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
		SEE ATTACHED TABLE	

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.

St.Clair Township Project

Project Name

Signature

11/□/2021

Date

Raymond Signs

[Printed Name]

Consultant / Preparer

[Title]

Duke Broadband, Inc.

[Company]

Application page #, paragraph #, and section #	State whether the material is a trade secret (TS), financial information (FI), or proprietary inform (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
Application Page 3, #3 (Partial)	PI	Author contact information (cell phone # and email) is personal information falls under Personal Privacy Exception MCL 15.243(1)(a)	Raymond Signs, 517 505 0396
Application Page 3, #8 (Partial)	FI	Contains company financial and/or commercial information protected under the trade secrets/commercial/financial information exception, MCL 15.243(1)(f), when submitted to a public body upon promise of confidentiality	Raymond Signs, 517 505 0396
Application Page 6, #18 (Partial)	FI	Contains company financial information protected under the trade secrets/commercial/financial information exception, MCL 15.243(1)(f), when submitted to a public body upon promise of confidentiality	Raymond Signs, 517 505 0396
Application Page 7, #20 (Partial)	PI	Project Budget is propriatery information under the trade secrets/commercial/financial information exception, MCL 15.243(1)(f), when submitted to a public body upon the promise of confidentiality	Raymond Signs, 517 505 0396
Application Page 9, #23	FI	Financial Summary is financial information protected by the trade secrets/commercial/financial information exception, MCL 15.243(1)(f), when submitted to a public body upon promise of confidentiality.	Raymond Signs, 517 505 0396
Application Page 10, #25	PI	Narrative contains financial metrics such as revenue which is propriatery information under trade secrets/commercial/financial information exception, MCL 15.243(1)(f), when submitted to a public body upon promise of confidentiality	Raymond Signs, 517 505 0396
Application Page 12, #26	PI	Network Design is propriatery information under the trade secrets/commercial/financial information exception, MCL 15.243(1)(f), when submitted to a public body upon promise of confidentiality	Raymond Signs, 517 505 0396
Application Page 14, #34	PI	Network Design is propriatery information under the trade secrets/commercial/financial information exception, MCL 15.243(1)(f), when submitted to a public body upon promise of confidentiality	Raymond Signs, 517 505 0396
Attachment 1 (pgs 2-5)	PI	The location of cybersecurity-related organizational information system infrastructure and hardware is protected under the cybersecurity exception, MCL 15.243(1)(z); the entity-created list of potential service address locations falls under the trade secrets/commercial/financial information exceptio, MCL 15.243(1)(f), when submitted to a public body upon promise of confidentiality and the personal privacy exception MCL 15.243(1)(a).	Raymond Signs, 517 505 0396
Attachment 5 (partial)	PI	The names of cyber-company employees identify or provide a means of identifying a person that may, as a result of disclosure of the information, become a victim of a cybersecurity incident as protected by the cyber-security exception, MCL 15.243(1)(z)	Raymond Signs, 517 505 0396
Attachement 4 (full)	FI	Contains company financial and/or commercial information protected under the trade secrets/commercial/financial information exception, MCL 15.243(1)(f), when submitted to a public body upon promise of confidentiality	
Attachment 6 (partial)	PI	The names of cyber operations employees are protected by the cyber security exception, MCL 15.243(z); the address, telephone numbers, and email addresses of non-public employees are protected by the personal privacy exception. MCL 15.243(1)(a)	Raymond Signs, 517 505 0396
Attachment 7 (full)	PI, FI	Contains company financial information protected under the trade secrets/commercial/financial information exception, MCL 15.243(1)(f), , when submitted to a public body upon promise of confidentiality; personal information falls under Personal Privacy Exception MCL 15.243(1)(a); tax returns are protected under the pass through exception of MCL 15.243(1)(d) and federal law, 26 U.S.C. § 6103(a)	Raymond Signs, 517 505 0396
Attachment 8 (partial)	PI	Network Design is propriatery information under the trade secrets/commercial/financial information exception, MCL 15.243(1)(f), when submitted to a public body upon promise of confidentiality	Raymond Signs, 517 505 0396
Attachment 9 (full)	FI	Financial forecasts are protected via the trade secrets/commercial/financial information exception, MCL 15.243(1)(f), when submitted to a public body upon promise of confidentiality.	Raymond Signs, 517 505 0396
Attachment 11 (full)	PI	The description of the proposed cyber-network design (s) is propriatery information under the trade secrets/commercial/financial information exception, MCL 15.243(1)(f) when submitted to a public body upon promise of confidentiality; the description of the network design(s) related to cybersecurity-related organizational information system infrastructure and hardware is protected under the cybersecurity exception, MCL 15.243(1)(z)	Raymond Signs, 517 505 0396
Attachment 12 (partial)	PI	Names & addresses of residents & businesses who registered interest is commercial information submitted under the trade secrets/commercial/financial information exception, MCL 15.243(1)(f), when submitted to a public body upon promise of confidentiality; the names and addresses of private individuals expressing interests and opinions of potential service is protected under personal privacy exception, MCL 15.243(1)(a)	Raymond Signs, 517 505 0396
Attachment 16 (partial)	PI	Contains Names & Addresses of residents & businesses who registered interest in the service, t information falls under Personal Privacy Exception MCL 15.243(1)(a)	Raymond Signs, 517 505 0396
Attachment 17 (partial)	FI	Contains Names & Addresses of residents & businesses who registered interest in the service, t information falls under Personal Privacy Exception MCL 15.243(1)(a)	Raymond Signs, 517 505 0396

GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY, MANAGEMENT & BUDGET
LANSING

BROM STIBITZ
DIRECTOR

Connecting Michigan Communities 3.0 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, November 15, 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, November 15, 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) 243-9374.

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:

Ira Extension FTTH

2. Applicant Name:

Duke Broadband Inc.

DBA (if applicable):

Mailing Address:

1341 S. St.Clair Road
St.Clair, MI 48840

3. Primary Grant Contact:

David LaDuke

Primary Contact Phone Number:

[redacted]

Primary Contact Email Address:

[redacted]

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

WideBand Group, LLC

4. Application Author Name:

Raymond Signs

Application Author Email:

rsigns@widebandgroup.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):

[redacted]

Michigan Tax Identification Number:

[redacted]

Michigan Vendor Identification Number:

[redacted]

Federal Communications Commission Registration Number (FRN):

[redacted]

Service Provider Identification Number (SPIN):

9. Project Summary (250 words max.):

The residents of eastern Ira Township, and the southeastern section of Casco Township, St.Clair County, Michigan have been actively seeking a high-speed broadband solution for their unserved community for over the past decade. Duke Broadband, based in St.Clair Michigan, with the support from CMIC, will build a Fiber To The Home (FTTH) network to these rural, unserved residents and businesses. The service area is an extension of our Cottrellville Township build and will employ state-of-the-art fiber optic network technology delivering base speeds 1000Mbps download / 100 Mbps upload, and the system is capable of delivering speeds of 10Gbps x 10Gbps .

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:

Duke_Attachment_1_Map_IRA.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:

Duke_Attachment_2_IRA_Shapefiles.rar

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

Select Premises in Saint Clair County, MI within and along the following boundaries: Begin at Mayer Rd and Perch Rd, north on Mayer to Lindsey Rd, west to Church Rd, South on Church Rd to Dixie Highway, East on Dixie Highway to Perch Rd to Mayer Rd.

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

Duke_Attachment_3_Address.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	359
Businesses	7
Community Anchor Institutions	1
Total Locations Passed	367

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):

Ira, Casco

County(ies):

Saint Clair

State House District(s):

32

State Senate District(s):

25

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.):

Duke Broadband network is an all fiber network; from the premise, through distribution, middle mile and long-haul network, landing in the [redacted] The network edge facility located in [redacted] is colocated with cross-connect access to 3 long-haul carriers.
Our technology partner is Nokia, and the XGS PON system will be deployed offering 1Gigabit to each premise served. Each gigabit circuit is shared with 32 premises (1:32). A single tiered Internet service of 1000/100 Mbps (download/upload) will be offered to our residential and SOHO customers. The Nokia NG platform is scalable to 10Gbps/10Gbps. The Optical Line Terminal (OLT) is deployed as a 10G/10G system, and customers at a future point in time will be offered 5G service by simply upgrading the Optical Network Terminal (ONT). Active Ethernet and dark fiber will also be available. Users can opt for a fully integrated WiFi CPE/ gateway, or may select the stand alone gateway. Through our partnership with RESA, an educational, on-net service will be offered to low-income homes to accommodate distance learning. Over-the-top 3rd party voice and video service options will be provided to customers upon sign-up.

Project Costs and Budget

17. Total Project Cost: Please complete the table below

Total Project Cost	$1,342,781.75
Total Grant Request	$858,226.86
Total Match Amount	$484,554.89
Total Match Percentage	36.09%

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

Duke_Attachment_4_Match_Commit.pdf

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?
[redacted]	$222,608.18	☐Cash ☑In-Kind	☑Yes ☐No
[redacted]	$58,073.20	☐Cash ☑In-Kind	☑Yes ☐No
[redacted]	$57,473.51	☑Cash ☐In-Kind	☑Yes ☐No
[redacted]	$146,400.00	☑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.):

Yukon Construction Inc., the constructors of the network, will provide [redacted] Yukon and Duke Broadband share common ownership. [redacted] the [redacted] in-kind contribution for design, engineering and project management. Duke Broadband match is equal to the customer installation costs that will be directly supported by installation fees. [redacted].

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			$0.00
Last Mile Construction Labor	$222,608.18	$307,411.30	$530,019.48
Middle Mile Construction Labor			$0.00
Construction Material	$32,788.58	$331,529.02	$364,317.60
Customer Premise Equipment	$10,360.12	$93,241.10	$103,601.22
Customer Premise Installation	$146,400.00		$146,400.00
Electronics	$14,324.80		$14,324.80
Permits		$67,972.24	$67,972.24
Professional Services and Engineering	$58,073.20	$58,073.20	$116,146.40
Other:			$0.00
		Total	$1,342,781.74

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.):

St.Clair county is recognized by the Connect Michigan organization second in ranking as the most underserved area in the state of Michigan. The capital infrastructure investment to provide FTTH is too high based on the per homes passed to capture a timely return on investment. Furthermore, there has been little middle mile investment by the incumbent carriers. With the CMIC grant and Duke's in-market infrastructure partnership with RESA, the service area will be built within a 12 month period, with lit services immediately following construction activities. With the funding from the CMIC grant, the financial model is profitable. and the state of Michigan funds will provide service that is state-of-the-art, gigabit fiber optic network.

Experience and Financial Wherewithal

Attachment 5: Applicant organizational chart

Name of Attachment 5:

Duke_Attachment_5_Org Chart.pdf

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

Name of Attachment 6:

Duke_Attachment_6_Resumes.pdf

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

Yukon Construction, Inc., based in St.Clair, Michigan is a utility contractor specializing in telecom networks. For the past 17 years, Yukon has constructed hundreds of miles of telecom network throughout Eastern Michigan and has first-hand knowledge of the limited broadband service in their community. The ownership of Yukon, frustrated with the lack of investment by the established carriers in their community, formed Duke Broadband Inc. (Duke) in 2020.

Duke's team includes Aspen Wireless, Inc., and Wideband Group, llc. Both companies are reputable, seasoned Fiber-To-The-Premise (FTTP) experts with 60 years combined success in broadband and fiber implementation and ISP services. Managed services are provided by Aspen; services include core network monitoring and support, customer support, and integrated billing/provisioning systems.

To date, Duke Broadband has self-financed engineering, design, equipment, and construction of the fiber network. Duke Broadband is currently constructing and providing gigabit service to homes in Saint Clair Township. Utilizing our in-market infrastructure agreements, construction continues in areas of St.Clair county.

Attachment 7: Three years of audited financial statements

Name of Attachment 7:

Duke_Attachment_7_Financial Statements.pdf

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

Yukon Construction Inc. [redacted] 3 year financial statements attached. The owner of Yukon Construction, Inc., launched Duke Broadband, incorporated in April, 2020. Duke Broadband Inc. 2020 financials are also provided. Duke Broadband has established banking relationships (attached) for any needed financing of Duke's equipment and services obligation. Customer installation costs will be offset by customer installation fees. IRA Extension FFTH project construction is scheduled to start after the substantial completion of Cottrellville Township construction. Operational costs of the Ira project will be fully supported through company revenues.

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:	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue	[redacted]				
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.):

[redacted] Saint Clair Township demographics and topology closely resembles the application area. The service offerings are identical to Saint Clair Township. High speed cable is not available in the project area, cellular broadband is data limited and throttled after reaching the data threshold. Cellular is further troublesome due to the proximity of the project area to Canada and the reduced carrier signal strength. Traditional phone company service is well below the FCC broadband minimum.

The ARPU is derived from our competitive service rate, [redacted], considers optional managed WiFi services, and our low-income, educational rate.

The service will be marketed through social media, direct marketing campaigns and online advertising. The financial forecast anticipates a front-load of service requests.

The construction timeline is based on [redacted]

As illustrated in the projection, the infusion of grant funding allows for a favorable ROI, and also allows for continued growth of the network in the surrounding areas. Note that debt financing and taxes are included with expenses

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:

Duke_Attachment_8_Commitment.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:

Duke_Attachment_9_Budgetary_Design.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.):

[redacted]

Our company has extensive experience building and operating communication networks. In 2020, the team has managed and constructed over 50 miles of network. Since the final award of the Saint Clair Township, Duke has constructed over 10 miles of new network, integrated the RESA network, and currently providing 70 unserved homes 1gig service averaging 1.5 new adds per day. Yukon Construction has an in-house inventory of 3 aerial bucket trucks, 5 directional bore rigs, vibratory plow, splice trailer, 5 support vehicles, and a workforce of 8 full time employees, union shop, and 2 regular sub-contractors.

Duke Broadband has implemented state-of-the art BSS and OSS systems. In addition to Duke's in house IT team, Duke employs managed services for critical networking and Tier 4 support. Duke's expertise is illustrated by the organizational chart, assuring expertise in service delivery and management. The Duke Broadband team has provisioned over 6000 CPE, and manages, supports and monitors approximately 7865 on-net devices.

Attachment 10: Evidence of network scalability

Name of Attachment 10:

Duke_Attachment_10_Scalability.pdf

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.):

Attached please scalability provided by the equipment manufacturer.

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	2022		2023				2024				2025		
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
[redacted]	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
[redacted]	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
[redacted]	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
[redacted]	☐	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐
[redacted]	☐	☐	☐	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐
[redacted]	☐	☐	☐	☐	☑	☑	☑	☑	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
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	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

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

[redacted]

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

Material and equipment shortages.

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.

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.

[redacted]

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.

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.):

Duke will leverage St.Clair County RESA fiber as middle mile access to the market. [redacted]

Attachment 11: Additional evidence of project readiness

Name of Attachment 11:

Duke_Attachment_11_Readiness.pdf

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.):

[redacted]

Community and Economic Development

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

Duke_Attachment_12_Cust_Interest.pdf

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.):

Connect Michigan has designated St.Clair county the number 2 area in need of broadband service in the state. The attached statements by the Ira and Casco Township Supervisors identify broadband access as the number concern of their respective residents. The attached also contains a statement from a current resident of Casco that, on his own initiative and frustration, volunteered unsolicited information of his self-performed survey of the cable infrastructure in Casco township, demonstrating the desire for broadband in the community.

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

Duke_Attachment_13_BusinessInterest.pdf

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.):

Please find the attached letter from the St.Clair County EDA and the Metropolitan Planning Commission. Also find data from the New York Times regarding the dramatic increase working from home / telecommuting. and the Glassdoor graph showing the upward trend toward businesses offering Work from Home benefits over the last 10 years. The segregation of home and work is increasingly becoming a thing of the past. The project area lacks the basic infrastructure to participate in this trend, increasingly isolating the workforce from the greater economy.

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.):

IRA township contains farm lands, and agricultural specific applications such as field monitoring, surveillance, and commodity pricing access will be available and encouraged through the Duke broadband connection. The Duke team will further offer our wireless expertise to integrate agricultural facilities and property

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).

St.Clair County RESA provides fiber connectivity to all the schools,and many of the libraries muncipalities in St.Clair County. A healthcare facility is not located within the footprint of the IRA Extension FTTH grant application area; emphasizing the need for tele-medicine capabilities within the township. [redacted]

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:

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.):

As Indicated above, RESA provides all SPIN related service. Duke Broadband possesses a FCC Form 499 ID registration number, and SPIN access will be streamlined should the need present itself.

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

Duke_Attachment_17_CommunitySupport.pdf

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 letters of support from the St.Clair County Metropolitan Planning Commission, Regional Educational Service Agency, and the impacted townships. The project area has little to no meaningful investment in broadband infrastructure by the carriers serving the area. School assignments are commonly provided online, and the local, public WiFi plays an ever increasing role in the community's education. The pandemic has dramatically amplified the need for broadband at home. As parents seek other alternatives, including locating to other communities where broadband is available, the workforce of the community will age, negatively impacting the local economy.

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:

St.Clair County Broadband Committee

Jurisdiction:

St.Clair County Economic Development Alliance

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)
1000	100	[redacted]	Unlimited (res)
1000	100		Unlimited (Edu Disct)
1000	100		Unlimited (res WiFi)
1000	100		Unlimited (SOHO)

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

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.):

Duke will offer a [redacted] to households who have children eligible for the assisted lunch program. Duke will team with the local St.Clair school district in offering this program to eligible households in the project area. An awareness program will be developed in partnership with the school district.

In addition, Duke is considering implementing the FCC Emergency Broadband Relief program for customers in the future, if the program remains available. If implemented, customers would be given a choice between the 2 programs.

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/documents/mshda/MSHDA-EDA-List_727782_7.pdf)?
☐ 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.):

During construction activities,an announcement regarding the digital literacy program will be mailed to residents and businesses of the project area. A seminar will be offered regarding the Duke broadband service and the package will also direct consumers to our digital literacy page to find out more about the program and access materials. The web page will gather each visitors' location and the data will provided to CMIC.

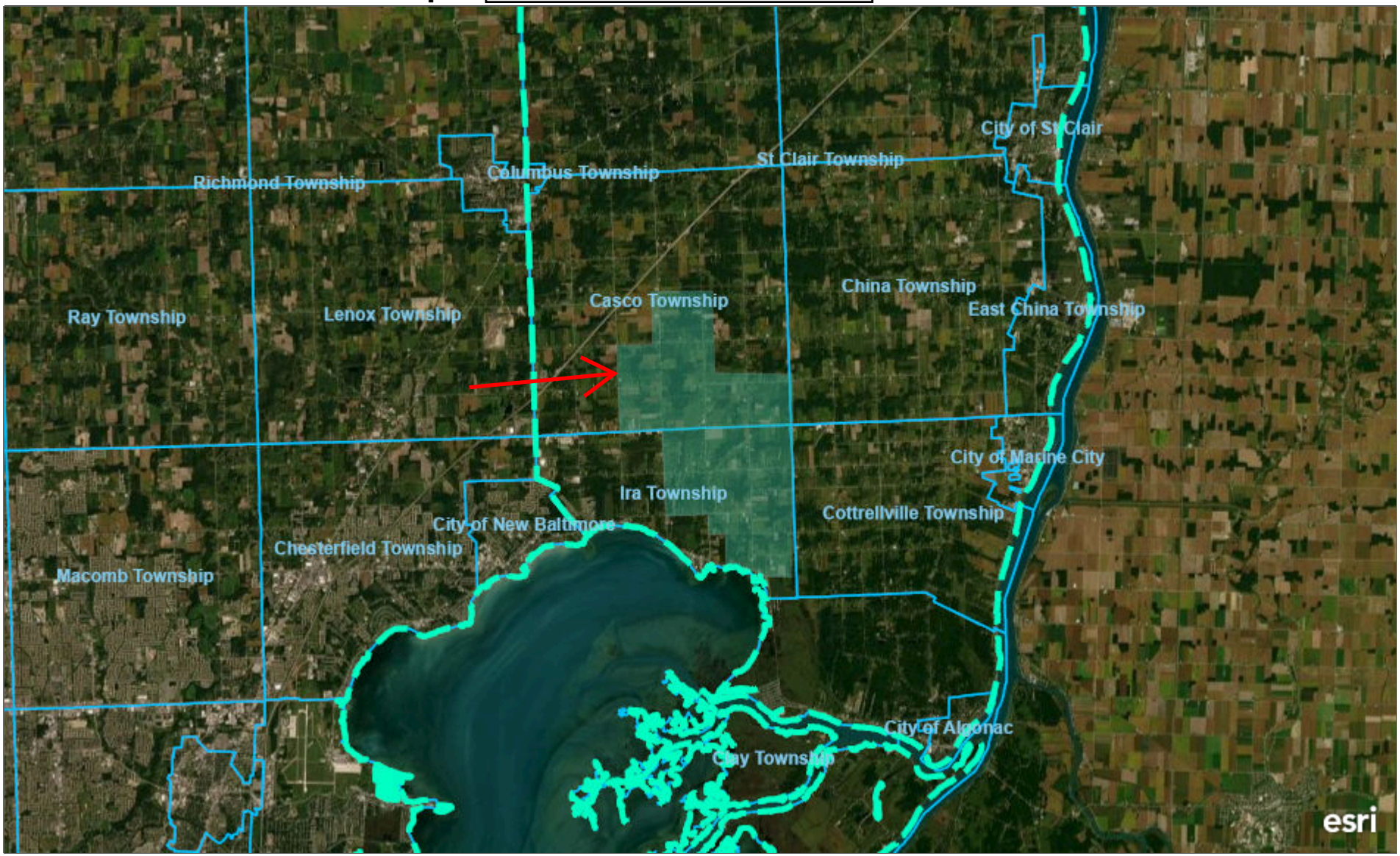
The in-person program will launch when construction activities are 50% complete, and held on a quarterly basis for the 1st year, two events the following year. The program will be held at the Ira township hall. Topics will include parental controls, security, safety, on-line educational opportunities, and the opportunities offered by high speed connection such as IoT, OTT, Security and VoIP applications. Phone and tablet use over the broadband connection will also be discussed. At the end of each program, assistance in basic online access will be provided to those who request it. Meetings will have sign-in sheets to measure the efficacy of the program. The program will be conducted by Duke Broadband team.

