section 6 of the Act**, and any claims for refunds or other corrections to the remittance of the Provider shall be made within 3 years from the date the compensation is remitted.

F. The Provider may identify and collect as a separate line item on the regular monthly bill of each subscriber an amount equal to the percentage established under **Section 6(8) of the Act**, applied against the amount of the subscriber's monthly bill.

G. The Franchising Entity shall not demand any additional fees or charges from a Provider and shall not demand the use of any other calculation method other than allowed under the Act.

IX. Audits

A. No more than every 24 months, a Franchising Entity may perform reasonable audits of the video service Provider's calculation of the fees paid under **Section 6 of the Act** to the Franchising Entity during the preceding 24-month period only. All records reasonably necessary for the audits shall be made available by the Provider at the location where the records are kept in the ordinary course of business. The Franchising Entity and the video service Provider shall each be responsible for their respective costs of the audit. Any additional amount due verified by the Franchising Entity shall be paid by the Provider within 30 days of the Franchising Entity's submission of invoice for the sum. If the sum exceeds 5% of the total fees which the audit determines should have been paid for the 24-month period, the Provider shall pay the Franchising Entity's reasonable costs of the audit.

B. Any claims by a Franchising Entity that fees have not been paid as required under **Section 6 of the Act**, and any claims for refunds or other corrections to the remittance of the provider shall be made within 3 years from the date the compensation is remitted.

X. Termination and Modification

This Franchise Agreement issued by a Franchising Entity may be terminated or the video service area footprint may be modified, except as provided under **Section 9 of the Act**, by the Provider by submitting notice to the Franchising Entity. The Provider will use Attachment 2, when notifying the Franchising Entity.

XI. Transferability

This Franchise Agreement issued by a Franchising Entity or an existing franchise of an incumbent video service Provider is fully transferable to any successor in interest to the Provider to which it is initially granted. A notice of transfer shall be filed with the Franchising Entity within 15 days of the completion of the transfer. The Provider will use Attachment 2, when notifying the Franchising Entity. The successor in interest will assume the rights and responsibilities of the original provider and will also be required to complete their portion of the Transfer Agreement located within Attachment 2.

XII. Change of Information

If any of the information contained in the Franchise Agreement changes, the Provider shall timely notify the Franchising Entity. The Provider will use Attachment 2, when notifying the Franchising Entity.

XIII. Confidentiality

Pursuant to Section 11 of the Act: Except under the terms of a mandatory protective order, trade secrets and commercial or financial information designated as such and submitted under the Act to the Franchising Entity or Commission are exempt from the Freedom of Information Act, 1976 PA 442, MCL 15.231 to 15.246 and MUST BE KEPT CONFIDENTIAL.

A. The Provider may specify which items of information should be deemed "confidential." It is the responsibility of the provider to clearly identify and segregate any confidential information submitted to the franchising entity with the following information:
 "[insert PROVIDER'S NAME]
 [CONFIDENTIAL INFORMATION]"

B. The Franchising Entity receiving the information so designated as confidential is required (a) to protect such information from public disclosure, (b) exempt such information from any response to a FOIA request, and (c) make the information available only to and for use only by such local officials as are necessary to approve the franchise agreement or perform any other task for which the information is submitted.

C. Any Franchising Entity which disputes whether certain information submitted to it by a provider is entitled to confidential treatment under the Act may apply to the Commission for resolution of such a dispute. Unless and until the Commission determines that part or all of the information is not entitled to confidential treatment under the Act, the Franchising Entity shall keep the information confidential.

XIV. Complaints/Customer Service

A. The Provider shall establish a dispute resolution process for its customers. Provider shall maintain a local or toll-free telephone number for customer service contact.

B. The Provider shall be subjected to the penalties, as described under **Section 14 of the Act**, and the Franchising Entity and Provider may be subjected to the dispute process as described in **Section 10 of the Act.**

C. Each Provider shall annually notify its customers of the dispute resolution process required under **Section 10 of the Act**. Each Provider shall include the dispute resolution process on its website.

D. Before a customer may file a complaint with the Commission under **Section 10(5) of the Act**, the customer shall first attempt to resolve the dispute through the dispute resolution process established by the Provider in **Section 10(2) of the Act.**

E. A complaint between a customer and a Provider shall be handled by the Commission pursuant to the process as described in **Section 10(5) of the Act.**

F. A complaint between a Provider and a franchising entity or between two or more Providers shall be handled by the Commission pursuant to the process described in **Section 10(6) of the Act.**

G. In connection with providing video services to the subscribers, a provider shall not do any act prohibited by Section 10(1)(a-f) of the Act. The Commission may enforce compliance to the extent that the activities are not covered by **Section 2(3)(l) in the Act.**

XV. Notices

Any notices to be given under this Franchise Agreement shall be in writing and delivered to a Party personally, by facsimile or by certified, registered, or first-class mail, with postage prepaid and return receipt requested, or by a nationally recognized overnight delivery service, addressed as follows:

If to the Franchising Entity:
(must provide street address)

Township of Mayfield:

Township of Mayfield
1616 Hammer Rd.
Kingsley, MI 49649
Attn: Township Supervisor
Fax No.: 231-263-4599

If to the Provider:
(must provide street address)

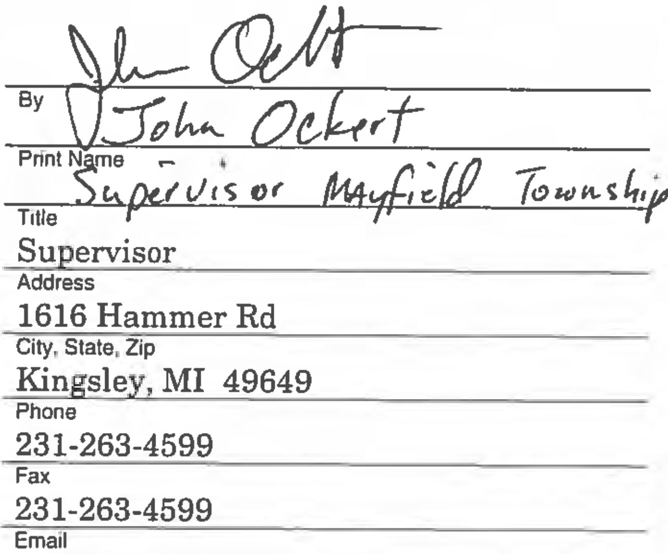
Charter Communications
12405 Powerscourt Dr.
St. Louis, MO 63131
Attn: Legal Department
Fax No.: 314-965-6640

Or such other addresses or facsimile numbers as the Parties may designate by written notice from time to time.

