MPSC

MICHIGAN PUBLIC SERVICE COMMISSION

Distributed Generation Program Report

For Calendar Year 2021

November 2022

MPSC Staff

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LICENSING AND REGULATORY AFFAIRS

Contents

This document is an annual report prepared by Staff from the Michigan Public Service Commission's Energy Operations Division, Interconnection and Distributed Energy Resources Section. The main data source is annual reports filed by Michigan electric providers covering calendar year 2021. Staff thanks the electric providers for their efforts to provide the data used in preparing this report.

To stay informed about renewable energy activities happening in Michigan, readers are invited to visit the Commission's Renewable Energy website, at http://www.michigan.gov/renewables.

Executive Summary

The distributed generation and legacy net metering programs (collectively DG program) enable Michigan's utility and alternative electric supplier customers to install on-site renewable energy electric generation projects to meet some or all of their electric energy needs and reduce their electric bills. Project size is limited such that the annual generation does not exceed the customer's electricity consumption from the previous 12 months. Customers reduce electricity purchases from the utility by using their generated electricity "behind the meter" and receive a credit for excess generation.

This report is based on electric provider annual reports for calendar year 2021. Public Acts 341 and 342 of 2016 required the Commission to phase out the net metering program and create a new DG program. During 2021, the Commission continued to implement the new DG program. Legacy net metering program customers and new customers who enter the legacy net metering program during the interim period, prior to approval of their utility's new DG tariff, may continue to be served under the legacy net metering program for 10 years from the date of their initial enrollment.

Alpena Power Company (Alpena Power), Consumers Energy, DTE Electric Company (DTE Electric), Indiana Michigan Power Company (Indiana Michigan), Northern States Power Company (NSP), and Upper Peninsula Power Company (UPPCO) now have Commission-approved DG program tariffs.

Current Michigan law allows utilities to cap participation in their DG programs at 1% of average annual peak load, with suballocations of 0.5% of average peak load for Category 1 systems of up to 20 kW, 0.25% of average peak load for Category 2 systems of greater than 20 kW and as large as 150 kW, and 0.25% of average peak load for Category 3 systems of greater than 150 kW and as large as 550 kW.[1] However, two Michigan utilities have voluntarily agreed to allow enrollments above the 1% minimum participation level. Consumers Energy notified the Commission on December 21, 2020 that it would double its program size. UPPCO doubled its program size cap to 2% of its peak load as part of a rate case settlement agreement approved in May 2019 in Case No. U-20276, and further agreed to increase its program size to at least 3% as part of a settlement agreement in May 2021 involving the acquisition of UPPCO by Axium UP Holdings LLC in case No. U-20995.

Customer participation in the DG program increased from 10,553 customers and 10,718 installations in 2020 to 14,262 customers and 14,446 installations in calendar year 2021. At the end of 2021, the total DG program capacity was approximately 124,749 kilowatts (kW), an increase of 33,760 kW and 37% over the previous calendar year.

With the change from net metering, which credited excess generation at the full retail rate, to the DG tariff program, which credits outflow generation at a lower rate,

[1] Category 1 and 2 systems may be any renewable energy technology, but Category 3 systems are limited to methane digesters.

it is advantageous for customers to replace as much of their energy usage with the solar energy they produce on-site as possible. Combining the reduced outflow credit value and the declining costs of battery storage, participants are increasingly interested in pairing their generation with battery storage. The annual reporting form was expanded as each electric provider began enrollment under the DG tariff to gather data about whether customers were participating in the legacy net metering or DG tariff programs and to additionally collect information on customer adoption of battery storage. At year-end 2021, electric providers reported 2,304 DG program customers with battery storage for a total battery storage capacity of 12,941 kW. This is a 208% increase over 2020 capacity.

Introduction

The Michigan Public Service Commission (Commission) Staff (MPSC Staff) annually issues a distributed generation program (DG program) report summarizing the information filed by electric providers pursuant to Rule 40 (3) of the Commission's Electric Interconnection and Net Metering Standards. This report is based on electric provider annual reports for calendar year 2021.

The distributed generation and legacy net metering programs (collectively DG program) enable Michigan's utility and alternative electric supplier customers to install on-site renewable energy electric generation projects to meet some or all of their electric energy needs and reduce their electric bills. During the time-period of data collection for this report Consumers Energy, DTE Electric, Indiana Michigan, and UPPCO had DG program tariffs in place. Alpena Power's DG tariff became effective on January 1, 2022, and Northern States Power's DG tariff will go into effect January 1, 2023.

DG projects are grouped into three size categories with differing billing, metering, and interconnection requirements. Project size is limited such that the annual generation does not exceed the customer's annual electricity consumption. Customers reduce electricity purchases from the utility by using their generated electricity "behind the meter" and receive a credit for excess generation.

Category 1: DG program for projects 20 kW and smaller (certified equipment)

The Category 1 DG program is available to any customer meeting the generator size requirements (20 kW and under) and using an Underwriters Laboratory (UL) 1741 certified inverter. Typically, residential customers would fit within this size category.