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.):

Duke will develop an awareness conference that will be held bi-annually during the first full year of service and will continue 1 year after construction completion . The program will be held at township hall and an invitation will be extended to local experts from the Economic Development Authority, St.Clair Community College, RESA, the township, McLauren Port Huron and local public safety. The panel will discuss their area of expertise regarding the benefits of being connected and how to fully leverage the connection for user economic educational and civil economic benefits. The panel will be invited to join in person, or via video conferencing. Duke Broadband will provide the equipment, and will host the event. A sign-up sheet will be provided at the event to track attendance.

Duke Network MASTER Web Map

IRA EXTENSION FTTH SERVICE AREA



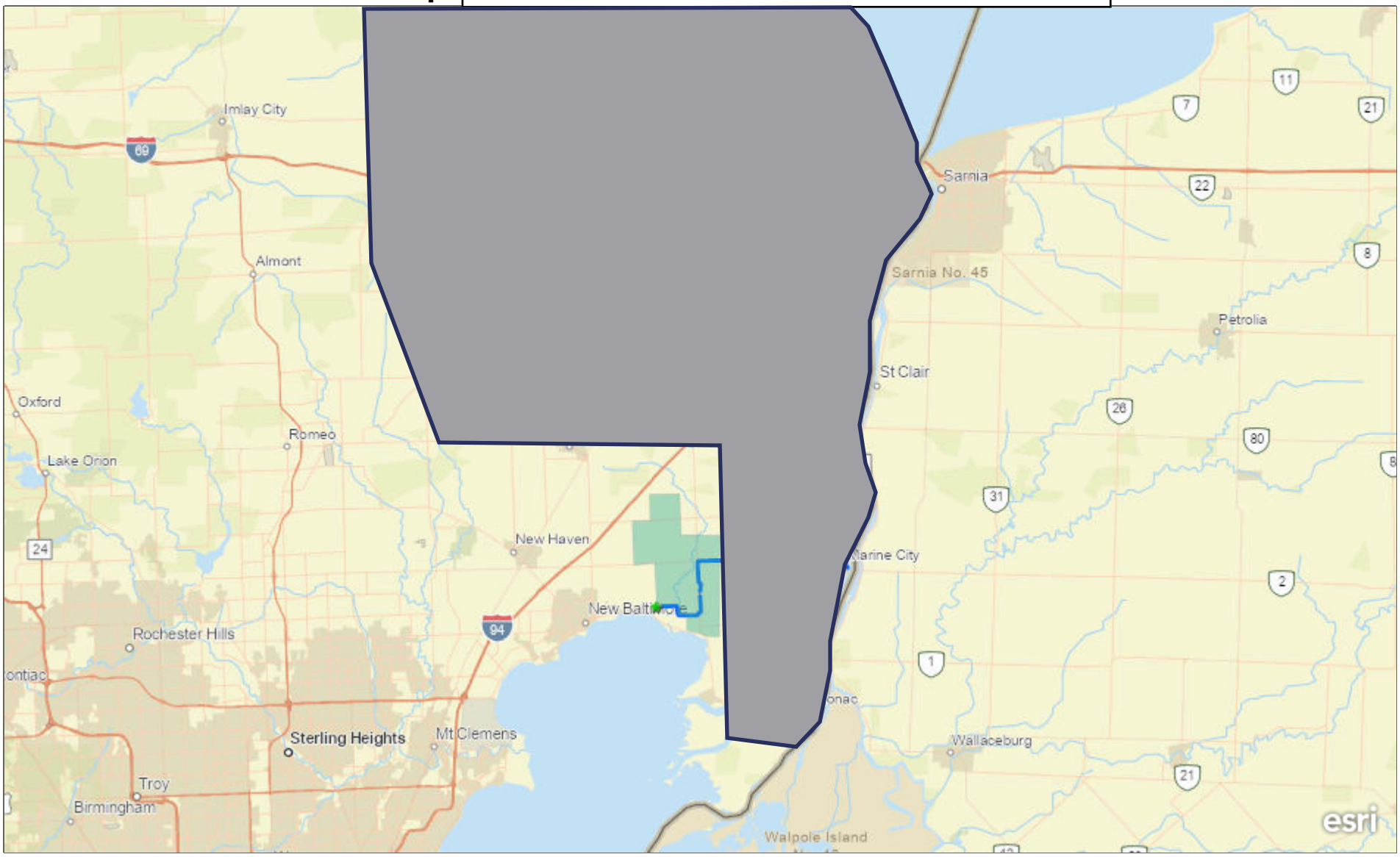
Network Map

Earthstar Geographics

DUKE BROADBAND FIBER

Duke Network MASTER Web Map

IRA EXTENSION FTTH PROJECT : Saint Clair County RESA Network

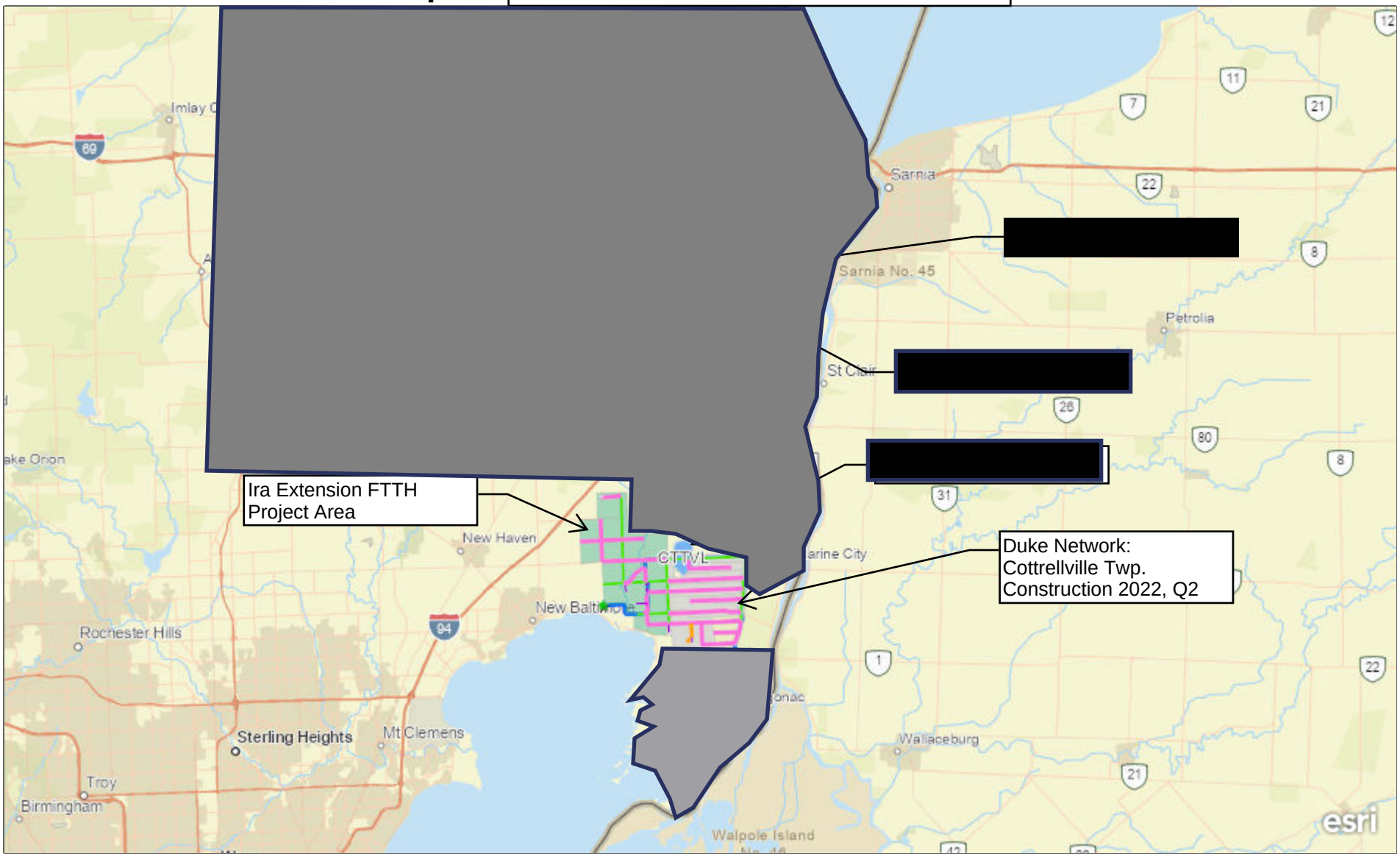


Network Map

Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, NRCan, Parks Canada

Duke Network MASTER Web Map

IRA EXTENSION FTTH: Duke Broadband Network Map



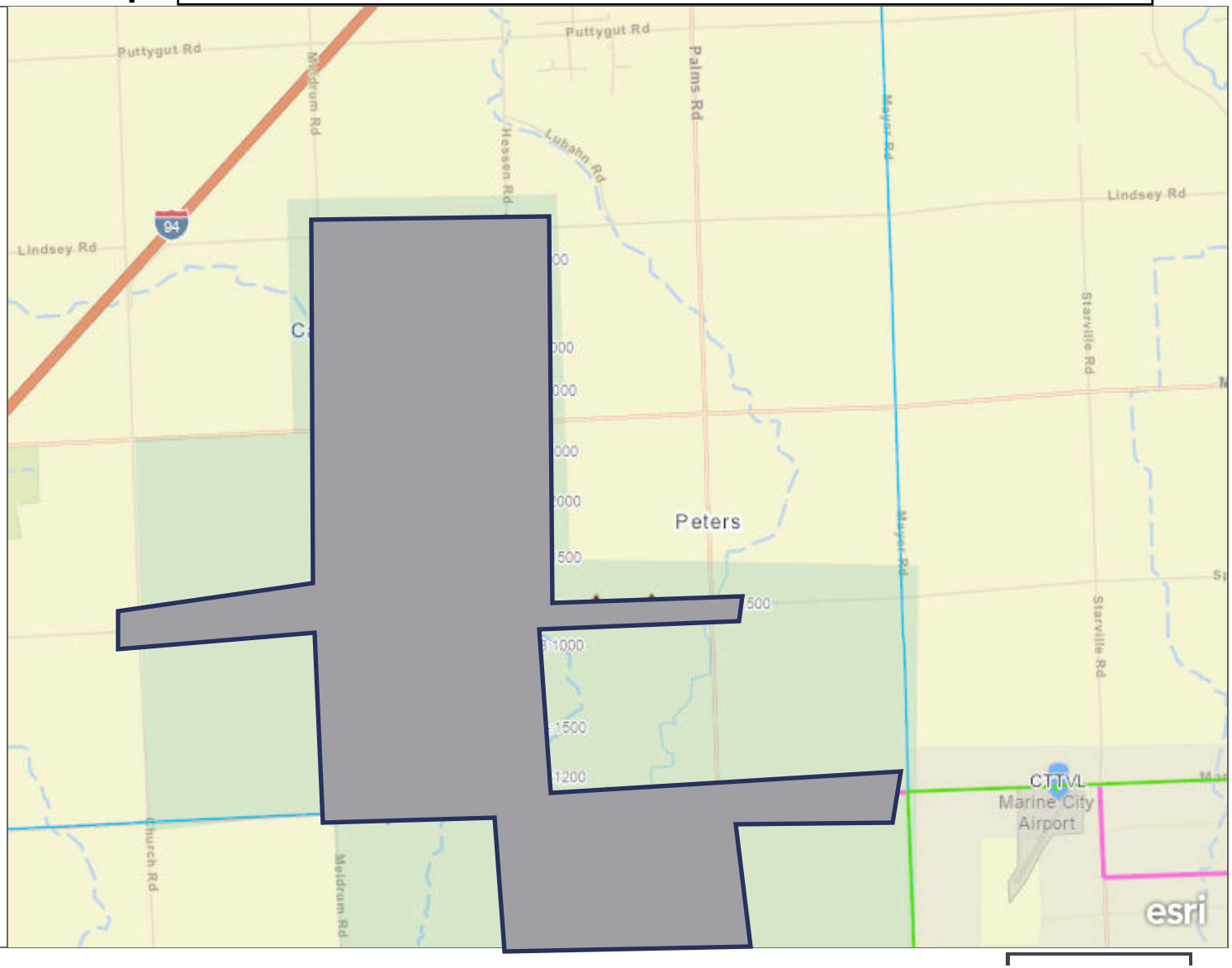
Network Map

Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, NRCan, Parks Canada

Duke Network MASTER Web Map

IRA EXTENSION FTTH PROJECT SERVICE AREA BUDGETARY DESIGN PLAN - MAP 1 OF 2

[redacted]

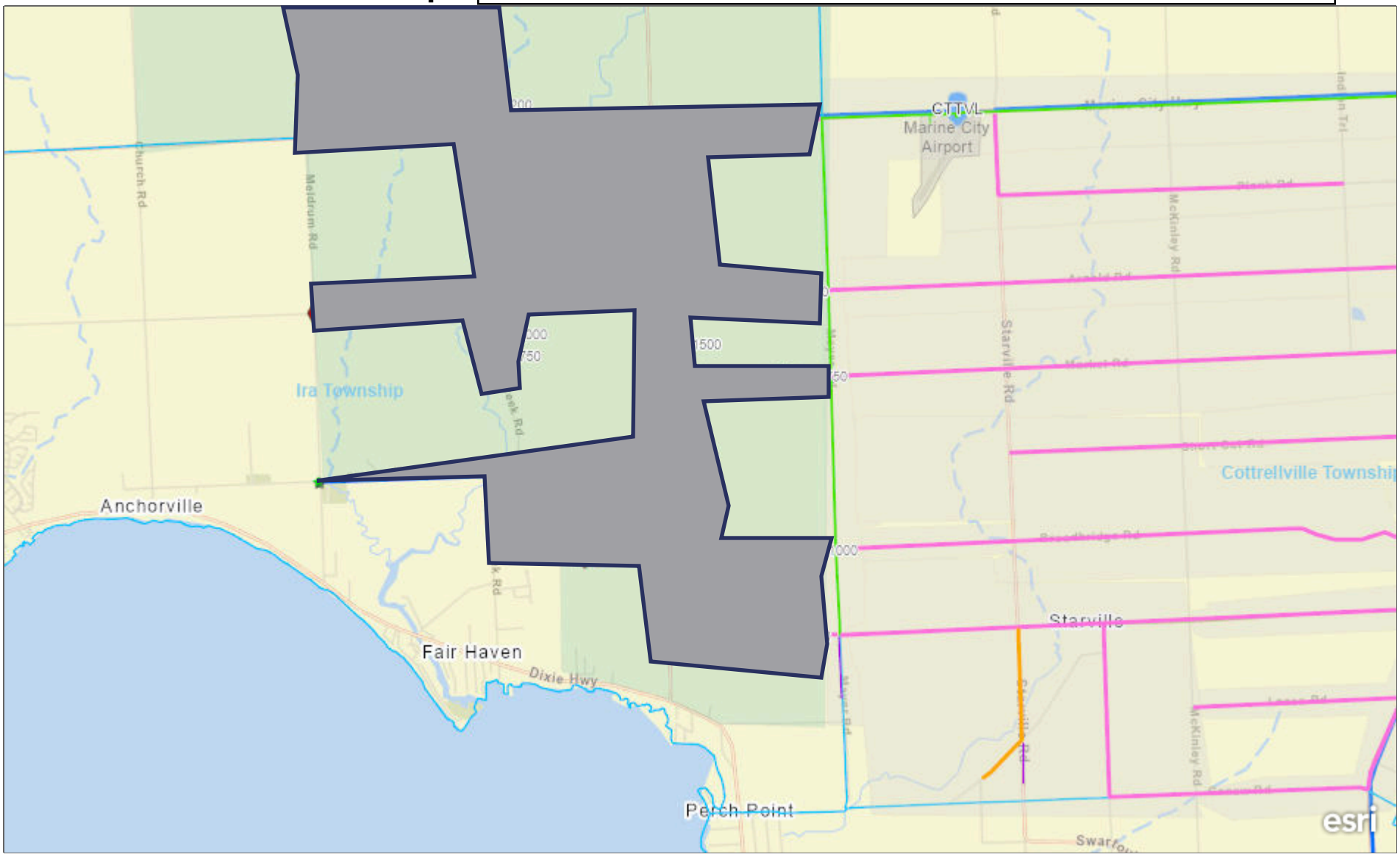


Network Map

Province of Ontario, County of Lambton, Esri Canada, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

Duke Network MASTER Web Map

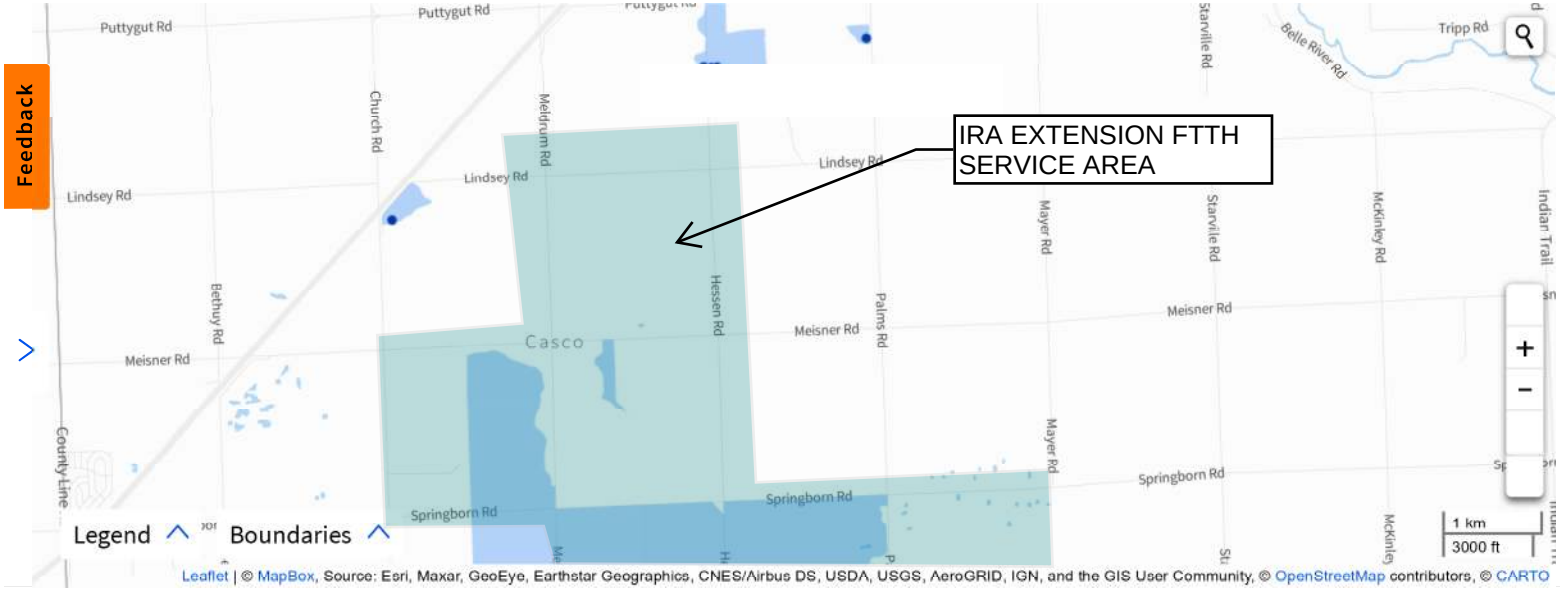
IRA EXTENSION FTTH PROJECT SERVICE AREA BUDGETARY DESIGN PLAN - MAP 2 OF 2



Network Map

Connect America Fund Broadband Map

Onboarding



Feedback

Fund
All Funds

State
All States

Company Name
Search Company Name

Speed (Applicable only to Local Data)
All Speeds

Deployment Year
All Years

State Data Local Data

Displaying 1-25 of 133 records | Download Data

5976 HESSEN RD
CASCO, MI 48064

Latitude: **42.724762**
Longitude: **-82.651387**
Company Name: **AT&T INC.**
Fund: **CAF II**
Speed: **10 Mbps/1 Mbps**
Locations Deployed: **1**
Deployment Year: **2017**