XVI. Miscellaneous

A. Governing Law. This Franchise Agreement shall be governed by, and construed in accordance with, applicable Federal laws and laws of the State of Michigan.
B. The parties to this Franchise Agreement are subject to all valid and enforceable provisions of the Act.
C. Counterparts. This Agreement may be signed in one or more counterparts, each of which shall be deemed an original and all of which together shall constitute on and the same agreement.
D. Power to Enter. Each Party hereby warrants to the other Party that it has the requisite power and authority to enter into this Franchise Agreement and to perform according to the terms hereof.
E. The Provider and Franchising Entity are subject to the provisions of 2006 Public Act 480.

IN WITNESS WHEREOF, the Parties, by their duly authorized representatives, have executed this Franchise Agreement.



Township of Mayfield, **a Michigan Municipal Corporation**

By: John Ockert

Print Name: John Ockert

Title: Supervisor Mayfield Township

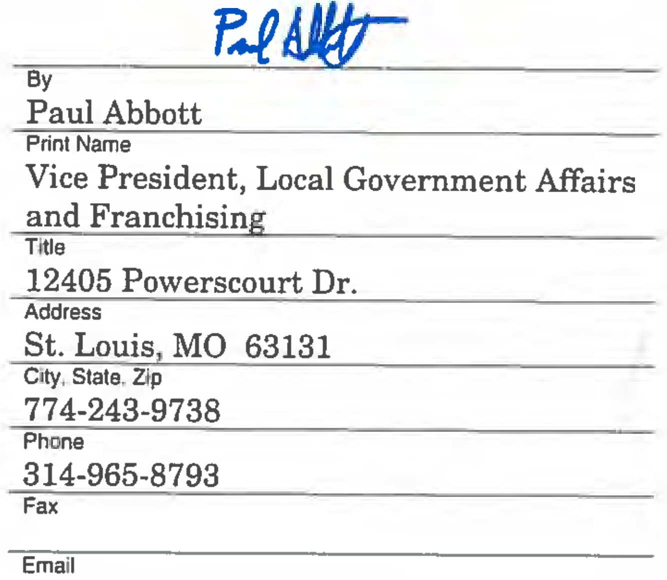
Supervisor
Address

1616 Hammer Rd
City, State, Zip

Kingsley, MI 49649
Phone

231-263-4599
Fax

231-263-4599
Email



CC Michigan, **a** Delaware Limited Liability **corporation doing business as** Charter Communications

By: Paul Abbott

Paul Abbott
Print Name

Vice President, Local Government Affairs and Franchising
Title

12405 Powerscourt Dr.
Address

St. Louis, MO 63131
City, State, Zip

774-243-9738
Phone

314-965-8793
Fax

Email

FRANCHISE AGREEMENT *(Franchising Entity to Complete)*

Date submitted: 9-11-17
Date completed and approved: 9-11-17

ATTACHMENT 1

UNIFORM VIDEO SERVICE LOCAL FRANCHISE AGREEMENT
(Pursuant To 2006 Public Act 480)
(Form must be typed)

Date: August 15, 2017		
Applicant's Name: CC Michigan, a Delaware Limited Liability Corporation		
Address 1: 12405 Powerscourt Dr.		
Address 2:		Phone: 314-965-0555
City: St. Louis	State: Missouri	Zip: 63131
Federal I.D. No. (FEIN): 13-4029981		

Company executive officers:

Name(s): Thomas M. Rutledge
Title(s): President and Chief Executive Officer

Person(s) authorized to represent the company before the Franchising Entity and the Commission:

Name: Marilyn Passmore		
Title: Director, State Government Affairs		
Address: 4670 E. Fulton, #102, Ada, MI 49301		
Phone: 616-607-2377	Fax: 616-975-1107	Email: marilyn.passmore@charter.com

Describe the video service area footprint as set forth in Section 2(3e) of the Act. (An exact description of the video service area footprint to be served, as identified by a geographic information system digital boundary meeting or exceeding national map accuracy standards.)

The area provided service is the Township of Mayfield. Upon request, Charter Communications shall provide route maps showing the locations of the Cable System, to Municipality, access to "as-built" maps, and updated route maps to reflect any changes. Municipality shall give Grantee a minimum of 48 hours notice of the request to view "as-built" maps, unless there exists an emergency situation requiring earlier viewing. Charter Communications' local office and engineering contact information (engineering drawings/"as-built" map address) is listed below. This information also applies to 24 hour emergencies:
Keith Schierbeek- Director of Field Operations
1433 Fulton Street
Grand Haven, MI 49417
Phone: 616-607-2302
email: keith.schierbeek@charter.com

[**Option A:** for Providers that Options B and C are not applicable, a description based on a geographic information system digital boundary meeting or exceeding national map accuracy standards]

[**Option B:** for Providers with 1,000,000 or more access lines in Michigan using telecommunication facilities to provide Video Service, a description based on entire wire centers or exchanges located in the Franchising Entity]

[**Option C:** for an Incumbent Video Service Provider, it satisfies this requirement by allowing the Franchising Entity to seek right-of-way information comparable to that required by a permit under the METRO Act as set forth in its last cable franchise or consent agreement from the Franchising Entity entered into before the effective date of the Act]

Pursuant to Section 2(3)(d) of the Act, if the Provider is not an incumbent video Provider, provide the date on which the Provider expects to provide video services in the area identified under Section 2(3)(e) (the Video Service Area Footprint).