Program features:

- Billing based on net usage with the credit for excess generation equal to the full retail rate for customers participating in the legacy net metering program.
- Billing based on an inflow and outflow mechanism for customers of utilities with the new DG tariff in place. Inflow represents kWh delivered by the utility and is billed at the full retail rate. Outflow represents kWh generated by the customer but not used on-site. To date, the outflow credit has been equal to the power supply component of the full retail rate and may have transmission costs subtracted.
- A generator meter is available at cost, if requested by the customer. (The generator meter allows the customer to monitor the amount of generation. Utilities are not obligated to read a customer's generator meter.)
- A maximum program and interconnection application processing fee of $50. Customers pay all interconnection costs.

Category 2: DG program for projects over 20 kW and as large as 150 kW

The Category 2 DG program is available to any customer meeting the generator size requirements. Typically, these customers would be commercial, small industrial, or institutional customers.

Program features:

- Billing based on an inflow and outflow mechanism. Inflow represents kWh delivered by the utility and is billed at the full retail rate. Outflow represents kWh generated by the customer but not used on-site. To date, the outflow credit has been equal to the power supply component of the full retail rate and may have transmission costs subtracted.
- Engineering review (if required) for the interconnection is done at no cost for legacy net metering customers.
- A maximum program and interconnection application processing fee of $50. Customers pay all interconnection costs.

Category 3: Limited to Methane Digesters over 150 kW and as large as 550 kW

- Same as Category 2, except customers may be subject to standby charges.

Distributed Generation Program Data

Customer participation in the DG program increased from 10,553 customers and 10,718[2] installations in 2020 to 14,262 customers and 14,446 installations in calendar year 2021. A complete list of projects by electric provider, ZIP code, type and size is available at the Commission's website. At the end of 2021, the total capacity of DG program installations was approximately 124,749 kilowatts (kW), an increase of 33,760 kW and 37% over the previous calendar year. As shown in **Figure 1**, program participation has increased each year from 2006 through 2021. While the program continues to grow, it still represents only 0.15 % of Michigan's total retail electricity sales.[3]

Table 1 summarizes DG program customers and capacity by electric provider for all three program size categories.[4] Pursuant to Public Act 342, the DG program Category 1 is available to new customers until the program size reaches 0.5% of the electric provider's average in-state peak load for the preceding five calendar years or

[2] The number of installations exceeds the number of customers due to some customers having multiple installations.

[3] The Energy Information Administration reports 2020 retail sales of 97,011,906 MWh for Michigan. See Michigan Electricity Profile: https://www.eia.gov/electricity/state/michigan/. A 13% capacity factor was assumed for the program generators.

[4] Category 1: Projects up to 20 kW incorporating IEEE 1547 certified inverters. Category 2: Projects greater than 20 kW and no larger than 150 kW and non-inverter based 20 kW and under projects. Category 3: Methane Digester projects up to 550 kW.

the voluntarily increased program size offered by the electric provider. As of year-end 2021, Consumers Energy and DTE Electric had 27.3 megawatts (MW) or 37% and 14.8 MW or 27% of Category 1 program space remaining, respectively.[5] The DG program Category 2 is available to new customers until the program size reaches 0.25% of the electric provider's average in-state peak load for the preceding five calendar years or the voluntarily increased program size offered by the electric provider. As of year-end 2021, Consumers Energy and DTE Electric had 18 MW or 49% and 19.9 MW or 73% of Category 2 program space remaining, respectively.[6] **Tables 2 and 3** show peak load and program size information for each rate-regulated electric provider for Category 1 and Category 2, respectively, through the end of 2021. Category 3 has limited participation with only three current customers[7]. DG program participation among alternative electric supplier customers is, to date, limited to Constellation New Energy and Direct Energy with a combined total of 17 customers. Alternative electric supplier DG program customers are included in utility reporting and are not shown separately on Table 1.

During this reporting period electric providers reported a combined total of 407 customers participating in the Category 2 size range, which is a 35% increase from the 302 customers reported last year. Even with the growth in Category 2 projects, Category 1 projects still account for 76.8% of the total program installed capacity.

The state's two largest utilities, Consumers Energy and DTE Electric, host 91% of the statewide total program capacity, and 97% of program installations are solar projects as opposed to wind turbines, hydroelectric projects, or methane digesters.

Michigan's member-regulated cooperatives are not required to offer the statewide DG program pursuant to Public Act 342 of 2016; however, many of these electric providers have established programs for customer distributed generation and voluntarily provide annual reporting data to the MPSC Staff for inclusion in this report.