7501 MARINE CITY HWY
IRA, MI 48023

Latitude: **42.724529**
Longitude: **-82.610785**
Company Name: **AT&T INC.**
Fund: **CAF II**
Speed: **10 Mbps/1 Mbps**
Locations Deployed: **1**
Deployment Year: **2020**

ALL DATA POINTS IN IRA AND CASCO TOWNSHIP ARE 10MB/1MB

DUKE BROADBAND FIBER

Connect America Fund Broadband Map

State Data Local Data

Displaying 1-25 of 133 records | Download Data

7536 ARNOLD RD
IRA, MI 48023

Latitude: **42.710402**
Longitude: **-82.611273**
Company Name: **AT&T INC.**
Fund: **CAF II**
Speed: **10 Mbps/1 Mbps**
Locations Deployed: **1**
Deployment Year: **2020**

7180 MARKEL RD
COTTRELLVILLE, MI 48039

Latitude: **42.704988**
Longitude: **-82.598034**
Company Name: **AT&T INC.**
Fund: **CAF II**
Speed: **10 Mbps/1 Mbps**
Locations Deployed: **1**
Deployment Year: **2017**

6410 SWAN CREEK RD
IRA, MI 48023

Latitude: **42.712944**
Longitude: **-82.641873**
Company Name: **AT&T INC.**
Fund: **CAF II**
Speed: **10 Mbps/1 Mbps**
Locations Deployed: **1**
Deployment Year: **2017**

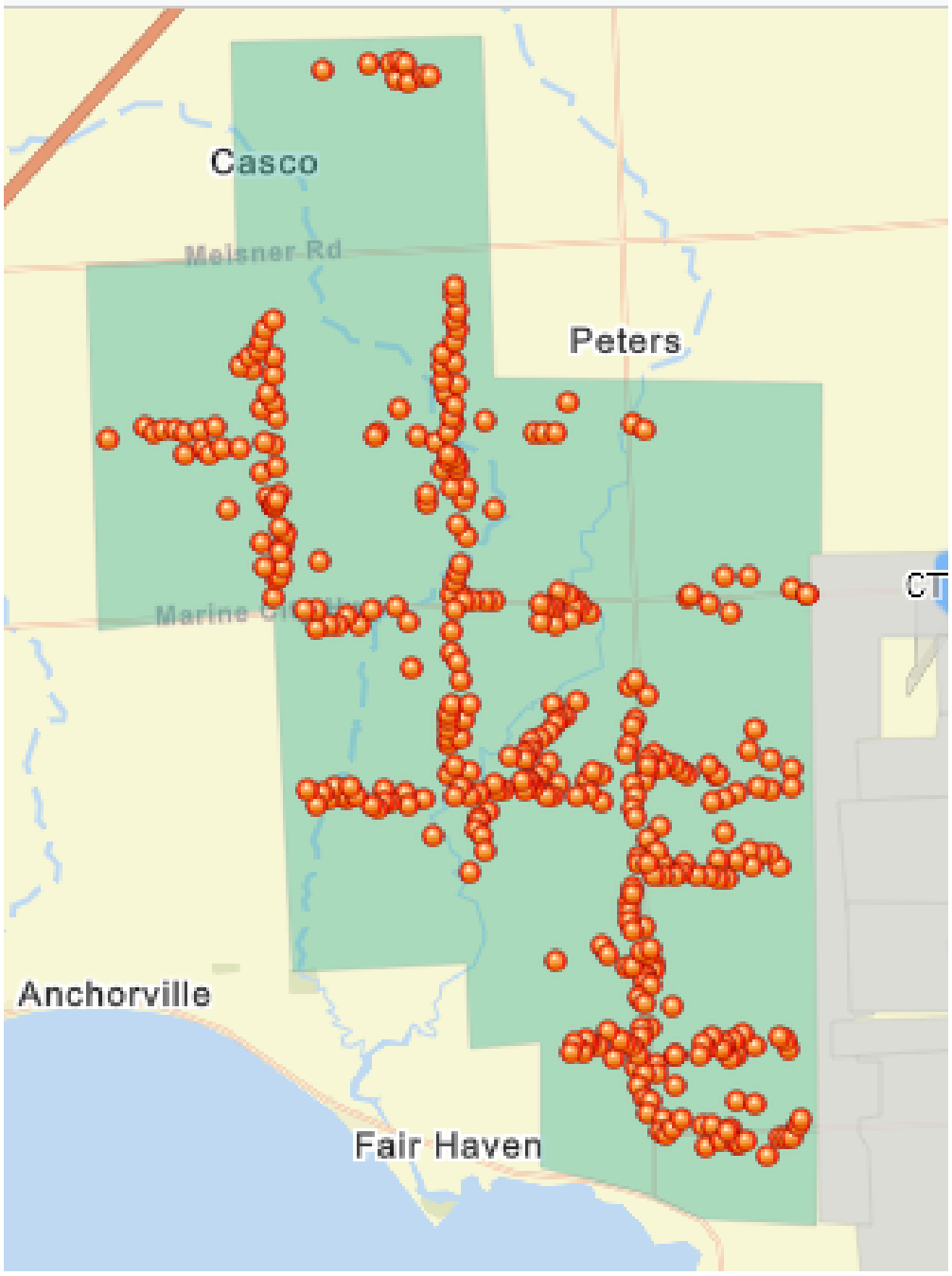
6687 PLANK RD
COTTRELLVILLE, MI 48039

Latitude: **42.717839**
Longitude: **-82.577587**
Company Name: **AT&T INC.**
Fund: **CAF II**
Speed: **10 Mbps/1 Mbps**
Locations Deployed: **1**
Deployment Year: **2020**

ALL DATA POINTS IN IRA AND CASCO TOWNSHIP ARE 10MB/1MB

DUKE BROADBAND FIBER

CABLE CO SURVEY; IRA EXTENSION FTTH PROJECT: PREMISES WHERE COAXIAL DISTRIBUTION INFRASTRUCTURE WAS OBSERVED NOT TO BE PRESENT



DUKE BROADBAND FIBER

Number	Street	Address	City
5976	HESSEN RD	5976 HESSEN RD	CASCO
5930	HESSEN RD	5930 HESSEN RD	CASCO
5925	HESSEN RD	5925 HESSEN RD	CASCO
5885	HESSEN RD	5885 HESSEN RD	CASCO
5827	HESSEN RD	5827 HESSEN RD	CASCO
5781	HESSEN RD	5781 HESSEN RD	CASCO
5709	HESSEN RD	5709 HESSEN RD	CASCO
5686	HESSEN RD	5686 HESSEN RD	CASCO
5679	HESSEN RD	5679 HESSEN RD	CASCO
5676	HESSEN RD	5676 HESSEN RD	CASCO
5675	HESSEN RD	5675 HESSEN RD	CASCO
5672	HESSEN RD	5672 HESSEN RD	CASCO
5612	HESSEN RD	5612 HESSEN RD	CASCO
5615	HESSEN RD	5615 HESSEN RD	CASCO
5605	HESSEN RD	5605 HESSEN RD	CASCO
5590	HESSEN RD	5590 HESSEN RD	CASCO
5583	HESSEN RD	5583 HESSEN RD	CASCO
5580	HESSEN RD	5580 HESSEN RD	CASCO
5514	HESSEN RD	5514 HESSEN RD	CASCO
5496	HESSEN RD	5496 HESSEN RD	CASCO
5471	HESSEN RD	5471 HESSEN RD	CASCO
5408	HESSEN RD	5408 HESSEN RD	CASCO
5404	HESSEN RD	5404 HESSEN RD	CASCO
5409	HESSEN RD	5409 HESSEN RD	CASCO
5383	HESSEN RD	5383 HESSEN RD	CASCO
5378	HESSEN RD	5378 HESSEN RD	CASCO
5346	HESSEN RD	5346 HESSEN RD	CASCO
5300	HESSEN RD	5300 HESSEN RD	CASCO
5291	HESSEN RD	5291 HESSEN RD	CASCO
5290	HESSEN RD	5290 HESSEN RD	CASCO
5253	HESSEN RD	5253 HESSEN RD	CASCO
5223	HESSEN RD	5223 HESSEN RD	CASCO
5173	HESSEN RD	5173 HESSEN RD	CASCO
5151	HESSEN RD	5151 HESSEN RD	CASCO
5137	HESSEN RD	5137 HESSEN RD	CASCO
5115	HESSEN RD	5115 HESSEN RD	CASCO
8824	LINDSEY RD	8824 LINDSEY RD	CASCO
8708	LINDSEY RD	8708 LINDSEY RD	CASCO
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8617	LINDSEY RD	8617 LINDSEY RD	CASCO
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8588	LINDSEY RD	8588 LINDSEY RD	CASCO
8585	LINDSEY RD	8585 LINDSEY RD	CASCO
8545	LINDSEY RD	8545 LINDSEY RD	CASCO
8505	LINDSEY RD	8505 LINDSEY RD	CASCO
7566	MARINE CITY HWY	7566 MARINE CITY HWY	CASCO

	7676	MARINE CITY HWY	7676 MARINE CITY HWY	CASCO
7515A		MARINE CITY HWY	7515A MARINE CITY HWY	IRA TWP
7515B		MARINE CITY HWY	7515B MARINE CITY HWY	IRA TWP
	7725	MARINE CITY HWY	7725 MARINE CITY HWY	IRA TWP
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	8135	MARINE CITY HWY	8135 MARINE CITY HWY	IRA TWP
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	8141	MARINE CITY HWY	8141 MARINE CITY HWY	IRA TWP
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	8237	MARINE CITY HWY	8237 MARINE CITY HWY	IRA TWP
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	8426	MARINE CITY HWY	8426 MARINE CITY HWY	CASCO
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	7619	MARKEL RD	7619 MARKEL RD	IRA TWP
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8046	BROADBRIDGE RD	8046 BROADBRIDGE RD	IRA TWP
8066	BROADBRIDGE RD	8066 BROADBRIDGE RD	IRA TWP
8099	BROADBRIDGE RD	8099 BROADBRIDGE RD	IRA TWP
8100	BROADBRIDGE RD	8100 BROADBRIDGE RD	IRA TWP
8130	BROADBRIDGE RD	8130 BROADBRIDGE RD	IRA TWP
8148	BROADBRIDGE RD	8148 BROADBRIDGE RD	IRA TWP
8150	BROADBRIDGE RD	8150 BROADBRIDGE RD	IRA TWP

	8160	BROADBRIDGE RD	8160 BROADBRIDGE RD	IRA TWP
	8195	BROADBRIDGE RD	8195 BROADBRIDGE RD	IRA TWP
	8230	BROADBRIDGE RD	8230 BROADBRIDGE RD	IRA TWP
	8225	BROADBRIDGE RD	8225 BROADBRIDGE RD	IRA TWP
	6455	HESSEN RD	6455 HESSEN RD	IRA TWP
	6456	HESSEN RD	6456 HESSEN RD	IRA TWP
	6448	HESSEN RD	6448 HESSEN RD	IRA TWP
	6418	HESSEN RD	6418 HESSEN RD	IRA TWP
	6408	HESSEN RD	6408 HESSEN RD	IRA TWP
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	6370	HESSEN RD	6370 HESSEN RD	IRA TWP
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	6300	HESSEN RD	6300 HESSEN RD	IRA TWP
	6305	HESSEN RD	6305 HESSEN RD	IRA TWP
	6233	HESSEN RD	6233 HESSEN RD	IRA TWP
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	6128	HESSEN RD	6128 HESSEN RD	IRA TWP
	6100	HESSEN RD	6100 HESSEN RD	IRA TWP
	5971	HESSEN RD	5971 HESSEN RD	CASCO
	7015	PALMS RD	7015 PALMS RD	IRA TWP
	7021	PALMS RD	7021 PALMS RD	IRA TWP
?		PALMS RD	PALMS RD	IRA TWP
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	7401	PALMS RD	7401 PALMS RD	IRA TWP

7898	SHEA RD	7898 SHEA RD	IRA TWP
7862	SHEA RD	7862 SHEA RD	IRA TWP
7856	SHEA RD	7856 SHEA RD	IRA TWP
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7845	SHEA RD	7845 SHEA RD	IRA TWP
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8128	SHORT CUT RD	8128 SHORT CUT RD	IRA TWP
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8029	SHORT CUT RD	8029 SHORT CUT RD	IRA TWP
8065	SHORT CUT RD	8065 SHORT CUT RD	IRA TWP
8051	SHORT CUT RD	8051 SHORT CUT RD	IRA TWP
9460	SPRINGBORN RD	9460 SPRINGBORN RD	CASCO
9324	SPRINGBORN RD	9324 SPRINGBORN RD	CASCO
9300	SPRINGBORN RD	9300 SPRINGBORN RD	CASCO
9292	SPRINGBORN RD	9292 SPRINGBORN RD	CASCO
5717	MELDRUM RD	5717 MELDRUM RD	CASCO
9260	SPRINGBORN RD	9260 SPRINGBORN RD	CASCO
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8205	SPRINGBORN RD	8205 SPRINGBORN RD	CASCO
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7981	SPRINGBORN RD	7981 SPRINGBORN RD	CASCO
5300	SWAN CREEK RD	5300 SWAN CREEK RD	IRA TWP
6305	SWAN CREEK RD	6305 SWAN CREEK RD	IRA TWP
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5703	MELDRUM RD	5703 MELDRUM RD	CASCO
6395	SWAN CREEK RD	6395 SWAN CREEK RD	IRA TWP
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6409	SWAN CREEK RD	6409 SWAN CREEK RD	IRA TWP
5695	MELDRUM RD	5695 MELDRUM RD	CASCO
6415	SWAN CREEK RD	6415 SWAN CREEK RD	IRA TWP
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5685	MELDRUM RD	5685 MELDRUM RD	CASCO
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7685	ARNOLD RD	7685 ARNOLD RD	IRA TWP
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7790	ARNOLD RD	7790 ARNOLD RD	IRA TWP
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7767	ARNOLD RD	7767ARNOLD RD	IRA TWP
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7796	ARNOLD RD	7796 ARNOLD RD	IRA TWP
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7820	ARNOLD RD	7820 ARNOLD RD	IRA TWP
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7922 ARNOLD RD	7922 ARNOLD RD	IRA TWP
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8296 ARNOLD RD	8296 ARNOLD RD	IRA TWP
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8303 ARNOLD RD	8303 ARNOLD RD	IRA TWP
8306 ARNOLD RD	8306 ARNOLD RD	IRA TWP
8314 ARNOLD RD	8314 ARNOLD RD	IRA TWP
8315 ARNOLD RD	8315 ARNOLD RD	IRA TWP
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8417 ARNOLD RD	8417 ARNOLD RD	IRA TWP
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8457 ARNOLD RD	8457 ARNOLD RD	IRA TWP
8461 ARNOLD RD	8461 ARNOLD RD	IRA TWP
8496 ARNOLD RD	8496 ARNOLD RD	IRA TWP
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8621 ARNOLD RD	8621 ARNOLD RD	IRA TWP
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8717 ARNOLD RD	8717 ARNOLD RD	IRA TWP
8761 ARNOLD RD	8761 ARNOLD RD	IRA TWP
8775 ARNOLD RD	8775 ARNOLD RD	IRA TWP
8802 ARNOLD RD	8802 ARNOLD RD	IRA TWP

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November 11, 2021

RE: Letter of Commitment Ira Extension FTTH Project; CMIC 3.0

To Whom it may Concern,

Yukon Construction Inc. will provide construction services to Duke Broadband at an in-kind contribution of 43% of the total billable services for the IRA Extension FTTH project, as illustrated:

[redacted]

This letter of commitment is contingent upon Duke Broadband's successful award of grant funding for the project.

Sincerely,

Jennifer Laduke
CEO / Owner
Yukon Construction, Inc
jladuke@yukoncs.com

November 10, 2021

To Whom It May Concern,

RE: Duke Broadband, Inc.
Yukon Construction Services, Inc.
1341 S Range Rd
St. Clair, MI 48079

Dave & Jennifer LaDuke, owners of Yukon Construction and Duke Broadband, have been valued clients of Northstar Bank since 2004. Yukon and the LaDuke's have maintained numerous accounts and have had numerous loans with the bank during the course of that time. The relationship has been handled in good manner and stands in very good standing with the bank.

During 2021, Northstar Bank has also started a banking relationship with Duke Broadband, Inc. Duke Broadband and the service it will offer, starting in St. Clair County, is very exciting. Many areas of our County are underserved when it relates to quality internet access. With being able to "self-perform" so much of the installation, system set up and maintenance through Yukon Construction, it seems that Dave is well positioned to make Duke successful. Northstar Bank is excited to be one of the "financial partners" for Duke but with it being a newly formed business in an industry that has a need for significant up front capital investment, it is likely that multiple "partners" will be needed. I hope you will give strong consideration to Duke Broadband's application for your grant. With many partners working together, I believe Duke can provide a much needed service.

Sincerely

Brian Moran
Senior Vice President – Commercial Lending

November 8, 2021

RE: Letter of Commitment Ira Extension FTTH Project

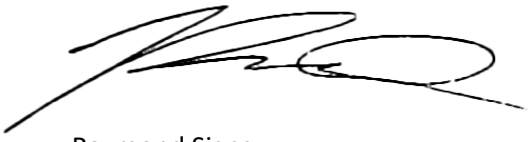
To Whom it May Concern;

Wideband Group, LLC will provide Engineering and Project Management to Duke Broadband at an in-kind contribution of 50% of the total billable services for the IRA Extension FTTH project, as illustrated:

Engineering & Project Management Estimated Billable	$116,146.40
Wideband Group In-Kind Contribution Commitment	$58,073.20

Contribution will apply to services render post grant award.

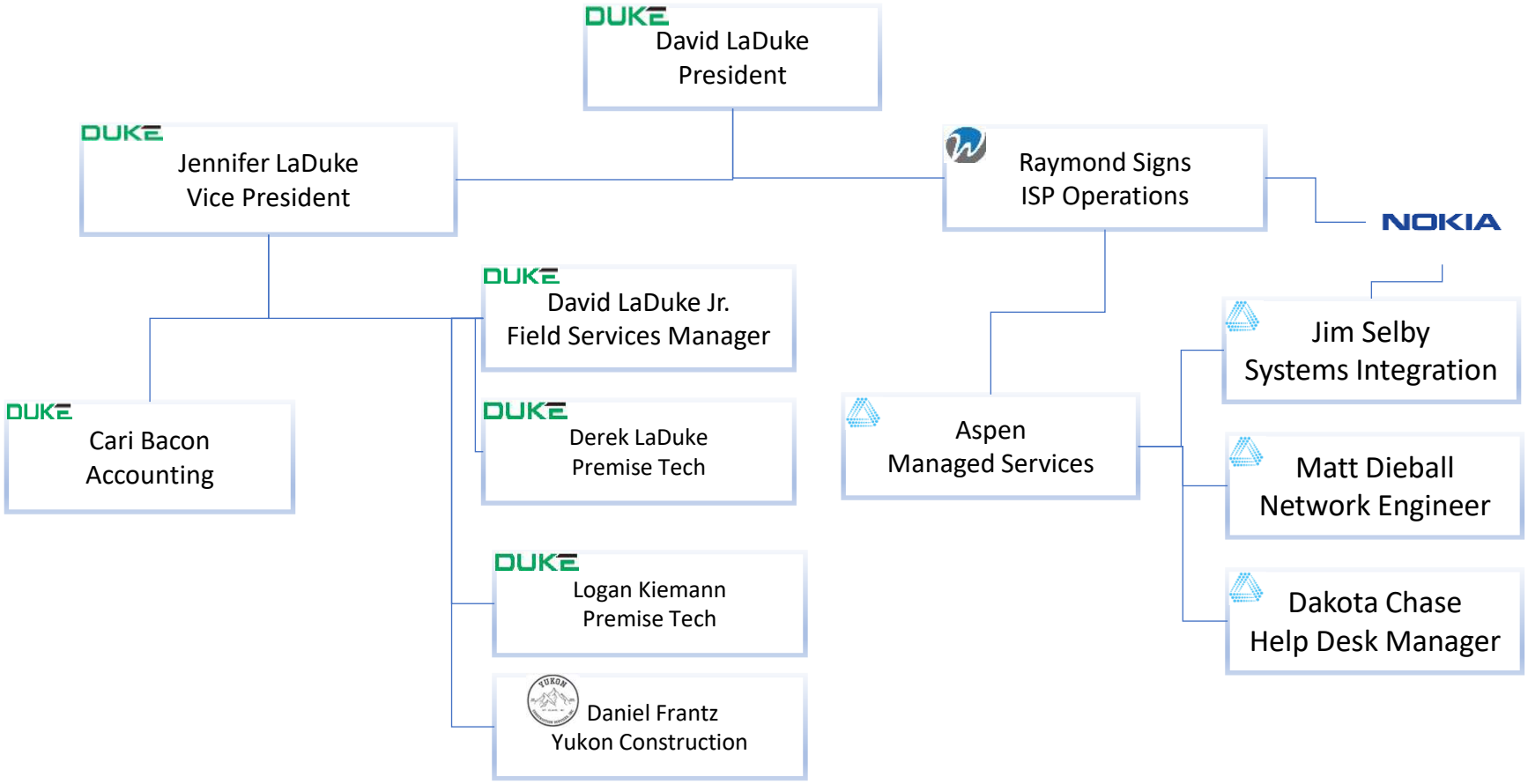
Best Regards,



Raymond Signs

President

Duke Broadband Organizational Chart



12/31/2020

RAYMOND SIGNS

[redacted]

SUMMARY

20+ years of progressive success including extensive experience in telecommunications. Able to apply a blend of strategic, technical, and tactical skills to translate overall business objectives into practical, feasible and measurable roadmaps

PROFESSIONAL HISTORY

Wideband Group, LLC — Lansing, MI October ✦2017 – 2020
OWNER / PRESIDENT
Technology consulting & integration company focused on fiber and wireless, successfully partnering with other companies for service delivery. Engagements include FTTH project & construction management for Coldwater Public Board of Utilities, T-Mobile DAS integrations, FTTH feasibility study for Conway Township, Michigan; deliverables included infrastructure-only network strategy, business model and financial proforma. Long-term engagement with Steuben County Indiana Fiber Network consulting with the board of directors on how to best position the network within the fiber and wireless ecosystem to serve the broadband needs of this rural county.