Date:

For All Applications:

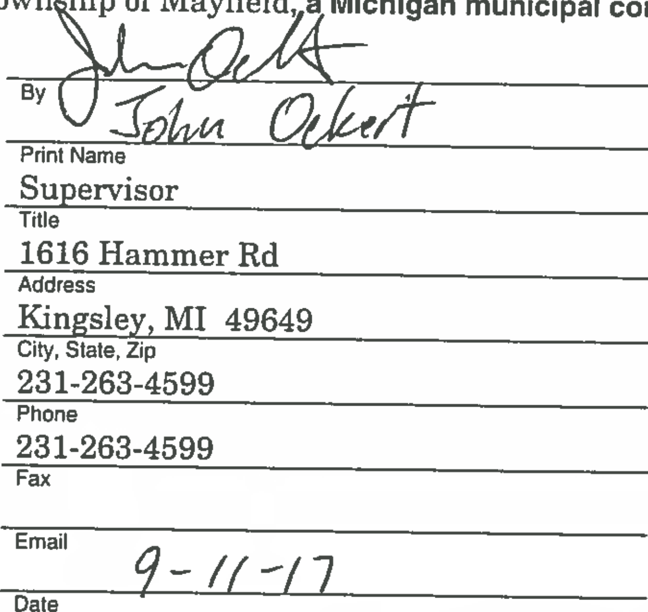
Verification
(Provider)

I, Paul Abbott, of lawful age, and being first duly sworn, now states: As an officer of the Provider, I am authorized to do and hereby make the above commitments. I further affirm that all statements made above are true and correct to the best of my knowledge and belief.

Name and Title (printed): Paul Abbott, Vice President, Local Government Affairs and Franchising	
Signature: Paul Abbott	*Date:* 8/18/2017

(Franchising Entity)

Township of Mayfield, a Michigan municipal corporation



By [signature]

John Oekert
Print Name

Supervisor
Title

1616 Hammer Rd
Address

Kingsley, MI 49649
City, State, Zip

231-263-4599
Phone

231-263-4599
Fax

Email

9-11-17
Date

UNIFORM VIDEO SERVICE LOCAL FRANCHISE AGREEMENT

THIS UNIFORM VIDEO SERVICE LOCAL FRANCHISE AGREEMENT ("Agreement") is made, pursuant to 2006 PA 480, MCL 484.3301 *et seq*, (the "Act") by and between the Township of Blair, a Michigan municipal corporation (the "Franchising Entity"), and CC Michigan, a Delaware Limited Liability corporation doing business as Charter Communications.

I. Definitions

For purposes of this Agreement, the following terms shall have the following meanings as defined in the Act:

A. "Cable Operator" means that terms as defined in 47 USC 522(5).
B. "Cable Service" means that terms as defined in 47 USC 522(6).
C. "Cable System" means that term as defined in 47 USC 522(7).
D. "Commission" means the Michigan Public Service Commission.
E. "Franchising Entity" means the local unit of government in which a provider offers video services through a franchise.
F. "FCC" means the Federal Communications Commission.
G. "Gross Revenue" means that term as described in Section 6(4) of the Act and in Section VI(D) of the Agreement.
H. "Household" means a house, an apartment, a mobile home, or any other structure or part of a structure intended for residential occupancy as separate living quarters.
I. "Incumbent video provider" means a cable operator serving cable subscribers or a telecommunication provider providing video services through the provider's existing telephone exchange boundaries in a particular franchise area within a local unit of government on the effective date of this act.
J. "IPTV" means internet protocol television.
K. "Local unit of government" means a city, village, or township.
L. "Low-income household" means a household with an average annual household income of less than $35,000.00 as determined by the most recent decennial census.
M. "METRO Act" means the Metropolitan Extension Telecommunications Rights-of-Way Oversight Act, 2002 PA 48, MCL 484.3101 *et seq.*
N. "Open video system" or "OVS" means that term as defined in 47 USC 573.
O. "Person" means an individual, corporation, association, partnership, governmental entity, or any other legal entity.
P. "Public rights-of-way" means the area on, below, or above a public roadway, highway, street, public sidewalk, alley, waterway, or utility easements dedicated for compatible uses.
Q. "Term" means the period of time provided for in Section V of this Agreement.
R. "Uniform video service local franchise agreement" or "franchise agreement" means the franchise agreement required under the Act to be the operating agreement between each franchising entity and video provider in this state.
S. "Video programming" means that term as defined in 47 USC 522(20).
T. "Video service" means video programming, cable services, IPTV, or OVS provided through facilities located at least in part in the public rights-of-way without regard to delivery technology, including internet protocol technology. This definition does not include any video programming provided by a commercial mobile service provider defined in 47 USC 332(d) or provided solely as part of, and via, a service that enables users to access content, information, electronic mail, or other services offered over the public internet.
U. "Video service provider" or "Provider" means a person authorized under the Act to provide video service.
V. "Video service provider fee" means the amount paid by a video service provider or incumbent video provider under Section 6 of the Act and Section VI of this Agreement.

II. Requirements of the Provider

A. An unfranchised Provider will not provide video services in any local unit of government without first obtaining a uniform video service local franchise agreement as provided under **Section 3 of the Act** (except as otherwise provided by the Act).
B. The Provider shall file in a timely manner with the Federal Communications Commission all forms required by that agency in advance of offering video service in Michigan.
C. The Provider agrees to comply with all valid and enforceable federal and state statutes and regulations.
D. The Provider agrees to comply with all valid and enforceable local regulations regarding the use and occupation of public rights-of-way in the delivery of the video service, including the police powers of the Franchising Entity.
E. The Provider shall comply with all Federal Communications Commission requirements involving the distribution and notification of federal, state, and local emergency messages over the emergency alert system applicable to cable operators.
F. The Provider shall comply with the public, education, and government programming requirements of Section 4 of the Act.
G. The Provider shall comply with all customer service rules of the Federal Communications Commission under 47 CFR 76.309 (c) applicable to cable operators and applicable provisions of the Michigan Consumer Protection Act, 1976 PA 331, MCL 445.901 to 445.922.
    i. Including but not limited to: MCL 445.902; MCL 445.903 (1)(a) through 445.903(1)(cc); MCL 445.903(1)(ff) through (jj); MCL 445.903(2); MCL 445.905; MCL 445.906; MCL 445.907; MCL 445.908; MCL 445.910; MCL 445.911; MCL 445.914; MCL 445.915; MCL 445.916; MCL 445.918.
H. The Provider agrees to comply with in-home wiring and consumer premises wiring rules of the Federal Communications Commission applicable to cable operators.
I. The Provider shall comply with the Consumer Privacy Requirements of 47 USC 551 applicable to cable operators.
J. If the Provider is an incumbent video provider, it shall comply with the terms which provide insurance for right-of-way related activities that are contained in its last cable franchise or consent agreement from the Franchising Entity entered before the effective date of the Act.
K. The Provider agrees that before offering video services within the boundaries of a local unit of government, the video Provider shall enter into a Franchise Agreement with the local unit of government as required by the Act.
L. The Provider understands that as the effective date of the Act, no existing Franchise Agreement with a Franchising Entity shall be renewed or extended upon the expiration date of the Agreement.
M. The Provider provides an exact description of the video service area footprint to be served, pursuant to **Section 2(3)(e) of the Act**. If the Provider is not an incumbent video Provider, the date on which the Provider expects to provide video services in the area identified under **Section 2(3)(e) of the Act** must be noted. The Provider will provide this information in Attachment 1 - Uniform Video Service Local Franchise Agreement.
N. The Provider is required to pay the Provider fees pursuant to **Section 6 of the Act.**

III. Provider Providing Access

A. The Provider shall not deny access to service to any group of potential residential subscribers because of the race or income of the residents in the local area in which the group resides.
B. It is a defense to an alleged violation of Paragraph A if the Provider has met either of the following conditions:
    i. Within 3 years of the date it began providing video service under the Act and the Agreement; at least 25% of households with access to the Provider's video service are low-income households.
    ii. Within 5 years of the date it began providing video service under the Act and Agreement and from that point forward, at least 30% of the households with access to the Provider's video service are low-income households.
C. **[If the Provider is using telecommunication facilities**] to provide video services and has more than 1,000,000 telecommunication access lines in Michigan, the Provider shall provide access to its video service to a number of households equal to at least 25% of the households in the provider's telecommunication

service area in Michigan within 3 years of the date it began providing video service under the Act and Agreement and to a number not less than 50% of these households within 6 years. **The video service Provider is not required to meet the 50% requirement in this paragraph until 2 years after at least 30% of the households with access to the Provider's video service subscribe to the service for 6 consecutive months.**

D. The Provider may apply to the Franchising Entity, and in the case of paragraph C, the Commission, for a waiver of or for an extension of time to meet the requirements of this section if 1 or more of the following apply:
   i. The inability to obtain access to public and private rights-of-way under reasonable terms and conditions.
   ii. Developments or buildings not being subject to competition because of existing exclusive service arrangements.
   iii. Developments or buildings being inaccessible using reasonable technical solutions under commercial reasonable terms and conditions.
   iv. Natural disasters
   v. Factors beyond the control of the Provider

E. The Franchising Entity or Commission may grant the waiver or extension only if the Provider has made substantial and continuous effort to meet the requirements of this section. If an extension is granted, the Franchising Entity or Commission shall establish a new compliance deadline. If a waiver is granted, the Franchising Entity or Commission shall specify the requirement or requirements waived.

F. The Provider shall file an annual report with the Franchising Entity and the Commission regarding the progress that has been made toward compliance with paragraphs B and C.

G. Except for satellite service, the provider may satisfy the requirements of this paragraph and Section 9 of the Act through the use of alternative technology that offers service, functionality, and content, which is demonstrably similar to that provided through the provider's video service system and may include a technology that does not require the use of any public right-of-way. The technology utilized to comply with the requirements of this section shall include local public, education, and government channels and messages over the emergency alert system as required under Paragraph II(E) of this Agreement.

IV. Responsibility of the Franchising Entity

A. The Franchising Entity hereby grants authority to the Provider to provide Video Service in the Video Service area footprint, as described in this Agreement and Attachments, as well as the Act.

B. The Franchising Entity hereby grants authority to the Provider to use and occupy the Public Rights-of-way in the delivery of Video Service, subject to the laws of the state of Michigan and the police powers of the Franchising Entity.

C. The Franchising Entity shall notify the Provider as to whether the submitted Franchise Agreement is complete as required by the Act within 15 business days after the date that the Franchise Agreement is filed. If the Franchise Agreement is not complete, the Franchising Entity shall state in its notice the reasons the Franchise Agreement is incomplete. The Franchising Entity cannot declare an application to be incomplete because it may dispute whether or not the applicant has properly classified certain material as "confidential."

D. The Franchising Entity shall have 30 days after the submission date of a complete Franchise Agreement to approve the agreement. If the Franchising Entity does not notify the Provider regarding the completeness of the Franchise Agreement or approve the Franchise Agreement within the time periods required under **Section 3(3) of the Act**, the Franchise Agreement shall be considered complete and the Franchise Agreement approved.
   i. If time has expired for the Franchising Entity to notify the Provider, The Provider shall send (via mail: certified or registered, or by fax) notice to the Franchising Entity and the Commission, using Attachment 3 of this Agreement.

E. The Franchising Entity shall allow a Provider to install, construct, and maintain a video service or communications network within a public right-of-way and shall provide the provider with open, comparable, nondiscriminatory, and competitively neutral access to the public right-of-way.

F. The Franchising Entity may not discriminate against a video service provider to provide video service for any of the following:
   i. The authorization or placement of a video service or communications network in public right-of-way.
   ii. Access to a building owned by a governmental entity.
   iii. A municipal utility pole attachment.