Earthcom, Inc. — Lansing, MI ✦ 2011 – 2017
PRESIDENT
Promoted to lead this $12M annual revenue fiber and wireless construction company. Developed a new sense of direction as the owner shifted away from leading day-to-day company activities. Worked alongside the GC who was promoted to VP and an expert accounting consultant to reorganize the company's books and identify areas for elimination and opportunities for growth. Improve the company's approach to the customer that willfully accepts scope gaps and turns them into value-added opportunities. Customers included Crown Castle, Ericsson, Merit Networks, Midwest Energy, Sprint, T-Mobile and Verizon.

Arialink — Lansing, MI ✦ 2001 – 2011
PARTNER / VICE PRESIDENT

Instrumental co-founder and contributor to strategic business development, operations, and expansion of data / telecom service provider specializing in fiber optics and wireless technologies. Built from 0 to $8M company, successfully sold to Zayo for $18M.

Member of executive team focused on identifying and pursuing new business opportunities. Forged and cultivated productive relationships with clients to ensure superior levels of satisfaction, retention, and referrals. Managed performance reviews, regulatory / standard compliance, reporting, policy / procedure development, and research / selection of new technologies to optimize as well as expand operational capacity. Spearheaded operational efforts focused on effectively implementing business plans within organization's Network Operation Center encompassing network architecture, engineering quality, customer service, ordering, and resources management.

EDUCATION

Michigan State University, East Lansing, MI

- **Master of Business Administration (MBA)** – Focus: Business Information Systems, Minor: Entrepreneurship, 2001
- **Bachelor of Science (BS) in Resource Development,** 1987

Jim Selby

[redacted]

PROFILE

As an industry entrepreneur and pioneer wireless internet service provider, Jim Selby specializes in advanced broadband technologies such as Licensed Exempt Frequencies, xPON, Active Ethernet, Municipal Wi-Fi, 802.11 evolutions with a focus on applications, business strategy, systems architecture, product development and service delivery. Dubbed the "Wireless Guerrilla" by the Wall Street Journal, Selby's expertise was called on Homeland Security events like the Presidential Inauguration where he was the first to use licensed exempt frequency in mission critical applications.

Recent accomplishments include the successful sale, engineering and deployment of the Town of Vail Fiber Wi-Fi network, where Selby was selected over notable major players such as AT&T, Qwest, Nortel and others. Selby laid the foundation for fiber and wireless architecture and infrastructure involved in this carrier's Municipal Wi-Fi, National Hotspot Network and Point to Point technologies.

Utilizing his expertise in product development and manufacturing methodologies, Selby founded a Wi-Fi Mesh startup and established of a successful wireless distribution startup which continues to produce millions of dollars in equipment sales annually.

Possessing deep technical skills combined with leadership experience Selby has practical hands-on experience of deploying thousands of network devices worldwide.

EXPERIENCE

MANAGING PARTNER AT ASPEN WIRELESS TECHNOLOGIES, LLC — 2001-PRESENT

- Provide highly specialized, technology-neutral business consulting for the telecom industry
- Specialize in license-exempt wireless and Internet technologies including Muni Wi-Fi and Hot Spots, Mesh, Video, Data, Mobility, and Public Safety applications
- Design carrier-grade turnkey systems
- Engineer networks that provide maximum ROI
- Create business case and Capex models for Municipal Networks
- System integration expertise in over 28 manufacturers
- Sales of leading fiber and wireless technologies such as Active Ethernet and Mesh networking
- World-renowned for notable accomplishments in licensed exempt frequency
- Train executive staff and technical teams

VP OF WIRELESS TECHNOLOGIES AT CENTURYTEL NYSE:CTL— 2005-2007

- Designed, won and implemented the Vail Municipal Wi-Fi Network over major competitors
- Created the OSS with location-based services, HTML injection, Ensemble integration and roaming
- Won every RFP response entered
- Designed a national Wi-Fi Hot Spot architecture increasing subscriber retention
- Produced technology at 45% cost of other vendor solutions
- Evaluated and selected all wireless technologies
- Refined Municipal Wi-Fi business plans that return greater than 20% IRR
- Exploited existing CenturyTel assets dramatically increasing territory
- Transferred wireless knowledge and increased mindshare throughout the regional offices.

- Created new efficiencies and lower cost through standardization of solutions while integrating into legacy systems.
- Orchestrated the Eng, Ops, IS and Marketing teams to achieve a tight deadline.
- Developed a Wireless budget and capex model for wireless networks

FOUNDER AND MANAGING PARTNER AT DEFACTO WIRELESS — 2003-2005

- Defacto Wireless has become a prominent global distributor of advanced wireless broadband technologies. Defacto supplies all aspects of wireless technology. As founder and managing partner Selby was responsible for Strategy, vendor relationships, logistics to product development and sales training.

CHIEF TECHNOLOGY OFFICER AT NATIONAL BROADBAND — 2002-2003

- Founder of first nationwide broadband wireless network covering 38 states, 420 POPs and over 18,000 route-miles of fiber optics
- First to Architect paradigm technology "Mid-Stage Injection" later copied by Telegent and WilTel
- • Negotiated an exclusive contract with a national fiber optic network
- • Assisted in solidifying $28MM in funding for this venture
- • Created a truly disruptive technology ahead of its time
- • Shaped technology negotiation points between NBB and its vendors
- Designed and deployed two Network Operation Centers, billing system infrastructures with SLA metering

FOUNDER AND CEO AT ASPENWAVE — 1999-2001

- Founded, engineered and deployed one of the first ubiquitous citywide Wi-Fi networks in Aspen,
- Colorado.
- Innovated network attracted attention and provided inspiration to others – think
- WISP's, Hotspots, Boingo and Tropos metro Wi-Fi. Dubbed the “Wireless Guerrilla”, Selby
- pioneered the way for alternative access to the Internet using license exempt technologies and at the time unconventional methods.
- Covered over 120 square miles with Wi-Fi
- Evolved the technology in outdoor 802.11 protocol
- Created marketing buzz
- Put Wi-Fi on the map as a viable broadband solution for mass subscribers
- One of first Muni Wi-Fi builds in the world
- Resourced on a shoe-string budget

EDUCATION

Central Michigan University — Bachelor of Science, 1988

HONORS & AWARDS

Wall Street Journal, National Public Radio, Wired Magazine, Forbes, Tech TV, USA Today, San Jose Mercury, Christian Science Monitor, Denver Post, Denver Rocky Mountain News, Aspen Magazine, Broadband Wireless Magazine, Telecom in the Valley TV and Geek Speak Radio. Featured as a keynote speaker at Broadband Wireless World Forum, The FCC Service Provider Showcase, The Colorado Rural Broadband Initiative, Progress and Freedom Foundation, WISPCON, Telluride Technology Festival and the Wireless Communications Association.

Cari Bacon

[redacted]

Education

Baker College of Port Huron
3403 Lapeer Road, Port Huron MI 48060
Associate Degree, Accounting, June 1995
Bachelor of Business Leadership, June 1997

St. Clair County Technical Education Center
499 Range Road, Port Huron MI 48060
Certified Financial Assistant, June 1992

Qualifications

Trained in computerized accounting - Quickbooks

- Accounts Payable, Accounts Receivable, Payroll

Knowledgeable in Google Docs & Spreadsheets

- Excellent verbal and written communication skills
- Excellent organizational skills

Related Activities

Volunteer at Gateway Church in Marysville as assistant treasurer 2019 - present
Volunteered at Washington Elementary School 2015-2016

- Assisted teacher in timed student readings, record keeping and other miscellaneous tasks

Volunteered at Marysville Cooperative Preschool 1999-2004 and 2009

- Served on the board as secretary, assistant treasurer and occasional paid position of substitute teacher

Work Experience

01/2017 to Present	Yukon Construction Services, Inc. 1341 S. Range Rd, St Clair, MI. 48079 Office Assistant
06/2008 to 12/2009	Charlie's Auto & Truck, Inc. 1504 24th Street, Port Huron, MI 48060 (business closed) Bookkeeper
1/1993 to 1/1997	Pine River Plastics, Inc. 1111 Fred Moore Hwy, St. Clair MI 48079 (business closed) Accounts Receivable, Accounts Payable and Hourly Payroll

REFERENCES FURNISHED UPON REQUEST

Michael Reen

[redacted]

SUMMARY

Multi-dimensional and readily adaptable to dynamic project development challenges with strong construction and telecommunication industry project development experience and technical skills. A creative problem solver blending a uniquely multi-faceted background effectively for client success.

EXPERIENCE

Aspen Wireless Technologies Inc.—Maple City, Mi. 2018-Present

Municipal FTTX Program Manager/Lead Outside Plant Designer

A Design-Build-Operate-Maintain Broadband Engineering and Consulting firm.

Responsible for initial Project Development and complete OSP Design. Actively coordinates with construction project management, contractors, and staff to ensure smooth project implementation and problem solving field challenges.

City of Marshall FiberNet.—Marshall Mi. 2017-2018

Customer Service and Marketing Manager

A Startup Municipal Telecommunications Utility

Responsible for customer identification, onboarding, installation and service for utility customer base. Key input provider for network design and implementation. Liaison with city staff and department management. Instrumental in establishing best practices for startup telco utility.

AT&T Wireline Division.—San Diego CA/Battle Creek MI. 2012-2017

International Provider of Telecommunication Services

Field services technician tasked with installation and repair of voice, video and internet services through IPDSL, VDSL, Fiber Optic, and Satellite delivery methods.

Education and Personal Development

Western Michigan University, Kalamazoo, MI

Bachelor of Science, Public Administration, 1997

United States Navy-Special Operations Group One 1989-1995

Explosive Ordnance Disposal, Naval Parachutist, Navy Diver, Marine Mammal Systems Operator

Jennifer LaDuke

[redacted]

Professional Summary

Accomplished President offering 17 years of progressive experience in utility construction. Adept at managing operations, financial administration, and key program areas.

Skills

- Financial administration
- Financial management
- Business administration
- Business planning

Work History

Vice President, 07/2020 to Current
Duke Broadband Inc – St Clair, MI

- Identified opportunities to improve business process flows and overall departmental productivity.
- Established and administered annual budget with effective controls to prevent overages, minimize burn rate and support sustainable objectives.
- Established clear management goals and devised system to track results for effective decision making.
- Applies performance data to evaluate and improve operations, target current business conditions, and forecast needs.

President, 06/2004 to current
Yukon Construction Services Inc – St Clair, MI

- Reduced cost by overhauling and streamlining contract bidding and procurement processes to assure best prices for materials and services.
- Resolved issues and recommended actions based on production and compliance reports.
- Increased efficiency by analyzing data and maximizing opportunities for improved productivity across several areas. Identified opportunities to improve business process flows and overall department productivity.
- Supervised daily operations of utility construction operation.
- Identified and solved issues with production, work force and material sourcing to drive business objectives.

Education

High School Diploma
St Clair High School – St Clair

Yukon History Timeline

2004

Started Yukon Construction DBA, doing Geothermal Loop Fields on the weekend.

2005

Hired my first two employees. Yukon Construction joined IBEW Local 17 union, and then negotiated contract with LeCom Communications doing Telecommunication work for Comcast, along with Harlan Electric install conduits for DTE Street lights.

2009

Yukon grew so I needed to become Incorporated (Yukon Construction Services Inc)

2010

Yukon became a vendor for ATT and also obtained WBE Certificate/WOSB Certificate

2013

I became a vendor for Semco Energy and landed a contract with Superior Electric doing streetlights for GM Warren Tech Center. Working on GM Property I need to have a Drug and Alcohol Program along with OSHA training. I joined the MUST Drug and Alcohol Program

2015

I teamed up with Scotty's Underground to install telecommunications for WOW. I bought a shop that has large outside building storage with an office building.

2016-current

I finally after many years trying, I was able to get a DTE Vendor. I joined the golden shovel to help with my DTE Vendor. By this time Yukon has worked for Verizon, 123.net, Comcast and AT&T in telecommunication along with Gas Distribution, Electric Work and Fiber Optics for security cameras at various auto plants.

[redacted]

Dave LaDuke

[redacted]

Professional Summary Responsible Construction Superintendent with over 30 years of comprehensive experience leading teams up to 100 employees and many contractors. Outstanding blueprint and design interpretation and comprehensive abilities with excellent communication, budgeting and project management talents. Extensive knowledge of all construction sub-trades, construction material and supplies

Skills

- Construction Management
- Staff Leadership and Direction
- Project Management
- Operations Management
- Project Estimating and Bidding
- Conflict Resolution
- Effective Communication
- Strategic Planning
- Site Monitoring
- Utility Line Construction

Work History Construction Superintendent / Rauhorn Electric, Motor City Electric, Yukon Construction

- Enhanced company development initiatives by solving complex issues and suggesting corrective action
- Collaborated with management, technical crew members and fellow supervisors to organize efficient operations and achieve demanding schedule targets
- Studied and interpreted blueprints to plan construction phases and team assignments.
- Coordinated materials to maintain steady flow and meet productivity objectives
- Organized and optimized daily operations of utility construction crews with consistent on time delivery
- Delegated assignments based on construction plans, project needed and knowledge on individual team members
- Interacted daily with various project managers, subcontractors and municipal inspectors to complete construction projects
- Helped successfully complete multi-million dollar utility construction projects ahead of schedule
- Handled construction tools and machinery to effectively complete projects

Education St Clair High School

TABLE OF CONTENTS

AUSTIN, NIESTER, SCHWEIHOFER & FINNEGAN, P.C.
CERTIFIED PUBLIC ACCOUNTANTS

ACCOUNTANT'S COMPILATION REPORT

Board of Directors
Yukon Construction Services, Inc.
Casco, MI

Management is responsible for the accompanying financial statements of Yukon Construction Services, Inc. (an S corporation), which comprise the balance sheets as of December 31, 2020 and 2019, and the related statements of income and retained earnings and cash flows for the years then ended, in accordance with accounting principles generally accepted in the United States of America. We have performed a compilation engagement in accordance with Statements on Standards for Accounting and Review Services promulgated by the Accounting and Review Services Committee of the AICPA. We did not audit or review the financial statements nor were we required to perform any procedures to verify the accuracy or completeness of the information provided by management. We do not express an opinion, a conclusion, nor provide any assurance on these financial statements.

Management has elected to omit substantially all of the disclosures required by accounting principles generally accepted in the United States of America. If the omitted disclosures were included in the financial statements, they might influence the user's conclusions about the Company's financial position, results of operations and cash flows. Accordingly, the financial statements are not designed for those who are not informed about such matters.

The Company has elected to be taxed under the provisions of Subchapter S of the Internal Revenue Code. Under those provisions, the Company does not pay federal corporate income taxes on its taxable income. Shareholders are taxed on their proportionate share of the Company's taxable income.

Supplementary Information

The accompanying supplementary information contained in the Schedules of Cost of Sales and Operating Expenses are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management. The supplementary information was subject to our compilation engagement. We have not audited or reviewed the supplementary information and do not express an opinion, a conclusion, nor provide any assurance on such supplementary information.

Austin, Niester, Schweihofer & Finnegan, P.C.

Certified Public Accountants

March 3, 2021
Port Huron, Michigan

AUSTIN, NIESTER, SCHWEIHOFER & FINNEGAN, P.C.
CERTIFIED PUBLIC ACCOUNTANTS

YUKON CONSTRUCTION SERVICES, INC.

BALANCE SHEETS

December 31, 2020 and 2019

	2020	2019
ASSETS		
[redacted]	$ [redacted]	$ [redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	$ [redacted]	$ [redacted]

See Accountant's Compilation Report.

	2020	2019
LIABILITIES AND STOCKHOLDER'S EQUITY		
[redacted]	$ [redacted]	$ [redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	$ [redacted]	$ [redacted]

AUSTIN, NIESTER, SCHWEIHOFER & FINNEGAN, P.C.
CERTIFIED PUBLIC ACCOUNTANTS

YUKON CONSTRUCTION SERVICES, INC.

STATEMENTS OF INCOME AND RETAINED EARNINGS

Years ended December 31, 2020 and 2019

	2020	2019
[redacted]	$ [redacted]	$ [redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]
RETAINED EARNINGS AT END OF YEAR	$ [redacted]	$ [redacted]

See Accountant's Compilation Report.

AUSTIN, NIESTER, SCHWEIHOFER & FINNEGAN, P.C.
CERTIFIED PUBLIC ACCOUNTANTS

YUKON CONSTRUCTION SERVICES, INC.

STATEMENTS OF CASH FLOWS

Years ended December 31, 2020 and 2019

	2020	2019
[redacted]		
[redacted]	$ [redacted]	$ [redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	
[redacted]	[redacted]	[redacted]
[redacted]		
[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]
		[redacted]
	[redacted]	
[redacted]	[redacted]	[redacted]
[redacted]		
[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
CASH AT END OF YEAR	$ [redacted]	$ [redacted]

See Accountant's Compilation Report.

	2020	2019
RECONCILIATION OF NET (LOSS) INCOME TO NET		
[redacted]	$ [redacted]	$ [redacted]
NET CASH PROVIDED BY OPERATING ACTIVITIES	$ [redacted]	$ [redacted]

SUPPLEMENTARY INFORMATION

AUSTIN, NIESTER, SCHWEIHOFER & FINNEGAN, P.C.
CERTIFIED PUBLIC ACCOUNTANTS

YUKON CONSTRUCTION SERVICES, INC.

SCHEDULES OF COST OF SALES
AND OPERATING EXPENSES

Years ended December 31, 2020 and 2019

	2020	2019
COST OF SALES		
	$	$
	$	$
OPERATING EXPENSES		
	$	$
	$	$

FINANCIAL STATEMENTS

YUKON CONSTRUCTION SERVICES, INC.

DECEMBER 31, 2018

TABLE OF CONTENTS

AUSTIN, NIESTER, SCHWEIHOFER & FINNEGAN, P.C.
CERTIFIED PUBLIC ACCOUNTANTS

Donna M. Niester
Laura L. Schweihofer
Linda L. Finnegan
Scott A. Ryan

ACCOUNTANT'S COMPILATION REPORT

Board of Directors
Yukon Construction Services, Inc.
Casco, MI

Management is responsible for the accompanying financial statements of Yukon Construction Services, Inc. (an S corporation), which comprise the balance sheets as of December 31, 2018 and 2017, and the related statements of income and retained earnings and cash flows for the years then ended, in accordance with accounting principles generally accepted in the United States of America. We have performed a compilation engagement in accordance with Statements on Standards for Accounting and Review Services promulgated by the Accounting and Review Services Committee of the AICPA. We did not audit or review the financial statements nor were we required to perform any procedures to verify the accuracy or completeness of the information provided by management. Accordingly, we do not express an opinion, a conclusion, nor provide any form of assurance on these financial statements.

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The Company has elected to be taxed under the provisions of Subchapter S of the Internal Revenue Code. Under those provisions, the Company does not pay federal corporate income taxes on its taxable income. Shareholders are taxed on their proportionate share of the Company's taxable income.

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Austin, Niester, Schweihofer & Finnegan, P.C.

Certified Public Accountants

April 18, 2019
Port Huron, Michigan

600 FORT STREET • SUITE 200
PORT HURON, MICHIGAN 48060
TEL. (810) 985-9000 • FAX (810) 985-7257
WEBSITE: www.ansfpc.com

AUSTIN, NIESTER, SCHWEIHOFER & FINNEGAN, P.C.

CERTIFIED PUBLIC ACCOUNTANTS

YUKON CONSTRUCTION SERVICES, INC.

BALANCE SHEETS

December 31, 2018 and 2017

	2018	2017
ASSETS		
[redacted]	$ [redacted]	$ [redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	$ [redacted]	$ [redacted]

See Accountant's Compilation Report.

	2018	2017
LIABILITIES AND STOCKHOLDER'S EQUITY		
CURRENT LIABILITIES		
[redacted]	$ [redacted]	$ [redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
STOCKHOLDER'S EQUITY		
[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]
	$ [redacted]	$ [redacted]

AUSTIN, NIESTER, SCHWEIHOFER & FINNEGAN, P.C.

CERTIFIED PUBLIC ACCOUNTANTS

YUKON CONSTRUCTION SERVICES, INC.

STATEMENTS OF INCOME AND RETAINED EARNINGS

Years ended December 31, 2018 and 2017

	2018	2017
[redacted]	$ [redacted]	$ [redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
RETAINED EARNINGS AT END OF YEAR	$ [redacted]	$ [redacted]

See Accountant's Compilation Report.

AUSTIN, NIESTER, SCHWEIHOFER & FINNEGAN, P.C.

CERTIFIED PUBLIC ACCOUNTANTS

YUKON CONSTRUCTION SERVICES, INC.

STATEMENTS OF CASH FLOWS

Years ended December 31, 2018 and 2017

	2018	2017
[redacted]	$ [redacted]	$ [redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
CASH AT END OF YEAR	$ [redacted]	$ [redacted]

See Accountant's Compilation Report.

	2018	2017
[redacted]		
	$ [redacted]	$ [redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
NET CASH PROVIDED BY OPERATING ACTIVITIES	$ [redacted]	$ [redacted]

SUPPLEMENTARY INFORMATION

AUSTIN, NIESTER, SCHWEIHOFER & FINNEGAN, P.C.

CERTIFIED PUBLIC ACCOUNTANTS

YUKON CONSTRUCTION SERVICES, INC.

SCHEDULES OF COST OF SALES
AND OPERATING EXPENSES

Years ended December 31, 2018 and 2017

	2018	2017
	$	$
	$	$
	$	$
	$	$

See Accountant's Compilation Report.

DUKE BROADBAND, INC.
Balance Sheet
As of December 31, 2020

Assets

[redacted]	$ [redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	$ [redacted]

Liabilities and Stockholders' Equity

[redacted]	
[redacted]	[redacted]
[redacted]	
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	$ [redacted]

No assurance is provided on these financial statements.

DUKE BROADBAND, INC.
Income Statement

	1 Year Ended December 31, 2020
Sales	
Total Sales	[redacted]
Gross Profit	[redacted]
Operating Expenses	
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	$ [redacted]

No assurance is provided on these financial statements.

DUKE BROADBAND FIBER

Affidavit of Commitment

State of Michigan

County of Saint Clair

In the event that a CMIC grant is awarded to Duke Broadband Inc. to construct fiber optic broadband service in IRA and Casco Townships located in St. Clair County Michigan, specifically Ira Extension FTTH, the ownership of Duke Broadband Inc. hereby certifies our commitment to offer broadband service in the awarded area for a minimum of five years after the project is complete. The service provided during this time period will be as described in our CMIC application, Specifically:

Type	Upload (Mbps)	Download (Mbps	Bandwidth	Price
Residential Base Rate	1000	100	unlimited	[redacted]
Residential Base – Education Discount	1000	100	Unlimited	[redacted]
Residential Wi-Fi	1000	100	Unlimited	[redacted]
Business SOHO	500	100	Unlimited	[redacted]

Signature: Dave LaDuke

Printed Name: Dave LaDuke

Title: President

Date: 11-8-2021

SHINK ENGINEERING, PLC
4146 PINE GROVE ROAD
FT. GRATIOT, MI 48059

Civil Engineering & Surveying 586.718.1965

November 4, 2021

RE: Duke Broadband Application for State Broadband Grant

To: Connecting Michigan Communities Grant Authority:

We have reviewed the budgetary engineering design, diagrams, and maps of the proposed project presented by Duke Broadband, Inc. Duke Broadband has demonstrated their understanding of the project and the ability to provide the proposed solution. This solution is scalable to meet the anticipated future connectivity demands for the proposed service areas in Saint Clair County.

Cordially,

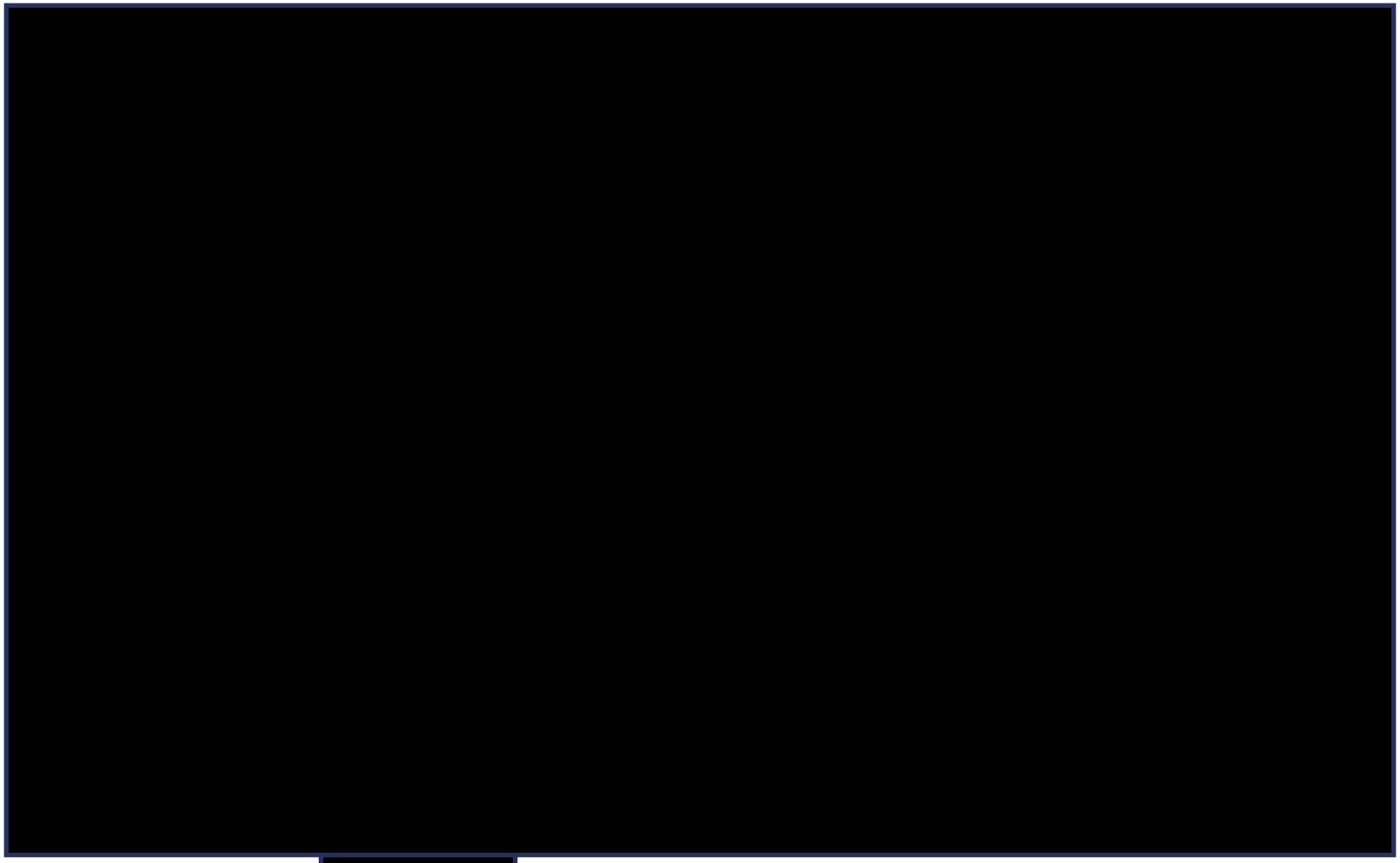
SHINK ENGINEERING, PLC

Lori M. Shink

Lori M. Shink, PE

[redacted]


[redacted]

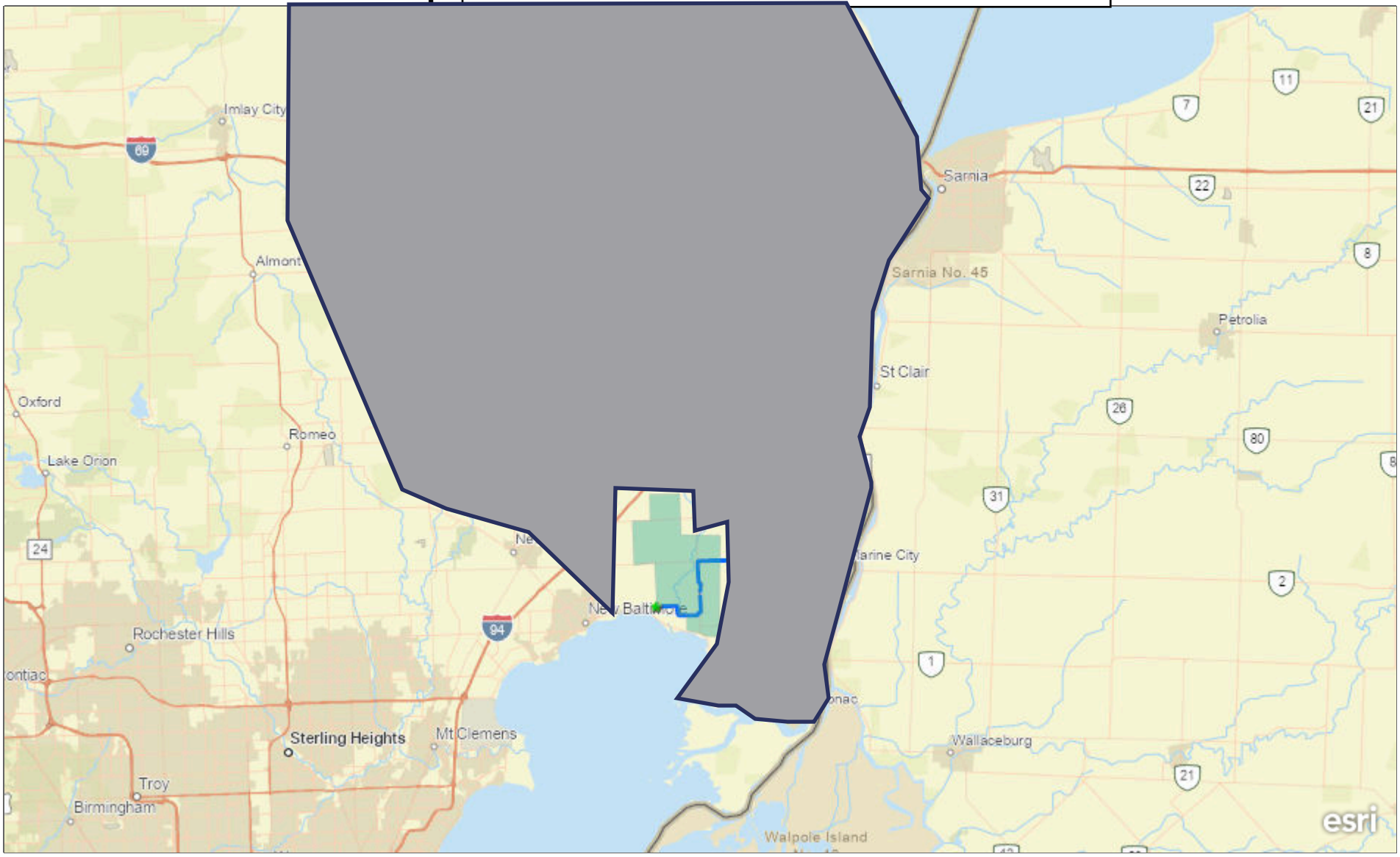


DUKE BROADBAND IRA Extension FTTH Project Hi Level Network Diagram

DUKE BROADBAND IRA Extension FTTH Project Hi Level Network Diagram

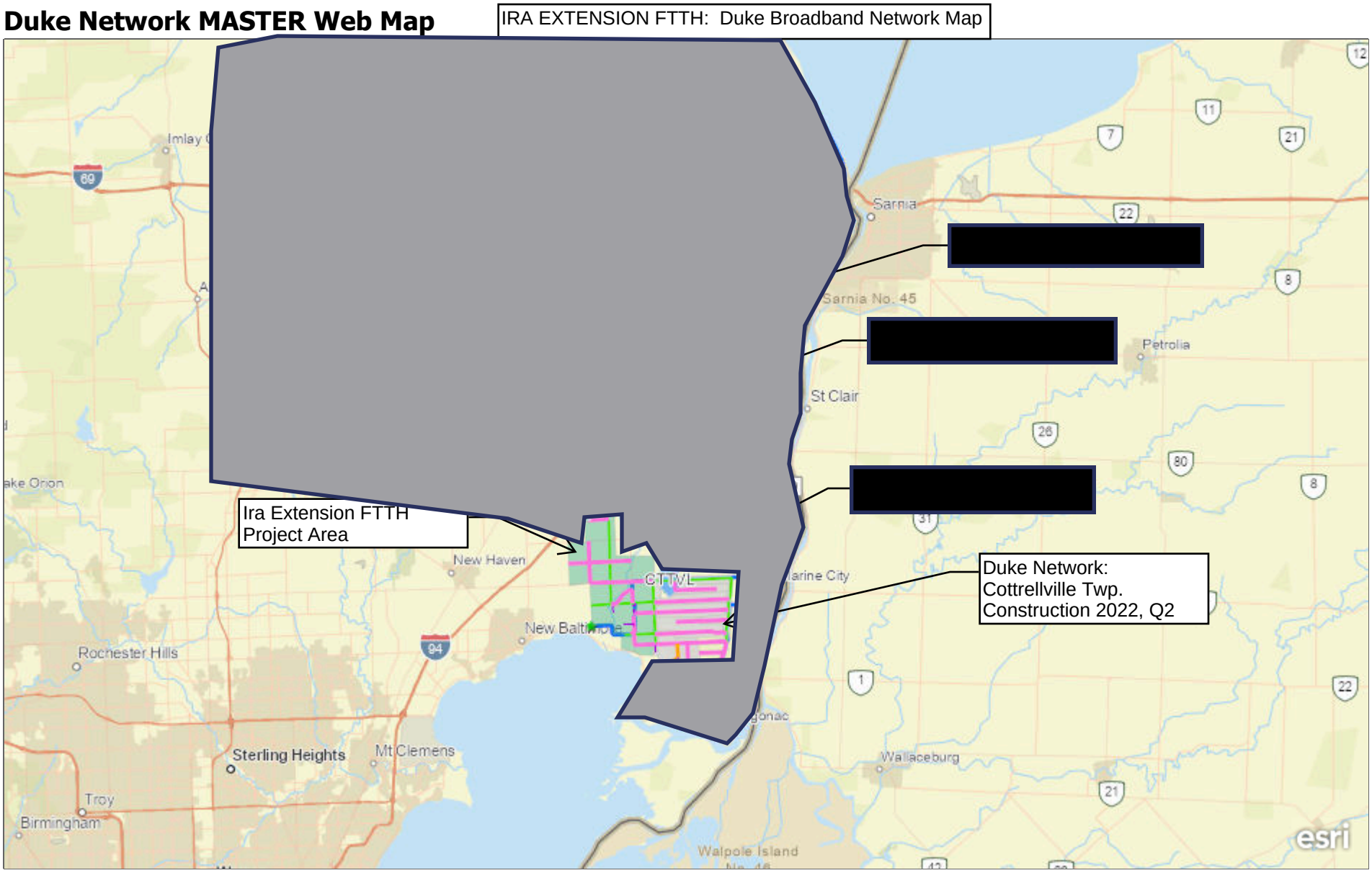
Duke Network MASTER Web Map

IRA EXTENSION FTTH PROJECT : Saint Clair County RESA Network



Network Map

Duke Network MASTER Web Map

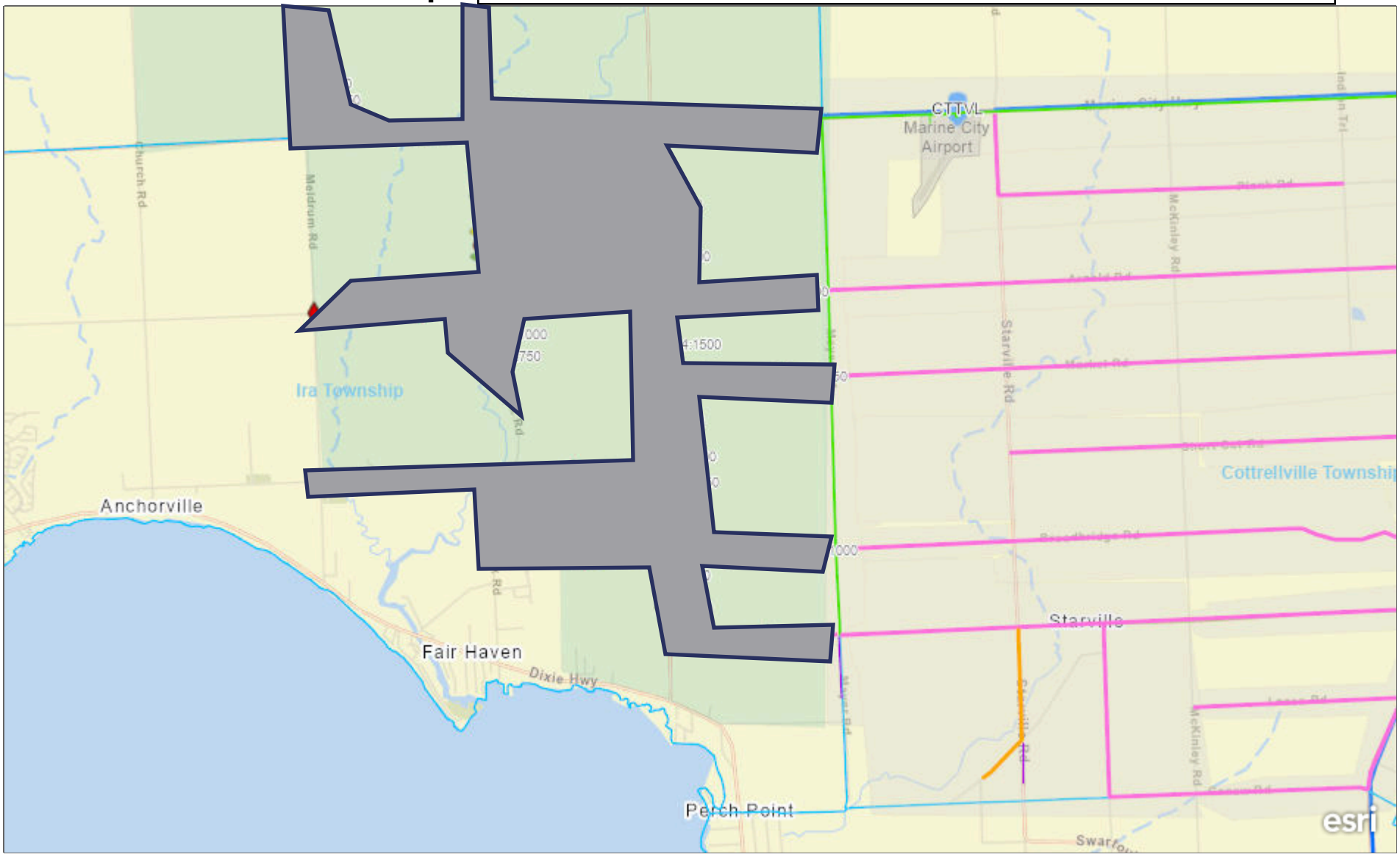


Network Map

Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, NRCan, Parks Canada

Duke Network MASTER Web Map

IRA EXTENSION FTTH PROJECT SERVICE AREA BUDGETARY DESIGN PLAN - MAP 2 OF 2



Network Map

Province of Ontario, County of Lambton, Esri Canada, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

Duke Network MASTER Web Map

IRA EXTENSION FTTH PROJECT SERVICE AREA BUDGETARY DESIGN PLAN - MAP 1 OF 2

Network Map

Province of Ontario, County of Lambton, Esri Canada, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

Duke Broadband
Ira Extension FTTH Project: Market Build Data

[redacted]

Premise Data

[redacted]

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Duke Broadband
IRA Extenstion FTTH

MASTER BOM
Ira Extension FTTH Project: Market Build Data

[redacted]

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Nokia 7360 ISAM FX

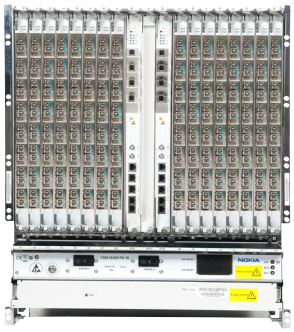
ANSI

The Nokia 7360 Intelligent Services Access Manager (ISAM) FX is a high-capacity access node designed to deliver ultra-broadband services to any number of users in a rapid and cost-effective way. Because there is no single solution to bring ultra-broadband to the masses, the 7360 ISAM FX supports a mix of services including VDSL2 with vectoring, point-to-point, GPON, EPON (with DPoE) and 10G PON services. High-bandwidth throughput is guaranteed by backplane technology that enables dual 100Gb/s backplane connections to each line termination (LT) slot.