G. The Franchising Entity may impose on a Provider a permit fee only to the extent it imposes such a fee on incumbent video providers, and any fee shall not exceed the actual, direct costs incurred by the Franchising Entity for issuing the relevant permit. A fee under this section shall not be levied if the Provider already has

paid a permit fee of any kind in connection with the same activity that would otherwise be covered by the permit fee under this section or is otherwise authorized by law or contract to place the facilities used by the Provider in the public right-of-way or for general revenue purposes.

H. The Franchising Entity shall not require the provider to obtain any other franchise, assess any other fee or charge, or impose any other franchise requirement than is allowed under the Act and this Agreement. For purposes of this Agreement, a franchise requirement includes but is not limited to, a provision regulating rates charged by video service providers, requiring the video service providers to satisfy any build-out requirements, or a requirement for the deployment of any facilities or equipment.

I. Notwithstanding any other provision of the Act, the Provider shall not be required to comply with, and the Franchising Entity may not impose or enforce, any mandatory build-out or deployment provisions, schedules, or requirements except as required by **Section 9 of the Act**.

J. The Franchising Entity is subject to the penalties provided for under Section 14 of the Act.

V. Term

A. This Franchise Agreement shall be for a period of 10 years from the date it is issued. The date it is issued shall be calculated either by **(a)** the date the Franchising Entity approved the Agreement, provided it did so within 30 days after the submission of a complete franchise agreement, or **(b)** the date the Agreement is deemed approved pursuant to **Section 3(3) of the Act**, if the Franchising Entity either fails to notify the Provider regarding the completeness of the Agreement or approve the Agreement within the time periods required under that subsection.

B. Before the expiration of the initial Franchise Agreement or any subsequent renewals, the Provider may apply for an additional 10-year renewal under **Section 3(7) of the Act.**

VI. Fees

A. A video service Provider shall calculate and pay an annual video service provider fee to the Franchising Entity. The fee shall be 1 of the following:

i. If there is an existing Franchise Agreement, an amount equal to the percentage of gross revenue paid to the Franchising Entity by the incumbent video Provider with the largest number of subscribers in the Franchising Entity.

ii. At the expiration of an existing Franchise Agreement or if there is no existing Franchise Agreement, an amount equal to the percentage of gross revenue as established by the Franchising Entity of __5__% (percentage amount to be inserted by Franchising Entity which shall not exceed 5%) and shall be applicable to all providers

B. The fee shall be due on a quarterly basis and paid within 45 days after the close of the quarter. Each payment shall include a statement explaining the basis for the calculation of the fee.

C. The Franchising Entity shall not demand any additional fees or charges from a provider and shall not demand the use of any other calculation method other than allowed under the Act.

D. For purposes of this Section, "gross revenues" means all consideration of any kind or nature, including, without limitation, cash, credits, property, and in-kind contributions received by the provider from subscribers for the provision of video service by the video service provider within the jurisdiction of the franchising entity.

1. **Gross revenues shall include all of the following:**

i. All charges and fees paid by subscribers for the provision of video service, including equipment rental, late fees, insufficient funds fees, fees attributable to video service when sold individually or as part of a package or bundle, or functionally integrated, with services other than video service.

ii. Any franchise fee imposed on the Provider that is passed on to subscribers.

iii. Compensation received by the Provider for promotion or exhibition of any products or services over the video service.

iv. Revenue received by the Provider as compensation for carriage of video programming on that Provider's video service.

v. All revenue derived from compensation arrangements for advertising to the local franchise area.

vi. Any advertising commissions paid to an affiliated third party for video service advertising.

2. **Gross revenues do not include any of the following:**

i. Any revenue not actually received, even if billed, such as bad debt net of any recoveries of bad debt.

ii. Refunds, rebates, credits, or discounts to subscribers or a municipality to the extent not already offset by subdivision (D)(i) and to the extent the refund, rebate, credit, or discount is attributable to the video service.

iii. Any revenues received by the Provider or its affiliates from the provision of services or capabilities other than video service, including telecommunications services, information services, and services, capabilities, and applications that may be sold as part of a package or bundle, or functionality integrated, with video service.
iv. Any revenues received by the Provider or its affiliates for the provision of directory or internet advertising, including yellow pages, white pages, banner advertisement, and electronic publishing.
v. Any amounts attributable to the provision of video service to customers at no charge, including the provision of such service to public institutions without charge.
vi. Any tax, fee, or assessment of general applicability imposed on the customer or the transaction by a federal, state, or local government or any other governmental entity, collected by the Provider, and required to be remitted to the taxing entity, including sales and use taxes.
vii. Any forgone revenue from the provision of video service at no charge to any person, except that any forgone revenue exchanged for trades, barters, services, or other items of value shall be included in gross revenue.
viii. Sales of capital assets or surplus equipment.
ix. Reimbursement by programmers of marketing costs actually incurred by the Provider for the introduction of new programming.
x. The sale of video service for resale to the extent the purchaser certifies in writing that it will resell the service and pay a franchise fee with respect to the service.

E. In the case of a video service that is bundled or integrated functionally with other services, capabilities, or applications, the portion of the video Provider's revenue attributable to the other services, capabilities, or applications shall be included in gross revenue unless the Provider can reasonably identify the division or exclusion of the revenue from its books and records that are kept in the regular course of business.
F. Revenue of an affiliate shall be included in the calculation of gross revenues to the extent the treatment of the revenue as revenue of the affiliate has the effect of evading the payment of franchise fees which would otherwise be paid for video service.
G. The Provider is entitled to a credit applied toward the fees due under **Section 6(1) of the Act** for all funds allocated to the Franchising Entity from annual maintenance fees paid by the provider for use of public rights-of-way, minus any property tax credit allowed under **Section 8 of the Metropolitan Extension Telecommunications Rights-of-Way Oversight Act (METRO Act)**, 2002 PA 48, MCL 484.3108. The credits shall be applied on a monthly pro rata basis beginning in the first month of each calendar year in which the Franchising Entity receives its allocation of funds. The credit allowed under this subsection shall be calculated by multiplying the number of linear feet occupied by the Provider in the public rights-of-way of the Franchising Entity by the lesser of 5 cents or the amount assessed under the **METRO Act**. The Provider is not eligible for a credit under this section unless the provider has taken all property tax credits allowed under the **METRO Act**.
H. All determinations and computations made under this section shall be pursuant to generally accepted accounting principles.
I. Any claims by a Franchising Entity that fees have not been paid as required under **Section 6 of the Act**, and any claims for refunds or other corrections to the remittance of the Provider shall be made within 3 years from the date the compensation is remitted.
J. The Provider may identify and collect as a separate line item on the regular monthly bill of each subscriber an amount equal to the percentage established under **Section 6(1) of the Act**, applied against the amount of the subscriber's monthly bill.
K. The Franchising Entity shall not demand any additional fees or charges from a Provider and shall not demand the use of any other calculation method other than allowed under the Act.