With three 7360 ISAM FX shelf sizes to choose from, service providers have maximum flexibility for deploying in central office, outside plant cabinet or other remote environments. With the 7360 ISAM FX, operators have the flexibility to deploy a mix of technologies that can deliver fast broadband, a faster time to market and the fastest possible return on investment.

Features

- High-capacity backplane: 2 x 100Gb/s per slot
- Four-slot (FX-4), eight-slot (FX-8) and 16-slot (FX-16) shelf options
- High-capacity 480Gb/s controllers (NT) with 40Gb/s network capacity (can be used as uplink, downlink or direct user link)
- Optional Network Termination Input Output (NTIO) for an additional 80Gb/s network capacity
- Full NT redundancy with Active/Active and load sharing options
- Added resiliency with MPLS, Ethernet Ring Protection Switching (ERPS) (G.8032) and Link Aggregation Group (LAG) support
- Simultaneous support of passive optical network (PON), point-to-point, POTS and VDSL2 with vectoring



7360 ISAM FX-16 — GPON shown

7360 ISAM FX-8 — VDSL2 Vectoring shown

7360 ISAM FX-4 — Multi-service shown

- Fully managed by the Nokia 5520 Access Management System (AMS) and 5529 Access Provisioning Center (APC) applications

Benefits

- Secure investment with system capacity that anticipates future technologies such as time and wavelength division multiplexed PON (TWDM-PON)
- Flexibility to deploy any access technology in any location in the network
- Residential, mobile and business applications converge on a single platform
- Deliver over 100Mb/s to subscribers over existing copper with VDSL2 vectoring and bonding
- Optimized for Gigabit services with Nokia Gigabit Express
- Take advantage of existing Data Over Cable Service Interface Specification (DOCSIS) provisioning systems with DOCSIS Provisioning of EPON (DPoE) support
- Built on widely deployed Nokia ISAM technology serving over 160 fiber to the home (FTTH) and 90 VDSL2 operators worldwide

Note: Feature content based on R5.1 baseline

Technical specifications

Full service platform

- Multiservice access support
  - IPTV services
  - Multimedia service
  - High-speed Internet access
  - Business access
  - Cell-site backhaul
  - Voice
- LT support
  - Gigabit PON (GPON) line cards
  - Ethernet PON (EPON) line card with DPoE
  - 10G EPON line card with DPoE
  - Point-to-point fiber line card
  - VDSL2 with vectoring line cards
  - System Level Vectoring (SLV) processor
  - Voice services line card
- Network Termination (NT) support: FANT-F
  - 480Gb/s switching matrix (bidirectional)
  - Active/Active redundancy
  - Four configurable 10Gb/s or 1Gb/s network links
  - Small Form Factor Pluggable (SFP)+ cages
- Network Termination Input Output (NTIO) support: FNIO-A
  - Eight configurable 10Gb/s or 1Gb/s network links
  - Small Form Factor Pluggable (SFP)+ cages
  - Used as uplink, downlink or direct user link management
  - Fully managed by the Nokia 5520 AMS and 5529 APC

Standards compliance

- Environmental
  - ETS EN 300 019-1-1 storage – Class 1.1 weather-protected, partly temperature-controlled locations
  - ETS EN 300 019-1-2 transport – Class 2.3 public transportation
  - ETS EN 300 019-1-3 stationary use – Class 3.1E and Class 3.3 (assuming no condensation and icing)
  - GR-63-CORE

- SBC TP76200MP
- GR-3108-CORE

- Powering
  - ETS EN 300 132-2
- Protection
  - ITU-T K.20 enhanced and K.45 basic
- Safety
  - IEC 60950, EN60950 Class 1, AS/NZS 60950.1
  - UL/CSA 60950-1-03
  - EN 60950-1
- EMC
  - ETS EN 300 386 for telecommunications center installation environment
  - ETS ES 201 468
  - GR-1089-CORE
  - FCC part 15 Class A
  - EN 55022
- Acoustic noise
  - ETS 300 753

Operating conditions

- Operating temperature range: -40ºC to 65ºC (-40ºF to 149º F)
- Relative humidity: 5% to 93% (non-condensing)
- Over-temperature sensors and over-temperature shutdown

Power

- Input
  - 48/60V DC nominal
  - Fully redundant power feeding (branch A and B)

Dimensions

- FX-16
  - Height: 600mm (23.62in) (~14 RU)
  - Width: 500mm (19.68in); can be used in ETSI-sized 600 x 300mm racks
  - Depth: 280mm (11.02in)
- FX-8
  - Height: 360mm (14.17in) (8 RU)
  - Width: 445mm (17.52in); can be used in 19in racks
  - Depth: 280mm (11.02in)
- FX-4
  - Height: 223mm. (8.77in) (5 RU)
  - Width: 445mm (17.52in); can be used in 19in racks
  - Depth: 280mm (11.02in)
  - Rack-mounting pitch of 25mm (0.984in)

Construction (based on FX-16)

- 16 wire-speed LT slots
- 256 GPON ports per shelf:
  - 16 ports x 16 slots
  - 8192 subscriber locations (32 split)
- 10Tb/s total system capacity

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Product code: MKT2015019508EN

Nokia WiFi Beacon 3

Beacon for the intelligent mesh network – HA-030W-B

The Nokia WiFi Beacon 3 extends the whole home Wi-Fi experience for broadband subscribers. This premium class Nokia WiFi beacon operates seamlessly, together with selected Nokia residential gateways and/or other Nokia beacons, to create a whole home coverage mesh network backhauled by wired Ethernet or Wi-Fi. This coverage can be expanded at any time by installing additional Wi-Fi beacons to ensure flawless roaming for mobile users. The end-user experience with the intelligent self-organizing mesh system is enhanced by a service provider's Wi-Fi care capabilities in the cloud and intuitive home user support using the Nokia mobile app.

The Nokia WiFi Beacon 3 has Nokia state-of-the-art intelligent self-organizing mesh and built-in edge analytics over concurrent dual-band Wi-Fi that delivers a whole home optimal link to the connected equipment. This device can provide triple play services with voice, video and data, while its unique spectrum monitoring and interference detection ensure an overall top quality experience. When no dedicated gateway is in the network, the Nokia WiFi Beacon 3 will take the role of wireless router with access to the broadband network.

The Nokia WiFi Beacon 3 is managed by the Nokia WiFi home portal and presents the help desk agents with a holistic view of the in-home network to assist them with easy identification and instantaneous resolution of issues as well as offering recommendations for operator upsell opportunities.

The Nokia WiFi mobile app provides home users with an intuitive and simplified interface for trouble-free management of their home network and Wi-Fi. It also provides advanced functions such as guest Wi-Fi management and parental controls.

NOKIA

Features

- Functions either as wireless router or beacon in a mesh network
- Dual-band concurrent IEEE 802.11b/g/n 3x3 2.4 GHz and 802.11ac 4x4 5 GHz
- Four 10/100/1000Base-T interfaces with RJ-45 connectors
- Nokia intelligent mesh
- Embedded analytics optimize network performance in real time
- Real-time wireless spectrum analysis

Benefits

- PHY rate up to 750 Mb/s for 2.4 GHz and 2170 Mb/s for 5 GHz (with 1024 QAM capable clients)
- Self-healing, self-optimizing network
- Mesh topology and intelligent mesh routing
- Seamless roaming for IEEE 802.11k/v capable and legacy clients
- Band steering, channel optimization
- Embedded range boost technology helps to significantly extend absolute range
- Real-time wireless spectrum scan and analysis
- High quality of service (QoS) video over Wi-Fi
- Ease of setup and user intuitive information

Technical specifications

Physical

- Height: 160 mm (6.3 in)
- Diameter: 94 mm (3.7 in)
- Weight: 0.65 kg (1.4 lb)

Installation

- Desktop mounting

Operating environment

- Temperature: -5°C to 45°C (23°F to 113°F)
- Relative humidity: 5% to 95%, non-condensing

Power requirements

- Local powering with 12 V DC input (external AC/DC adapter)
- Power consumption: <19.1 W

Ethernet interfaces

- One 10/100/1000Base-T interface with RJ-45 connector for WAN side
- Three 10/100/1000Base-T interfaces with RJ-45 connectors for LAN side

WLAN interfaces

- Supports 3x3 802.11b/g/n 2.4 GHz wireless LAN (WLAN) interface
- Supports 4x4 802.11ac 5 GHz WLAN interface with multi-user multiple input, multiple output (MU-MIMO)
- Maximum effective isotropic radiated power (EIRP) on 2.4 GHz up to 500 mW and 5 GHz up to 1 W
- 64-bit and 128-bit Wired Equivalent Privacy (WEP) support
- Wi-Fi Protected Access (WPA) support including Pre-Shared Key (WPA-PSK) and WPA2
- Media access control (MAC) filters

Router mode

- IPv4 and IPv6 connectivity: Dual stack and DS Lite, stateless and stateful auto-configuration, DHCPv6 prefix delegation
- Point-to-Point Protocol over Ethernet (PPPoE) and IP over Ethernet (IPoE)
- Network Address Translation (NAT), port forwarding, demilitarized zone (DMZ) and firewall
- Dynamic Host Configuration Protocol (DHCP), domain name system (DNS) proxy and dynamic domain name system (DDNS)
- Internet Group Management Protocol (IGMP) v2/v3 proxy/Multicast Listener Discovery (MLD) proxy
- Virtual private network (VPN) pass-through for Point-to-Point Tunneling Protocol (PPTP), Layer 2 Tunneling Protocol (L2TP) and IPSec

- Flexible video delivery options over Ethernet or wireless
- TR-069 for remote management

Beacon mode

- Forwarding IPv4 and IPv6 traffic
- VPN pass-through for PPTP, L2TP and IPSec
- IGMP v2/v3 snooping/MLD snooping
- Flexible video delivery options over Ethernet or wireless
- TR-069 for remote management with Extensible Messaging and Presence Protocol (XMPP) support for management behind a NAT router

LED

- Simple and intuitive status indication by colored light on top of device

Buttons

- Power on/off
- Wi-Fi Protected Setup (WPS)
- Device reset

Safety and electromagnetic interference (EMI)

- Protection of over voltage/current

Regulatory compliances

- UL 62368-1
- IEC 62368-1
- CSA C22.2 No. 62368-1
- FCC
- CE
- CCC
- RCM
- Wi-Fi Alliance certified

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Document code: SR1802022283EN (April)

Nokia WiFi Beacon 1

Beacon for the intelligent mesh network – HA-020W-B

The Nokia WiFi Beacon 1 extends the whole home Wi-Fi experience for broadband subscribers. This standard class Nokia WiFi Beacon 1 operates seamlessly together with selected Nokia residential gateways and/or other Nokia beacons, to create a whole home coverage mesh network backhauled by wired Ethernet or Wi-Fi. This coverage can be expanded at any time by installing additional Wi-Fi beacons to ensure flawless roaming for mobile users. The end-user experience with the intelligent self-organizing mesh system is enhanced by a service provider's Wi-Fi care capabilities in the cloud and intuitive home user support using the Nokia mobile app.

The Nokia WiFi Beacon 1 has Nokia state-of-the-art intelligent self-organizing mesh and built-in edge analytics over concurrent dual-band Wi-Fi that delivers a whole home optimal link to the connected equipment. This device can provide triple play services with voice, video and data. When no dedicated gateway is in the network, the Nokia WiFi Beacon 1 will take the role of wireless router with access to the broadband network.

The Nokia WiFi Beacon 1 is managed by the Nokia WiFi Home Portal and presents the help desk agents with a holistic view of the in-home network to assist them with easy identification and instantaneous resolution of issues as well as offering recommendations for operator upsell opportunities.

The Nokia WiFi mobile app provides home users with an intuitive and simplified interface for trouble-free management of their home network and Wi-Fi. It also provides advanced functions such as guest Wi-Fi management and parental controls.

Front


Back

NOKIA

Features

- Functions either as wireless router or beacon in a mesh network
- Dual-band concurrent IEEE 802.11b/g/n 2x2 2.4 GHz and 802.11n/ac 2x2 5 GHz
- Two 10/100/1000Base-T interfaces with RJ-45 connectors
- Nokia intelligent mesh
- Embedded analytics optimize network performance in real time

Benefits

- PHY rate up to 300 Mb/s for 2.4 GHz and 867 Mb/s for 5 GHz
- Self-healing, self-optimizing network
- Mesh topology and intelligent mesh routing
- Seamless roaming for IEEE 802.11k/v capable and legacy clients
- Band steering, channel optimization
- High quality of service (QoS) video over Wi-Fi
- Ease of setup and user intuitive information

Technical specifications

Physical

- Height: 150 mm (5.9 in)
- Width: 115 mm (4.5 in)
- Depth: 42 mm (1.6 in)
- Weight: 0.28 kg (0.62 lb)

Installation

- Desktop mounting

Operating environment

- Temperature: -5°C to 45°C (23°F to 113°F)
- Relative humidity: 5% to 95%, non-condensing

Power requirements

- Local powering with 12 V DC input (external AC/DC adapter)
- Power consumption: <11.5 W

Ethernet interfaces

- One 10/100/1000Base-T interface with RJ-45 connector for WAN side
- One 10/100/1000Base-T interface with RJ-45 connector for LAN side

WLAN interfaces

- Supports 2x2 802.11b/g/n 2.4 GHz wireless LAN (WLAN) interface
- Supports 2x2 802.11n/ac 5 GHz WLAN
- Maximum effective isotropic radiated power (EIRP) on 2.4 GHz up to 500 mW and 5 GHz up to 1 W
- 64-bit and 128-bit Wired Equivalent Privacy (WEP) support
- Wi-Fi Protected Access (WPA) support including Pre-Shared Key (WPA-PSK) and WPA2
- Media access control (MAC) filters

Router mode

- IPv4 and IPv6 connectivity: Dual stack and DS Lite, stateless and stateful auto-configuration, DHCPv6 prefix delegation
- Point-to-Point Protocol over Ethernet (PPPoE) and IP over Ethernet (IPoE)
- Network Address Translation (NAT), port forwarding, demilitarized zone (DMZ) and firewall
- Dynamic Host Configuration Protocol (DHCP), domain name system (DNS) proxy and dynamic domain name system (DDNS)
- Internet Group Management Protocol (IGMP) v2/v3 proxy/Multicast Listener Discovery (MLD) proxy
- Virtual private network (VPN) pass-through for Point-to-Point Tunneling Protocol (PPTP), Layer 2 Tunneling Protocol (L2TP) and IPSec
- Flexible video delivery options over Ethernet or wireless
- TR-069 for remote management

Beacon mode

- Forwarding IPv4 and IPv6 traffic
- VPN pass-through for PPTP, L2TP and IPSec
- IGMP v2/v3 snooping/MLD snooping
- Flexible video delivery options over Ethernet or wireless
- TR-069 for remote management with Extensible Messaging and Presence Protocol (XMPP) support for management behind a NAT router

LED

- Simple and intuitive status indication by single colored LED indicator

Buttons

- Power on/off
- Device reset

Safety and electromagnetic interference (EMI)

- Protection for over voltage/current

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Document code: SR1905035210EN (May) CID206068

Nokia ONT Gateway 3

Gateway for the intelligent mesh network – G-240W-E

The Nokia ONT Gateway 3 is the most advanced solution for whole home Wi-Fi networking delivered by Gigabit Passive Optical Network (GPON). This premium class Nokia WiFi gateway operates seamlessly, together with the Nokia WiFi beacons, to create a whole home coverage mesh network backhauled by wired Ethernet or Wi-Fi. The end-user experience with the intelligent self-organizing mesh system is enhanced by a service provider's Wi-Fi care capabilities in the cloud and intuitive home user support using the Nokia mobile app.

The Nokia ONT Gateway 3 is the optimal one-box solution integrating the optical network terminal (ONT) and Wi-Fi mesh functions to bring ultra-broadband service to and into the home. The device has Nokia state-of-the-art intelligent self-organizing mesh and built-in edge analytics over concurrent dual-band Wi-Fi that delivers a whole home optimal link to the connected equipment. It can provide triple play services with voice, video and data, while its unique spectrum monitoring and interference detection ensure an overall top quality experience.

In combination with the Nokia 7360 Intelligent Services Access Manager (ISAM)/7342 ISAM and Lightspan optical line terminals (OLTs), the gateway forms a uniform end-to-end industry-leading access network solution to ensure carriers deliver the highest satisfaction to their subscribers.

Next to the regular ONT management control interface (OMCI) and TR-069 remote device management, operators acquire control over the home Wi-Fi solution through the one-click Nokia WiFi home portal. The portal presents a holistic view of the in-home network to help desk agents, assisting them in easy identification and instantaneous resolution of issues as well as offering recommendations for operator upsell opportunities.

The Nokia WiFi mobile app provides home users with an intuitive and simplified interface for trouble-free management of their home network and Wi-Fi. It also provides advanced functions such as guest Wi-Fi management and parental controls.

NOKIA

Features

- GPON uplink, G.984, G.988 series standard compliant
- Bridge and router mode, TR-069 support
- Supports full triple play services including voice, video and high-speed internet access (HSIA)
- Dual-band concurrent IEEE 802.11b/g/n 3x3 2.4 GHz and 802.11ac 4x4 5 GHz
- Nokia intelligent mesh
- Embedded edge analytics
- Real-time wireless spectrum analysis

Benefits

- PHY rate up to 750 Mb/s for 2.4 GHz and 2170 Mb/s for 5 GHz (with 1024 QAM capable clients)
- Mesh topology and intelligent mesh routing
- Self-healing, self-optimizing network
- Band steering, channel optimization
- Seamless roaming for IEEE 802.11k/v/r capable or legacy clients
- Embedded range boost technology to significantly extend absolute range
- Insight on home network and recommendations for operator assisted care and end user self-care
- Real-time wireless spectrum scan and analysis
- Allows service per port configurations
- High quality of service (QoS) video over Wi-Fi
- Ease of setup and user intuitive information
- Optimized fiber routing and protection

Technical specifications

Physical

- Height: 200 mm (7.9 in)
- Diameter: 94 mm (3.7 in)
- Weight: 0.84 kg (1.9 lb)

Installation

- Desktop mounting

Operating environment

- Temperature: -5°C to 45°C (23°F to 113°F)
- Relative humidity: 5% to 95%, non-condensing

Power requirements

- Local powering with 12 V/3A DC input (external AC/DC adapter)
- Dying gasp support
- Power consumption: <36 W
- Uninterruptible power supply (UPS) connector

GPON uplinks

- Wavelength: 1490 nm downstream, 1310 nm upstream
- Line rate: 2.488 Gb/s downstream, 1.244 Gb/s upstream
- GPON Encapsulation Method (GEM) mode support for IP/Ethernet service traffic support
- ITU-T G.984.3-compliant dynamic bandwidth report (DBR)
- ITU-T G.984.3-compliant Advanced Encryption Standard (AES) in downstream
- ITU-T G.984.3-compliant forward error correction (FEC)
- ITU-T G.988 Appendix 1 and Appendix 2 OMCI
- Flexible software image management
- SC/APC connector

POTS interfaces

- Two FXS ports for voice over IP (VoIP) service with RJ-11 connectors
- Multiple codecs: ITU-T G.711, ITU-T G.729 (A and B)
- Session Initiation Protocol (SIP) (RFC 3261)
- ITU-T G.168 echo cancellation
- Services: caller ID, call waiting, call hold, 3-way call, call transfer, message waiting indication
- Maximum 5 ringer equivalency numbers (RENs) per line

- Dual-tone multi-frequency (DTMF) dialing
- Balanced sinusoidal ring signal, 55 V root mean square (RMS)

WLAN interfaces

- Supports 3x3 802.11b/g/n 2.4 GHz wireless LAN (WLAN) interface
- Supports 4x4 802.11ac 5 GHz WLAN interface with multi-user multiple input, multiple output (MU-MIMO)
- Maximum effective isotropic radiated power (EIRP) on 2.4 GHz up to 500 mW and 5 GHz up to 1 W
- 64-bit and 128-bit Wired Equivalent Privacy (WEP) support
- Wi-Fi Protected Access (WPA) support including Pre-Shared Key (WPA-PSK) and WPA2
- Media access control (MAC) filters

USB interface

- Two USB 2.0 interfaces support external disk drives and home network attached storage (NAS)

Residential gateway

- IPv4 and IPv6 connectivity: Dual stack and DS Lite, stateless and stateful auto-configuration, DHCPv6 prefix delegation
- Point-to-Point Protocol over Ethernet (PPPoE) and IP over Ethernet (IPoE)
- Network Address Translation (NAT), demilitarized zone (DMZ) and firewall
- Dynamic Host Configuration Protocol (DHCP) and domain name system (DNS) proxy
- Internet Group Management Protocol (IGMP) v2/v3 proxy/Multicast Listener Discovery (MLD) proxy
- Supports virtual private network (VPN) pass-through for Point-to-Point Tunneling Protocol (PPTP), Layer 2 Tunneling Protocol (L2TP) and IPSec
- Port forwarding and DMZ/dynamic domain name system (DDNS)
- Flexible video delivery options of Ethernet or wireless to set-top boxes (STBs)
- Dual TR-069 connectivity for independent remote device and Wi-Fi management

LEDs

- Simple and intuitive status indication by colored light on top of device
- GPON link status
- VoIP status

Safety and electromagnetic interference (EMI)

- Protection of over voltage/current

Regulatory compliances

- UL 62368-1
- CSA C22.2 No. 62368-1
- FCC
- CE
- FDA laser register
- Wi-Fi Alliance certified

About Nokia

We create the technology to connect the world. Only Nokia offers a comprehensive portfolio of network equipment, software, services and licensing opportunities across the globe. With our commitment to innovation, driven by the award-winning Nokia Bell Labs, we are a leader in the development and deployment of 5G networks.

Our communications service provider customers support more than 6.4 billion subscriptions with our radio networks, and our enterprise customers have deployed over 1,300 industrial networks worldwide. Adhering to the highest ethical standards, we transform how people live, work and communicate. For our latest updates, please visit us online www.nokia.com and follow us on Twitter @nokia.

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Document code:SR2005044161EN (June) CID202128

Wi-Fi CERTIFIED™ Certificate

This certificate lists the features that have successfully completed Wi-Fi Alliance interoperability testing. Learn more: www.wi-fi.org/certification/programs

Certification ID: WFA78538

Product Info

Date of Certification	July 24, 2018
Company	Nokia Shanghai Bell Co., Ltd.
Product Name	Nokia WiFi Gateway 3
Version	2018-07-24 (WFA78538 - 7353402)
Model Number	G-240W-E
Category	Routers
Sub-category	Access Point for Home or Small Office (Wireless Router)

Summary of Certifications

CLASSIFICATION	CERTIFICATION
Connectivity	2.4 GHz Spectrum Capabilities 5 GHz Spectrum Capabilities Wi-Fi CERTIFIED™ a Wi-Fi CERTIFIED™ ac Wi-Fi CERTIFIED™ b Wi-Fi CERTIFIED™ g Wi-Fi CERTIFIED™ n
Security	Protected Management Frames WPA2™-Enterprise WPA2™-Personal 2018-04 WPA™-Enterprise WPA™-Personal
Optimization	WMM®
Access	Wi-Fi Protected Setup™

Wi-Fi CERTIFIED™ Certificate

Certification ID: WFA78538

Wi-Fi Components

Wi-Fi Component Operating System

Linux

Wi-Fi Component Firmware

7.14.170.25

RF Architecture

Bands Supported	Transmit (Tx)	Receive (Rx)
2.4 GHz	3	3
5 GHz	4	4

Certifications

2.4 GHz Spectrum Capabilities

1 Spatial Stream
2 Spatial Streams
20 MHz Channel Width
3 Spatial Streams
40 MHz Channel Width

5 GHz Spectrum Capabilities

1 Spatial Stream
2 Spatial Streams
20 MHz Channel Width
3 Spatial Streams
4 Spatial Streams
40 MHz Channel Width

Protected Management Frames

WMM®

WPA2™-Enterprise

EAP methods

WPA2™-Personal 2018-04

WPA™-Enterprise

WPA™-Personal

Wi-Fi CERTIFIED™ a

Wi-Fi CERTIFIED™ ac

A-MPDU with A-MSDU
LDPC Rx
LDPC Tx
MCS 8-9 Rx
STBC
Short Guard Interval

Wi-Fi CERTIFIED™ b

Wi-Fi CERTIFIED™ g

Wi-Fi CERTIFIED™ n

A-MPDU Tx
HT Duplicate Mode
OBSS on Extension Channel
RIFS
STBC
Short Guard Interval

Wi-Fi Protected Setup™

Wi-Fi CERTIFIED™ Certificate

Certification ID: WFA78538

Role: Access Point

Wi-Fi Protected Setup™ (continued)

PIN

Pushbutton

NOKIA

25G PON technology

White paper

Commercial PONs have traditionally leveraged mature components from transport systems. Starting with 25G PON, the data center ecosystem will be leveraged. A strategy to accommodate higher speed at low cost is presented.

NOKIA

Contents

Past and future perspective on TDM-PONs

TDM-PONs were invented in the late 1980s and, within a few years, questions were raised about the ability of TDM-PON to meet bandwidth demands. Expansion of capacity via multiple wavelengths was proposed for future PONs and so decades of WDM-PON research ensued. In the meantime, virtually all commercially deployed PONs have been of the TDM-PON variety, are highly cost-effective and have easily met capacity demands. Mass deployments started with BPON (622 Mb/s downstream, 155 Mb/s upstream) and EPON (1 Gb/s symmetrical), and were followed by GPON (2.488 Mb/s downstream, 1.248 Mb/s upstream). Deployment of 10 Gb/s class PONs (with 1, 2.488, or 10 Gb/s upstream) are currently ramping up.

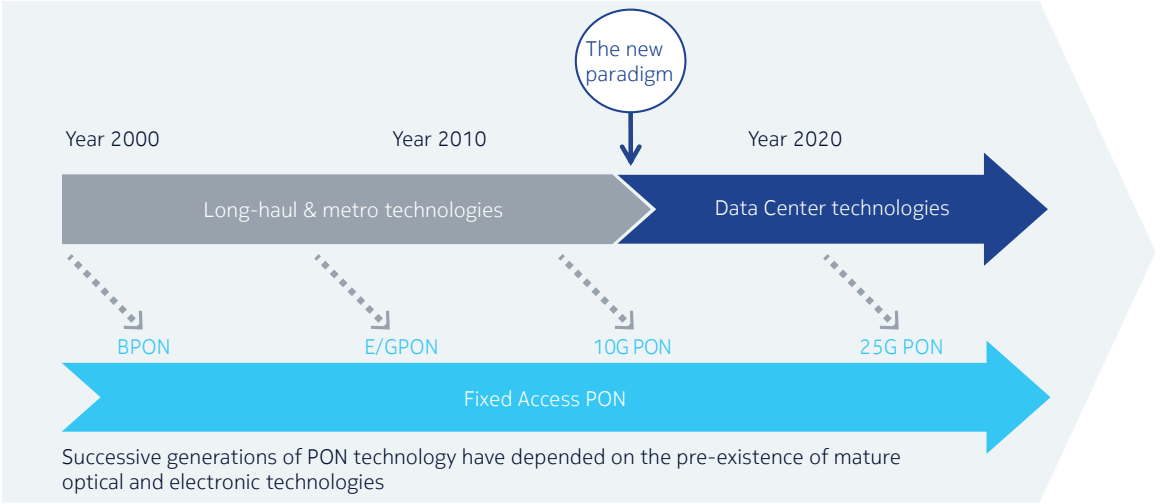
The question this paper addresses is whether TDM-PON as a technology can continue to satisfy future bandwidth demands and, if so, how can they do so cost-effectively.

PON technology: the trickle-down effect and the new data center paradigm

During the past few decades, the success of TDM-PON has depended on the pre-existence of mature optical and electronic technologies. Volumes of these technologies were driven first by the long-haul market. After sufficient cost erosion these components were adopted by the metro market, driving volumes and maturation further, enabling their adoption by PON. This process required time; not only because the access market had lower price points, but also because these technologies had to be adapted for larger power budgets and burst mode operation.

This paradigm worked well: OC-12 and OC-48 (and STM equivalents) fueled BPON, EPON and GPON; OC-192 fueled 10G PON. However, in the 2000s, the 40G market fizzled out. When FSAN began standardization of a 40G PON in 2012, a mature 40G ecosystem did not exist and a multi-wavelength technology based on 10 Gb/s was selected. (One could argue that operators were premature in their estimate of the need for 40G capacity).

Figure 1: PON: a history of leveraging technologies matured in other domains

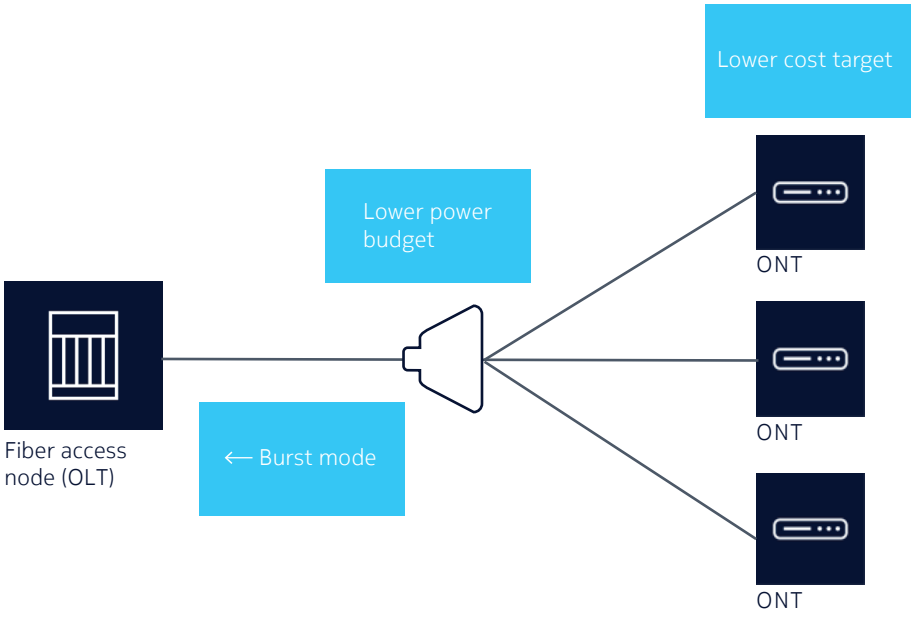


Successive generations of PON technology have depended on the pre-existence of mature optical and electronic technologies

Data center technology found itself in a similar position. With no mature ecosystem for > 10 Gb/s Ethernet channels, the IEEE 802.3 community created a new family of 100 Gigabit Ethernet technologies based on 25 Gb/s channels. Eventually the insatiable demand for data center intra-connect capacity, much of it on single mode fiber, began to drive large volumes and reduced costs (to varying degrees) on 25G components such as DMLs, EMLs, APDs, TIAs and SerDes. This is the mature ecosystem that next generation 25G TDM-PON will leverage.

Is it possible to just plug these data center components into OLT and ONU transceivers? Of course not. PON applications will require new wavelengths, higher launch power from transmitters, and greater sensitivity from receivers. However, this is no different than the adoption, for previous PON generations, of components from long-haul and metro transceivers.

Figure 2: The PON "lag": Each time, 3 technical challenges to overcome



With data center technologies now driving Ethernet towards 50 Gb/s and later 100 Gb/s channels, one can see a new paradigm emerging, where PON technologies follow data center instead of long haul/metro ecosystems.

Leveraging the 25 Gb/s ecosystem for 25G TDM-PON

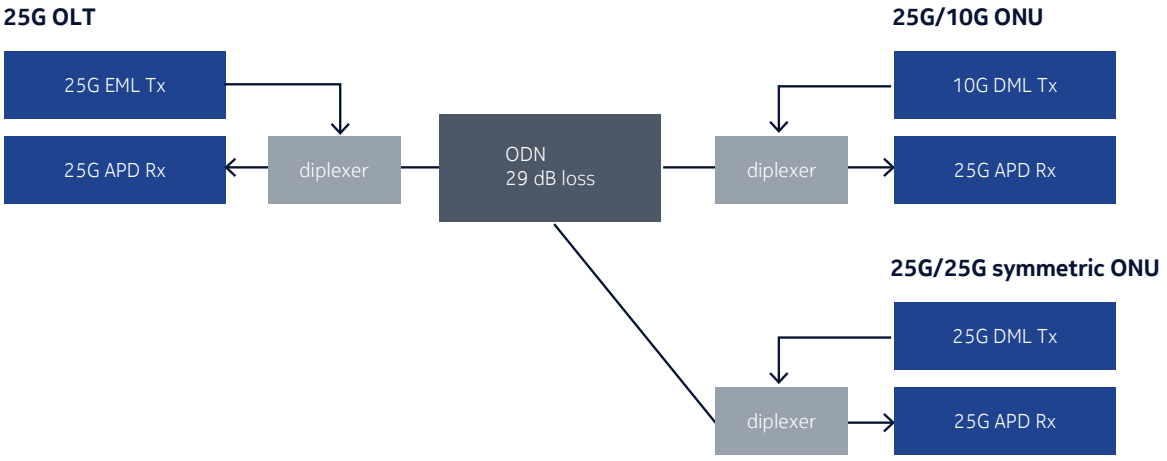
The IEEE 802.3ca Task Force started work on the standardization 25G TDM-PON in 2016. (Two wavelength-stacked 25G PONs to realize 50G TWDM PON is also in scope).

The commercial success of 25G PON will depend on its ability to deliver 2.5x more bandwidth than 10G PON at a small incremental cost. This must be the guiding principle. When this happens, sometime after the year 2020, the market will flip from 10G PON to 25G PON. This is what gated the success of GPON: it was massively deployed once its incremental cost above BPON and EPON became small. If there is a large initial cost premium for 25G PON, it will sit on the shelf for years, just as 10G PON did.

The strategy to achieve low incremental cost is composed of the following elements:

- **O-band wavelengths**. Dispersion increases with higher bit rates. 25G PON downstream and upstream wavelengths need to be in the O-band to avoid large penalties or the need for dispersion compensation.
- **Simple NRZ transmission.** Higher level modulation schemes like PAM4 bring complexity and cost and come with significant power penalties.
- **No optical amplification**. 25 Gb/s has about a 5 dB power penalty compared to 10 Gb/s. To achieve a 29 dB (PR30 EPON, N1 class ITU-T PON) loss budget, and to avoid the cost of optical amplification, those 5 dBs need to come from a combination of higher launch power, improved receiver sensitivity and stronger FEC. This will be possible, but with little margin to spare.
- **Asymmetric 25G/10G ONUs**. Success is gated by a low cost ONU. Much cost can be avoided by using an uncooled 10G DML in the upstream direction. The most widely deployed PON technology in the world, GPON, proves that asymmetric bandwidth is perfectly adequate for high volume FTTH. Until the cost increment for a higher power 25G cooled DML diminishes, the more expensive 25G symmetric ONUs can be reserved for business services. (OLTs will, therefore, have to support both asymmetric and symmetric ONUs, the same as 10G PON OLTs).

Figure 3: Strategy for 25G TDM-PON: simplicity for low cost



25G receiver based on 10G components. 25G APDs have been developed for the relatively low volume 40 km single wavelength data center interconnect market. Therefore, the cost increment of 25G APDs versus 10G APDs may be significant and persist for some time. A powerful strategy, especially for use in the ONU, would be to use 10G APDs followed by electro-duobinary detection[1]. This technique requires standardization of pre-coding at the transmit side. Alternatively, MLSE could be used to recover the 25G signal from a 10G receiver[2]. However, this implementation would incur significant non-recurring engineering costs.

1 D. van Veen and V. Houtsma, "Proposals for Cost-Effectively Upgrading Passive Optical Networks to a 25G Line Rate," J. of Lightwave Technology, vol. 35, no. 6, pp. 1180-1187, March 15 2017.

2 M. Tao, et. al., 28-Gb/s/λ TDM-PON with Narrow Filter Compensation and Enhanced FEC Supporting 31.5 dB Link Loss Budget after 20-km Downstream Transmission in the C-band", OFC, Th1I.4 (2016)

25G PON wavelength plan and co-existence with legacy PONs

802.3ca has objectives for 25G PON to co-exist with both 10G PONs (1270 +/-10 nm upstream) and GPON (1310 +/-20 nm upstream). To accomplish this, there will be two choices for upstream 25G PON wavelengths: 1300 nm and 1270 nm for wavelength co-existence with 10G PONs (see Figure 4) and GPONs (see Figure 5) respectively. (It is also possible to support triple co-existence of 25G PON, XGS-PON and GPON by adding XGS-PON (see Figure 6), with 25G PON and XGS-PON sharing the same 1270 nm upstream wavelength in TDM fashion). Each upstream wavelength will have a +/- 10 nm tolerance to allow for uncooled lasers. The 25G downstream wavelength will be 1358 +/- 2 nm, and is assumed to be an EML laser.

Figure 4: 25G PON wavelength plan: WDM co-existence with 10G PON

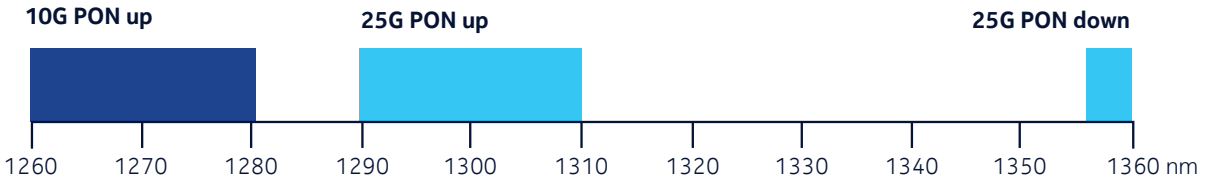


Figure 5: 25G PON wavelength plan: WDM co-existence with GPON

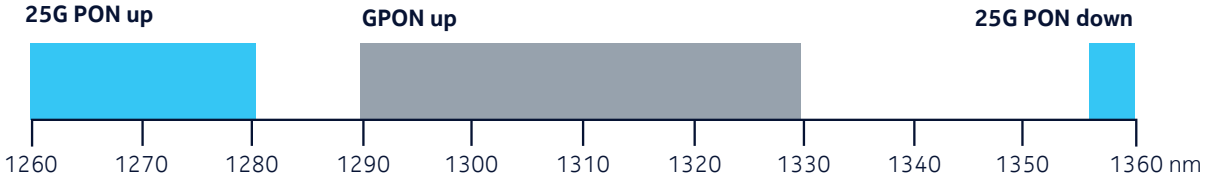
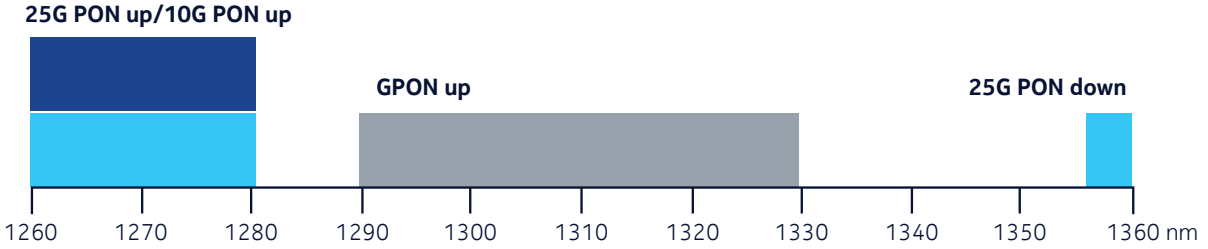


Figure 6: 25G PON wavelength plan: WDM co-existence with GPON and 10G PON



The market is likely to favor the ONUs supporting GPON co-existence for two reasons:

- The addressable market for GPON upgrades will be much larger when 25G PON becomes commercially available.
- It will be more urgent to upgrade older GPON by a factor of 10x than newer 10G PON by a factor of 2.5x.

NOKIA

25G PON use cases

The strategy for 25G PON is to hit the FTTH cost target. However, that target might not be attained in the first years of product availability and residential bandwidth demand is unlikely to drive the need for >10G PON until at least 2025[3]. On the other hand, 25G PON is well suited to the following use cases:

- **Backhaul of deep fiber nodes**, for example G.fast DPUs in copper networks and DAA nodes in cable networks. Compared to 10G PON, the number of remote nodes that can be served by a single OLT port is increased by a factor of 2.5, with corresponding fiber savings.
- **Business services**. Due to various overheads, 10G PONs can provide at most an 8-9 Gb/s symmetric service. After overhead, 25G PON will have about 20 Gb/s capacity, and can deliver a committed 10 Gb/s business service, and still have another 10 Gb/s available for residential users on the same PON.
- **5G mobile transport**. Operators are preparing for the deployment of dense 5G radios. For mobile operators, these deployments will require a vast amount of new fiber connectivity. Alternatively, a converged FTTH network might be leveraged for lower costs and simpler operations for mobile backhaul, midhaul, and maybe even fronthaul transport. The higher bandwidth of 25G PON will be a better fit for this application than 10G PON. In fact, the expected timings for 25G PON wireline and widescale 5G wireless are well aligned.
- **5G, specifically fixed wireless access**. Many operators are considering 5G millimeter wave (mmW) as an alternative to the fiber drop used to connect homes in traditional FTTH networks. mmW is capable of delivering gigabit speeds but only over short distances. This leads to dense 5G antennas, and 25G PON might be the ideal way to provide backhaul/midhaul connectivity.

Proposed roadmap to 50G TDM-PON

50 Gb/s-based Ethernet channels are currently being standardized for 200 and 400 Gigabit Ethernet and are predicted to start supplanting 100 Gigabit Ethernet in data centers around 2020. Given the aforementioned time lag between ecosystem development and application in PON systems, we can expect commercially ready 50G TDM-PONs in the middle of the next decade. Refer again to Figure 1.