VII. Public, Education, and Government (PEG) Channels

A. The video service Provider shall designate a sufficient amount of capacity on its network to provide for the same number of public, education, and government access channels that are in actual use on the incumbent video provider system on the **effective date of the Act** or as provided under **Section 4(14) of the Act**.
B. Any public, education, or government channel provided under this section that is not utilized by the Franchising Entity for at least 8 hours per day for 3 consecutive months may no longer be made available to the Franchising Entity and may be programmed at the Provider's discretion. At such a time as the Franchising Entity can certify a schedule for at least 8 hours of daily programming for a period of 3 consecutive months, the Provider shall restore the previously reallocated channel.
C. The Franchising Entity shall ensure that all transmissions, content, or programming to be retransmitted by a video service Provider is provided in a manner or form that is capable of being accepted and retransmitted by a Provider, without requirement for additional alteration or change in the content by the Provider, over the

particular network of the Provider, which is compatible with the technology or protocol utilized by the Provider to deliver services.

D. The person producing the broadcast is solely responsible for all content provided over designated public, education, or government channels. The video service Provider *shall not* exercise any editorial control over any programming on any channel designed for public, education, or government use.

E. The video service Provider is not subject to any civil or criminal liability for any program carried on any channel designated for public, education, or government use.

F. If a Franchising Entity seeks to utilize capacity pursuant to **Section 4(1) of the Act** or an agreement under **Section 13 of the Act** to provide access to video programming over one or more PEG channels, the Franchising Entity shall give the Provider a written request specifying the number of channels in actual use on the incumbent video provider's system or specified in the agreement entered into under **Section 13 of the Act**. The video service Provider shall have 90 days to begin providing access as requested by the Franchising Entity. The number and designation of PEG access channels shall be set forth in an addendum to this agreement effective 90 days after the request is submitted by the Franchising Entity.

G. A PEG channel shall only be used for noncommercial purposes.

VIII. PEG Fees

A. The video service Provider shall also pay to the Franchising Entity as support for the cost of PEG access facilities and services an annual fee equal to one of the following options:

1. If there is an existing Franchise on the effective date of the Act, the fee (enter the fee amount ______________) paid to the Franchising Entity by the incumbent video Provider with the largest number of cable service subscribers in the Franchising Entity as determined by the existing Franchise Agreement;
2. At the expiration of the existing Franchise Agreement, the amount required under (1) above, which is ______% of gross revenues. (The amount under (1) above is not to exceed 2% of gross revenues);
3. If there is no existing Franchise Agreement, a percentage of gross revenues as established by the Franchising Entity and to be determined by a community need assessment, is _____% of gross revenues. (The percentage that is established by the Franchising Entity is not to exceed 2% of gross revenues.); and
4. An amount agreed to by the Franchising Entity and the video service Provider.

B. The fee required by this section shall be applicable to all providers, pursuant to Section 6(9) of the Act.

C. The fee shall be due on a quarterly basis and paid within 45 days after the close of the quarter. Each payment shall include a statement explaining the basis for the calculation of the fee.

D. All determinations and computations made under this section shall be pursuant to generally accepted accounting principles.

E. Any claims by a Franchising Entity that fees have not been paid as required under **Section 6 of the Act**, and any claims for refunds or other corrections to the remittance of the Provider shall be made within 3 years from the date the compensation is remitted.

F. The Provider may identify and collect as a separate line item on the regular monthly bill of each subscriber an amount equal to the percentage established under **Section 6(8) of the Act**, applied against the amount of the subscriber's monthly bill.

G. The Franchising Entity shall not demand any additional fees or charges from a Provider and shall not demand the use of any other calculation method other than allowed under the Act.

IX. Audits

A. No more than every 24 months, a Franchising Entity may perform reasonable audits of the video service Provider's calculation of the fees paid under **Section 6 of the Act** to the Franchising Entity during the preceding 24-month period only. All records reasonably necessary for the audits shall be made available by the Provider at the location where the records are kept in the ordinary course of business. The Franchising Entity and the video service Provider shall each be responsible for their respective costs of the audit. Any additional amount due verified by the Franchising Entity shall be paid by the Provider within 30 days of the Franchising Entity's submission of invoice for the sum. If the sum exceeds 5% of the total fees which the audit determines should have been paid for the 24-month period, the Provider shall pay the Franchising Entity's reasonable costs of the audit.

B. Any claims by a Franchising Entity that fees have not been paid as required under **Section 6 of the Act**, and any claims for refunds or other corrections to the remittance of the provider shall be made within 3 years from the date the compensation is remitted.

X. Termination and Modification

This Franchise Agreement issued by a Franchising Entity may be terminated or the video service area footprint may be modified, except as provided under **Section 9 of the Act**, by the Provider by submitting notice to the Franchising Entity. The Provider will use Attachment 2, when notifying the Franchising Entity.

XI. Transferability

This Franchise Agreement issued by a Franchising Entity or an existing franchise of an incumbent video service Provider is fully transferable to any successor in interest to the Provider to which it is initially granted. A notice of transfer shall be filed with the Franchising Entity within 15 days of the completion of the transfer. The Provider will use Attachment 2, when notifying the Franchising Entity. The successor in interest will assume the rights and responsibilities of the original provider and will also be required to complete their portion of the Transfer Agreement located within Attachment 2.