Most 50 Gb/s channels will be implemented with the 25 Gbaud optics developed for 100 Gigabit Ethernet, plus PAM4 modulation. More efficient 400 Gigabit Ethernet based on 100 Gb/s channels using 50 Gbaud optics and PAM4 modulation is being demanded by operators of “hyperscale” data centers. Some 50 Gbaud components are already commercially available. Once again, the data center trickle-down paradigm should hold.

Compared to 25G TDM-PON, 4-5 more dBs are required for 50G. This time, optical amplification cannot be avoided. SOA preamplifiers may not give the required improvement, in which case SOA post amplifiers would be needed. PAM4 has a 4.8 dB theoretical modulation penalty and in implementation is worse, maybe too high to be compensated by optical amplification[4]. The required digital signal processing might prove problematic for cost-effective ONUs. Therefore, NRZ modulation should be considered. 50 Gbaud transmitters could be shipping in high volumes by the middle of next decade. These might need to be integrated with SOA post amplifiers. The problem may be on the receiver side: the availability of low cost

3 E. Harstead, R. Sharpe, “Forecasting of Access Network Bandwidth Demands for Aggregated Subscribers Using Monte Carlo Methods”, IEEE Comm. Mag., March 2015.

4 V. Houtsma and D. van Veen, “Bi-directional 25G/50G TDM-PON with Extended Power Budget using 25G APD and Coherent Detection,” J. of Lightwave Technology, vol. PP, no. 99, pp. 1-1. doi: 10.1109/JLT.2017.2742465

50 Gbaud APDs. The solution can be electro duobinary or MLSE detection with 25 Gbaud APDs, which would also increase dispersion tolerance.

Possible paths to a 100G TDM-PON: coherent

To fulfill a 29 dB loss budget, 100G TDM-PON will probably require a coherent receiver. For symmetrical 100G, a coherent burst mode receiver will be required; this is an active area of research[5,6], . There are at least three possible scenarios that could lead to a practical 100G coherent PON in the second half of the next decade:

- Sufficient cost erosion of traditional 100G coherent, 28 Gbaud PM-QPSK, occurs in time for the market need. This would be a return to the old long-haul-to-metro-to-PON paradigm.
- Data centers adopt coherent in the early/mid 2020s. High volumes drive low-cost coherent components. This would be a continuation of the data-center-to-PON paradigm.
- A new IM-coherent detection scheme attains PON cost targets more quickly than 28 Gbaud PM-QPSK. Perhaps what would be needed is a stripped-down coherent architecture optimized for PONs.

With digital signal processing, coherent PON could use the S, C or L wavelength bands, since chromatic dispersion can be fully compensated, easing wavelength co-existence with legacy PONs in the crowded O-band.

At any rate, the PON industry has at least 5 years before making technology decisions about 100G PON.

Acronyms

APD	Avalanche photodiode
BPN	Broadband PON
DAA	Distributed access architecture
dB	Decibel
DML	Directly modulated laser
DOCSIS	Data Over Cable Service Interface Specification
EML	Electro-absorption modulated laser
EPON	Ethernet PON
FSAN	Full Service Access Network Group
GPON	Gigabit PON
IEEE	Institute of Electrical and Electronics Engineers
IM-coherent	Intensity modulation-coherent
MLSE	Maximum Likelihood Sequence Estimation
NRZ	Non-return-to-zero

5 R. Koma, et. al., “22-dB Dynamic Range, Real-Time Burst-Mode Reception of Digital Coherent 20-Gb/s QPSK PON Upstream Signals”, ECOC (2016)

6 R. Matsumoto, K. Matsuda, N. Suzuki, “Burst-Mode Coherent Detection Using Fast-Fitting Pilot Sequence for 100-Gb/s/λ Coherent TDM-PON Systems,” Proc. ECOC, W.3.D.5, 2017

OC-14/48/192	Optical carrier rates
OLT	Optical line terminal
ONU	Optical network unit
PAM	Pulse amplitude modulation
PM-QPSK	Polarization-multiplexed quadrature phase shift keying
PON	Passive optical networks
SerDes	Serializer/deserializer
SOA	Semiconductor optical amplifiers
STM	Synchronous transport module
TDM	Time-division multiplexing
TIA	Transimpedance amplifier
VR	Virtual reality
WDM	Wavelength-division multiplexing

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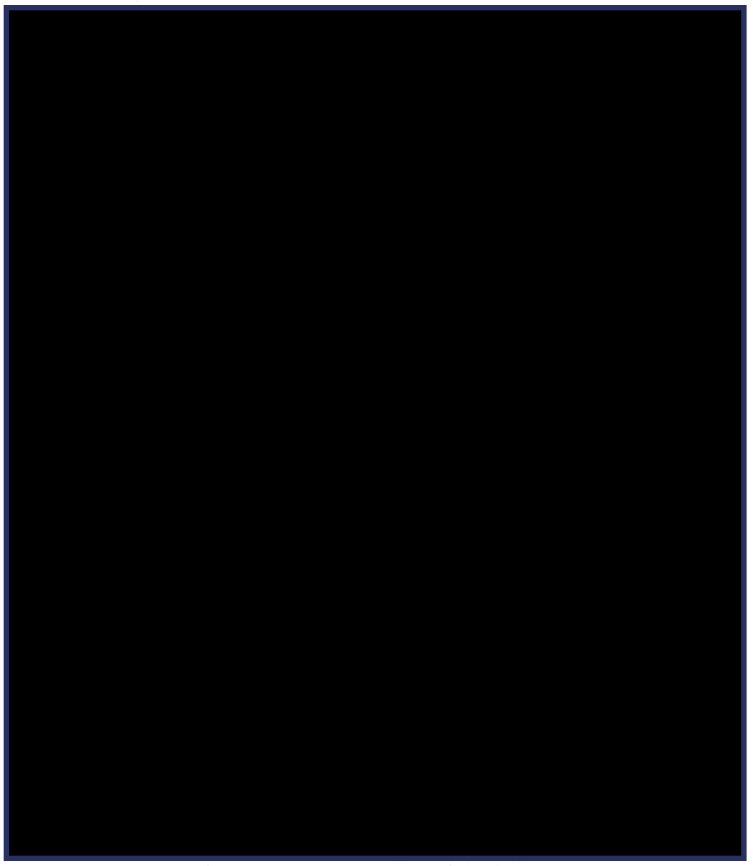
BETWEEN

DUKE BROADBAND INC.

[redacted]

[redacted]



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Master Agreement

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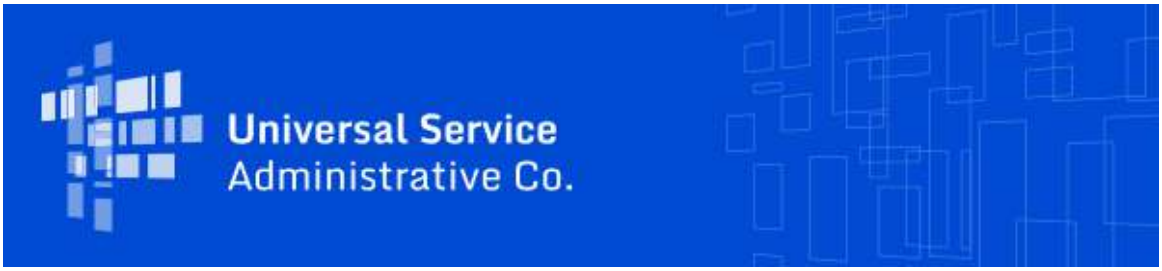

FCC FORM 499 APPROVAL CONFIRMATION

Thank you for registering with USAC to set up the FCC Form 499 account for **Duke Broadband Inc.**. USAC has completed the processing of your registration and the new 499 Filer ID for **Duke Broadband Inc.** [redacted]

Required Previous FCC Form 499 Filings

[redacted]

499Q Filings

- [redacted]

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Granitee IRU Fiber

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CASCO TOWNSHIP

4512 Meldrum Rd. Casco, MI 48064
586-727-7524 fax 586-727-3034
EMAIL: supervisor@cascostclair.com
Website: cascostclair.com
Patricia Allagreen, Supervisor Jennifer Andersen, Clerk
Colleen Stover, Treasurer Daniel Goulston, Trustee
Joseph Stevens, Trustee

November 4, 2021

To Whom it May Concern,

The number one concern of the rural residents and businesses of Casco Township is broadband access. My office receives numerous calls per week regarding the lack of broadband.

The Duke/RESA partnership will fast track the build-out to the unserved residents of the township. The township is thrilled that the proposed solution will be fiber to the home. We enthusiastically support Duke Broadband and will provide any assistance we can to assure that our township receives the needed investment to finally address this long-standing problem.

Please feel free to reach out to our office should you have any questions or need additional information.

Best Regards,

Patricia M Allagreen

Patricia M. Allagreen
Casco Township Supervisor

Ira Township
County of St. Clair

7085 Meldrum Road
Fair Haven, Michigan 48023
(586) 725-0263
Fax: (586) 725-8790

November 4, 2021

To whom it may concern,

The number one concern of the rural residents and businesses of Ira Township is broadband access. My office receives numerous calls per week regarding the lack of broadband.

RESA fiber serves our Library. The Duke / RESA partnership will fast track the build-out to the unserved residents of the township. The township is thrilled that the proposed solution will be fiber to the home. We enthusiastically support Duke Broadband and will provide any assistance we can to assure that our township receives the needed investment to finally address this long-standing problem.

Please feel to reach out to our office should you have any questions or need additional information.

Best Regards,

James Endres, Jr

IRA Township Supervisor

[redacted]

November 6, 2021

To Whom It May Concern,

[redacted]

November 12, 2021

To whom it may concern,

It is shocking to learn that St. Clair County, a fringe county of Metro Detroit, is ranked as having some of the worst broadband connectivity in the State of Michigan. As a Connect Michigan Community, the second to be designated in Michigan, and after years of working at a committee level, the county is no farther ahead today than when it began. This is an example of where public resources are needed to subsidize private dollars in order to overcome this problem.

Prior to the COVID-19 pandemic, St. Clair County was beginning to see a resurgence of people moving to the area to take advantage of the county's unique quality of life assets, including natural resources such as Lake Huron, Lake St. Clair, and the St. Clair River. The COVID-19 pandemic forced many people to work remotely at least part of the work week. St. Clair County is a prime location for remote workers because 40% of its workforce commutes to the Metro Detroit area to work. The pandemic may forever change the way that many people work. In the very near future, it is likely that many people will work from home or remote offices, reducing their need to commute daily. This intensifies the need for high-speed internet to be installed in the underserved areas of the country.

Duke Broadband is a company that is choosing to serve rural communities. It has held substantive discussions with RESA, the intermediate school district in St. Clair County which operates its own fiber network. Collaborating together, this public/private partnership can begin to tackle underserved areas in our county, including dark spots in St. Clair and Cottrellville Townships.

The Economic Development Alliance is very supportive of their efforts knowing the importance of high-speed internet for creating an effective and resilient economy.

Sincerely

Daniel B. Casey

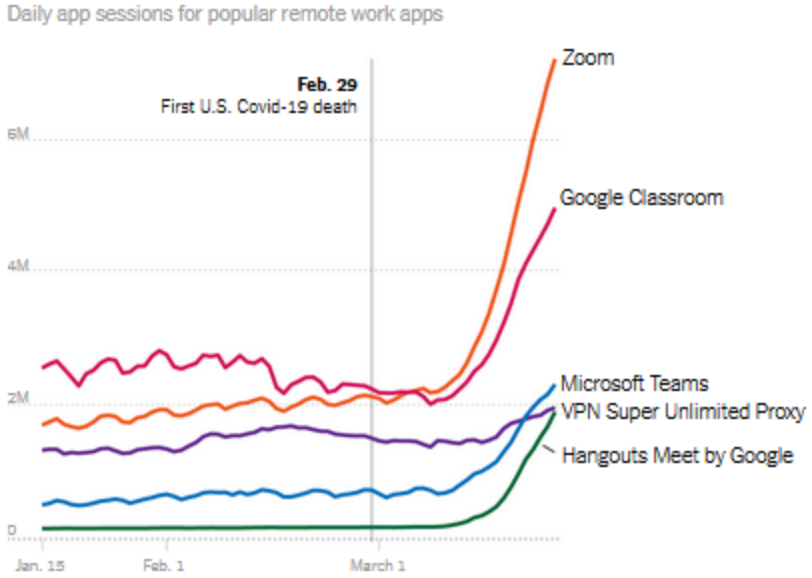
Daniel B. Casey
CEO
Economic Development Alliance

100 McMorran Blvd, 4th Floor, Executive Suite B Port Huron, MI 48060 phone: 810.982.9511 fax: 810.982.9531 toll free: 1.877.982.9511
www.edascc.com

The Virus Changed the Way We Internet

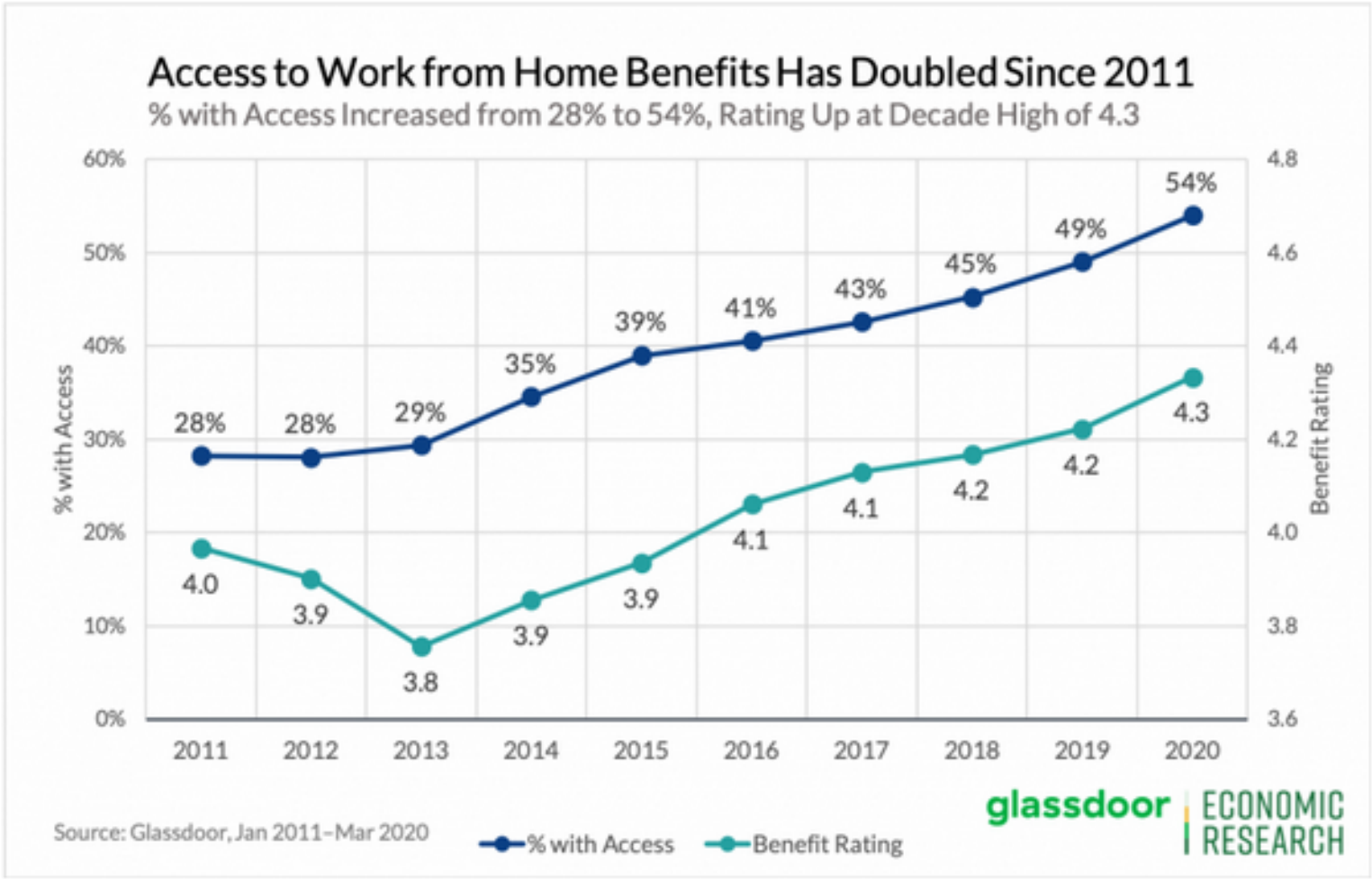
By Ella Koeze and Nathaniel Popper April 7, 2020

We have suddenly become reliant on services that allow us to work and learn from home



App popularity according to iOS App Store rankings on March 16-18. · Source: Apptopia

The offices and schools of America have all moved into our basements and living rooms. Nothing is having a more profound impact on online activity than this change. School assignments are being handed out on Google Classroom. Meetings are happening on Zoom, Google Hangouts and Microsoft Teams. The rush to these services, however, has brought new scrutiny on privacy practices.


Access to Work from Home Benefits Has Doubled Since 2011
% with Access Increased from 28% to 54%, Rating Up at Decade High of 4.3
% with Access
Benefit Rating
60%
50%
40%
30%
20%
10%
0%
4.8
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4.2
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2011 2012 2013 2014 2015 2016 2017 2018 2019 2020
28% 28% 29% 35% 39% 41% 43% 45% 49% 54%
4.0 3.9 3.8 3.9 3.9 4.1 4.1 4.2 4.2 4.3
Source: Glassdoor, Jan 2011–Mar 2020
% with Access
Benefit Rating
glassdoor | ECONOMIC RESEARCH

COUNTY OF ST. CLAIR

Metropolitan Planning Commission
David Struck, Director

November 10, 2021

To Whom It May Concern:

On behalf of the St. Clair County Metropolitan Planning Commission, I am pleased to offer support for the Duke Broadband grant application. St. Clair County is one of the top priorities of organizations like Connect Michigan, as we have numerous regions of our county considered either underserved or unserved by broadband internet. The large national broadband providers simply are not interested in installing fiber to reach the rural areas of our county.

Duke Broadband is a company that has a passion for serving these rural communities. St. Clair County RESA owns a 200-mile fiber network that serves more than 50 educational buildings as well as the entire county library system and its branches. Duke Broadband has reached out to St. Clair County RESA as a partner to bring fiber to these unserved rural communities.

It is partnerships between private companies like Duke Broadband and public entities like St. Clair County RESA that will have the greatest impact in the future on areas unserved by fiber networks. Duke has a plan to reach two of the largest internet deserts in the county, Casco and Ira Townships using RESA's network as a backbone.

The Metropolitan Planning Commission recognizes the importance of local broadband access. Technology plays a pivotal role in how businesses operate, how institutions provide services, and where consumers choose to live, work, and play. Particularly during the COVID-19 pandemic, we have residents in rural areas that have been forced to attend school or work remotely and do not have adequate broadband service. The problems they face have been amplified in these difficult times.

The *St. Clair County Technology Action Plan* was adopted to summarize the community's assessment of local broadband access, adoption, and use, as well as the best next steps for addressing any deficiencies or opportunities for improving the local technology ecosystem. The plan includes a number of goals that support the Duke Broadband grant application, including developing public-private partnerships to deploy broadband service.

We are pleased to offer our support for the Duke Broadband application, which will help expand the broadband network throughout St. Clair County.

Sincerely,

David Struck, AICP
Planning Director/Deputy County Administrator

200 Grand River Avenue, Suite 202, Port Huron, MI 48060
Phone: 810-989-6950 / Fax: 810-987-5931

St. Clair County RESA

REGIONAL EDUCATIONAL SERVICE AGENCY
Kevin Miller, Ph.D., Superintendent

499 Range Road, PO Box 1500
Marysville, MI 48040
(810) 455-403 | (810) 364-7474 Fax
www.sccresa.org

November 3, 2021

To whom it may concern,

St. Clair County, Michigan is one of the top priorities of organizations like Connect Michigan as we have numerous regions of our county considered either underserved or unserved by broadband internet. The large national broadband providers simply aren't interested in installing fiber to reach the rural areas of our county.

If we have learned anything from the COVID-19 pandemic, broadband is essential to erasing the digital divide between the broadband "haves" and "have-nots". All seven of our public school districts have online schools that have become necessary since the onset of the pandemic in 2020. Learning at home has become an integral part of the educational process to teach its students in any setting. Unfortunately, here in St. Clair County, there are thousands of students who do not have reliable internet for learning at home.

Duke Broadband is a company that has a passion for serving these rural communities. St. Clair County RESA owns a 200-mile fiber network that serves more than 50 educational buildings as well as the entire county library system and its branches. Duke has partnered with us to bring fiber to these unserved rural communities.

The Duke RESA partnership greatly benefits our aging fiber infrastructure to these anchor institutions, providing much-needed construction of redundant paths and upgrades.

It is partnerships between private companies like Duke and public entities like RESA that will have the greatest impact in the future on areas unserved by fiber networks. Duke has a plan to reach two of our largest internet deserts in the county, St. Clair and Cottrellville Townships using our network as a backbone. We give our full support to Duke Broadband and will be proud to partner with them, making our network available to them to help reach these areas.

Sincerely,

Kevin D. Miller, Ph.D.
Superintendent
St. Clair County RESA