XII. Change of Information

If any of the information contained in the Franchise Agreement changes, the Provider shall timely notify the Franchising Entity. The Provider will use Attachment 2, when notifying the Franchising Entity.

XIII. Confidentiality

Pursuant to Section 11 of the Act: Except under the terms of a mandatory protective order, trade secrets and commercial or financial information designated as such and submitted under the Act to the Franchising Entity or Commission are exempt from the Freedom of Information Act, 1976 PA 442, MCL 15.231 to 15.246 and MUST BE KEPT CONFIDENTIAL.

A. The Provider may specify which items of information should be deemed "confidential." It is the responsibility of the provider to clearly identify and segregate any confidential information submitted to the franchising entity with the following information:
"[insert PROVIDER'S NAME]
[CONFIDENTIAL INFORMATION]"

B. The Franchising Entity receiving the information so designated as confidential is required (a) to protect such information from public disclosure, (b) exempt such information from any response to a FOIA request, and (c) make the information available only to and for use only by such local officials as are necessary to approve the franchise agreement or perform any other task for which the information is submitted.

C. Any Franchising Entity which disputes whether certain information submitted to it by a provider is entitled to confidential treatment under the Act may apply to the Commission for resolution of such a dispute. Unless and until the Commission determines that part or all of the information is not entitled to confidential treatment under the Act, the Franchising Entity shall keep the information confidential.

XIV. Complaints/Customer Service

A. The Provider shall establish a dispute resolution process for its customers. Provider shall maintain a local or toll-free telephone number for customer service contact.

B. The Provider shall be subjected to the penalties, as described under **Section 14 of the Act**, and the Franchising Entity and Provider may be subjected to the dispute process as described in **Section 10 of the Act**.

C. Each Provider shall annually notify its customers of the dispute resolution process required under **Section 10 of the Act.** Each Provider shall include the dispute resolution process on its website.

D. Before a customer may file a complaint with the Commission under **Section 10(5) of the Act**, the customer shall first attempt to resolve the dispute through the dispute resolution process established by the Provider in **Section 10(2) of the Act**.

E. A complaint between a customer and a Provider shall be handled by the Commission pursuant to the process as described in **Section 10(5) of the Act.**

F. A complaint between a Provider and a franchising entity or between two or more Providers shall be handled by the Commission pursuant to the process described in **Section 10(6) of the Act.**

G. In connection with providing video services to the subscribers, a provider shall not do any act prohibited by Section 10(1)(a-f) of the Act. The Commission may enforce compliance to the extent that the activities are not covered by **Section 2(3)(l) in the Act.**

XV. Notices

Any notices to be given under this Franchise Agreement shall be in writing and delivered to a Party personally, by facsimile or by certified, registered, or first-class mail, with postage prepaid and return receipt requested, or by a nationally recognized overnight delivery service, addressed as follows:

If to the Franchising Entity:
(must provide street address)

Township of Blair (Grand Traverse):

Blair Township
2121 Co. Rd. 633
Grawn, MI 49637
Attn: Supervisor
Fax No.: 231-276-5111

If to the Provider:
(must provide street address)

Charter Communications
12405 Powerscourt Dr.
St. Louis, MO 63131
Attn: Legal Department
Fax No.: 314-965-6640

Or such other addresses or facsimile numbers as the Parties may designate by written notice from time to time.

XVI. Miscellaneous

A. Governing Law. This Franchise Agreement shall be governed by, and construed in accordance with, applicable Federal laws and laws of the State of Michigan.
B. The parties to this Franchise Agreement are subject to all valid and enforceable provisions of the Act.
C. Counterparts. This Agreement may be signed in one or more counterparts, each of which shall be deemed an original and all of which together shall constitute on and the same agreement.
D. Power to Enter. Each Party hereby warrants to the other Party that it has the requisite power and authority to enter into this Franchise Agreement and to perform according to the terms hereof.
E. The Provider and Franchising Entity are subject to the provisions of 2006 Public Act 480.

IN WITNESS WHEREOF, the Parties, by their duly authorized representatives, have executed this Franchise Agreement.

Townshipof Blair, **a Michigan Municipal Corporation**

By: Nicole Blonshine

Print Name: Nicole Blonshine

Title: Supervisor

Address: 2121 Co. Rd. 633

City, State, Zip: Grawn, MI 49637

Phone: 231-276-9263

Fax: 231-276-5111

Email:

CC Michigan, **a** Delaware Limited Liability **corporation doing business as** Charter Communications

By: Paul Abbott

Print Name: Paul Abbott

Title: Vice President, Local Government Affairs and Franchising

Address: 12405 Powerscourt Dr.

City, State, Zip: St. Louis, MO 63131

Phone: 774-243-9738

Fax: 314-965-8793

Email:

FRANCHISE AGREEMENT *(Franchising Entity to Complete)*

Date submitted:	December 1, 201[illegible]
Date completed and approved:	

Date [illegible]

ATTACHMENT 1

UNIFORM VIDEO SERVICE LOCAL FRANCHISE AGREEMENT
(Pursuant To 2006 Public Act 480)
(Form must be typed)

Date: July 6, 2017		
Applicant's Name: CC Michigan, a Delaware Limited Liability Corporation		
Address 1: 12405 Powerscourt Dr.		
Address 2:		Phone: 314-965-0555
City: St. Louis	State: Missouri	Zip: 63131
Federal I.D. No. (FEIN): 13-4029981		

Company executive officers:

Name(s): Thomas M. Rutledge
Title(s): President and Chief Executive Officer

Person(s) authorized to represent the company before the Franchising Entity and the Commission:

Name: Marilyn Passmore		
Title: Director, State Government Affairs		
Address: 4670 E. Fulton, #102, Ada, MI 49301		
Phone: 616-607-2377	Fax: 616-975-1107	Email: marilyn.passmore@charter.com

Describe the video service area footprint as set forth in Section 2(3e) of the Act. (An exact description of the video service area footprint to be served, as identified by a geographic information system digital boundary meeting or exceeding national map accuracy standards.)

The area provided service is the Township of Blair. Upon request, Charter Communications shall provide route maps showing the locations of the Cable System, to Municipality, access to "as-built" maps, and updated route maps to reflect any changes. Municipality shall give Grantee a minimum of 48 hours notice of the request to view "as-built" maps, unless there exists an emergency situation requiring earlier viewing. Charter Communications' local office and engineering contact information (engineering drawings/"as-built" map address) is listed below. This information also applies to 24 hour emergencies:
Keith Schierbeek- Director of Field Operations
1433 Fulton Street
Grand Haven, MI 49417
Phone: 616-607-2302
email: keith.schierbeek@charter.com

[**Option A**: for Providers that Options B and C are not applicable, a description based on a geographic information system digital boundary meeting or exceeding national map accuracy standards]

[**Option B:** for Providers with 1,000,000 or more access lines in Michigan using telecommunication facilities to provide Video Service, a description based on entire wire centers or exchanges located in the Franchising Entity]

[**Option C**: for an Incumbent Video Service Provider, it satisfies this requirement by allowing the Franchising Entity to seek right-of-way information comparable to that required by a permit under the METRO Act as set forth in its last cable franchise or consent agreement from the Franchising Entity entered into before the effective date of the Act]

Pursuant to Section 2(3)(d) of the Act, if the Provider is not an incumbent video Provider, provide the date on which the Provider expects to provide video services in the area identified under Section 2(3)(e) (the Video Service Area Footprint).

Date:

For All Applications:

Verification

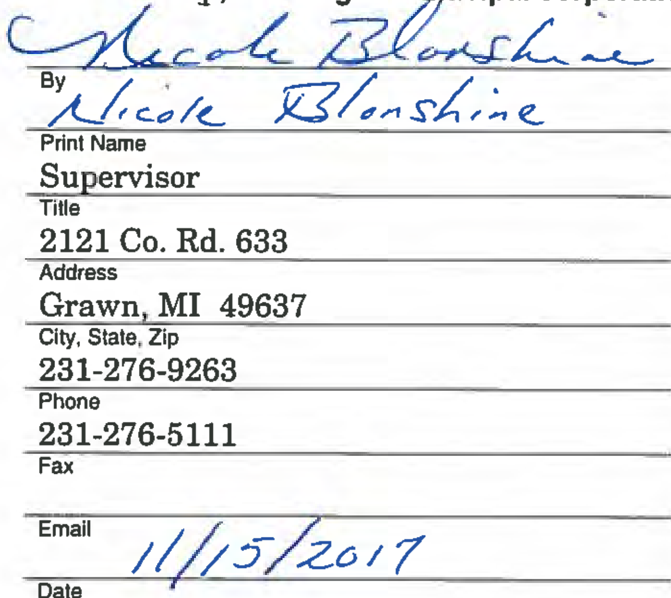
(Provider)

I, Paul Abbott, of lawful age, and being first duly sworn, now states: As an officer of the Provider, I am authorized to do and hereby make the above commitments. I further affirm that all statements made above are true and correct to the best of my knowledge and belief.

Name and Title (printed): Paul Abbott, Vice President, Local Government Affairs and Franchising	
Signature:	*Date:* 7/6/17

(Franchising Entity)

Blair Township, a **Michigan municipal corporation**



By

Nicole Blonshine

Print Name

Supervisor

Title

2121 Co. Rd. 633

Address

Grawn, MI 49637

City, State, Zip

231-276-9263

Phone

231-276-5111

Fax

Email

11/15/2017

Date

December 16, 2020

Joan G. Movrich
Manager, State Government Affairs
Charter Communication
115 East McLeod Avenue
Ironwood, MI 49938

Dear Ms. Morvrich and Grants Committee,

It is with great enthusiasm that we offer this letter of support for Charter Communications who is applying for a Michigan CMIC 2.0 Broadband Grant.

Blair Township consists of 36 square miles with over half of it considered Rural, with no Broadband access. Due to the COVID-19 virus, Rural internet access is no longer a luxury, it is an absolute necessity. Day after day, Broadband internet is proving indispensable for day-to-day activities. As we continue to practice social distancing, our internet access is shaping our reality and defining our access to essential services, products, and even income.

It is undeniable that the Urban areas were more prepared for this abrupt shift to digital landscape however, the rural communities have been left behind in terms of Broadband infrastructure and capabilities.

In Blair Township and our surrounding rural communities, our public schools were the first institutions to close and transition to virtual modes of operations when the COVID-19 outbreak happened and yet we have huge disparities in internet access. This has caused the alternative learning approaches to our area children impractical and for many, nearly impossible. I hear this regularly from our community parents. Their children are falling behind in their education and in some cases, completely failing. We believe it is essential for our rural areas to receive extensions of Broadband for the access of education for our children and all the other reasons mentioned above.

Rural Broadband internet is a lifeline for communities like ours. As we continue to depend on online services moving forward, we must deploy Broadband capabilities to ensure connectivity for all.

We truly appreciate your consideration of awarding this Grant to Charter Communications.

Kind Regards,

Nicole Blonshine
Blair Township Supervisor

2121 County Road 633 | Grawn, MI 49637
231-276-9263
www.blairtownship.org
ESTABLISHED 1867

Attachment 18: Affordability and Service Limitations – response to Question 44

Below are Spectrum's current standard speed tiers and standalone, non-promotional pricing for Spectrum's residential broadband service (as of 12/23/2020). Spectrum's service offerings are structured in response to market conditions, which may evolve over the next five years. Accordingly, all prices, speeds and terms of service listed below are subject to change. .

Name / Speed	Price	Data Cap
Spectrum Internet – 100/10	$74.99	Currently none
Spectrum Ultra – 400/20	$94.99	Currently none
Spectrum Internet Assist* - 30/4	$17.99	Currently none
Spectrum Internet Gig – 940/35	$134.99	Currently none

*Available for qualifying households, only.