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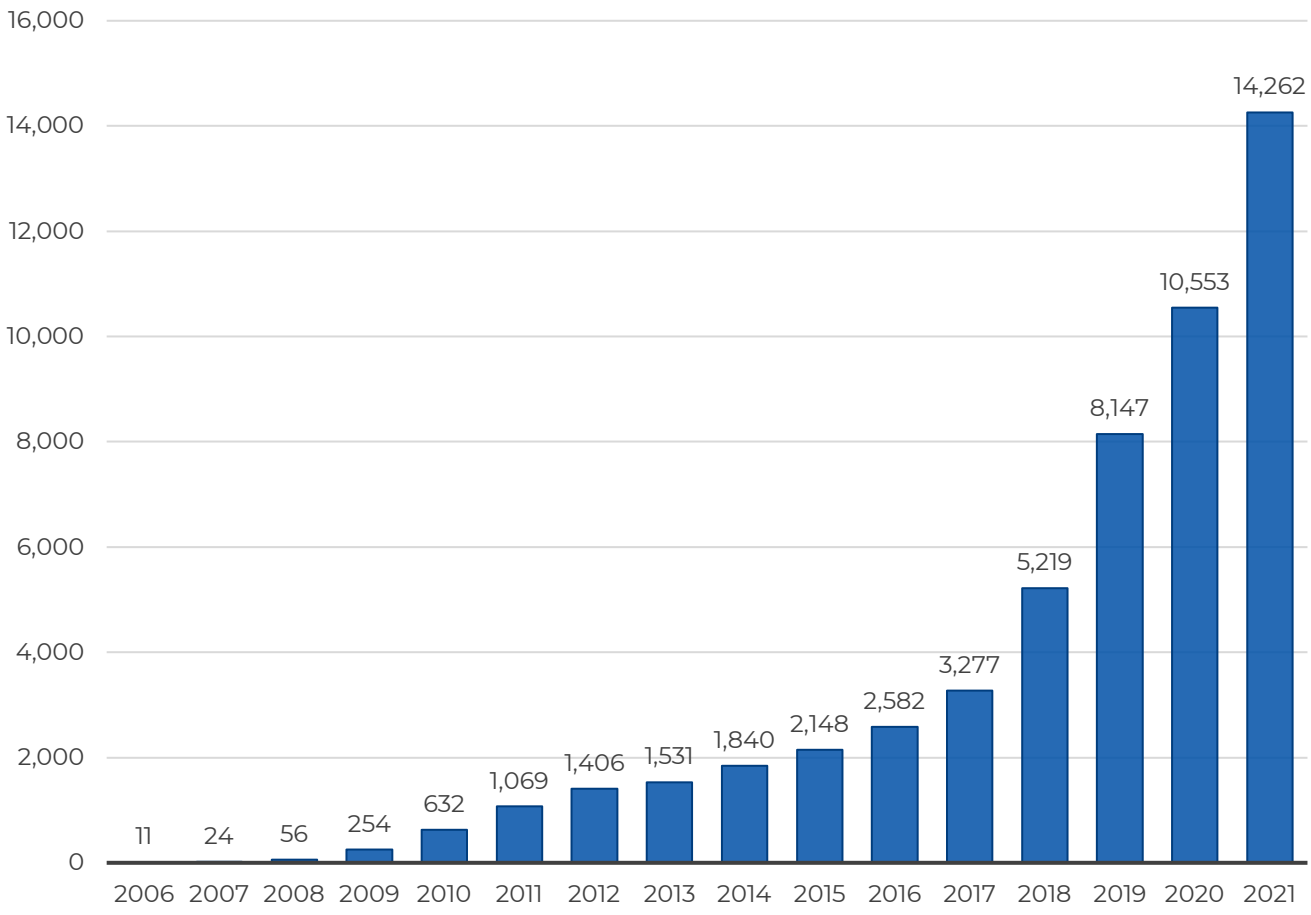
[5] As of September 2022, the current capacity of Consumers Energy's Category 1 program under the voluntarily expanded program cap is 73.3% enrolled as of September 2022**.** When adding the current pending Category 1 projects to current program capacity, the program will be 82.6% enrolled while its Category 2 program has 43.52% of the program capacity remaining. When adding pending Category 2 projects to the current capacity, 31.87% of the program capacity is available.

[6] As of September 2021, Consumers Energy's Category 2 program has 43.52% of its voluntarily expanded programs capacity available. Based on preliminary data provided by DTE Electric through September 2022, its program size had reached 46.8 MW participating out of a program cap of 54.6 MW for Category 1 projects (approximately 86% subscribed), and 8.7 MW out of 27.3 MW participating for Category 2, or 32% enrolled.

Figure 1: Total Distributed Generation Program Customers



Source: 2021 Electric Provider Annual Program Reports, Case No. U-15787

Table 1: 2021 Distributed Generation Program Data

Company	Category 1 Customers	Category 1 Nameplate Capacity (kW)	Category 2 Customers	Category 2 Nameplate Capacity (kW)	Category 3 Customers	Category 3 Nameplate Capacity (kW)
Rate Regulated Utilities (Act 295 Statewide DG Program)						
Alpena	**23**	**110**				
Consumers	**6,315**	**46,992**	**243**	**19,077**	**1**	**190**
DTE Electric	**6,206**	**39,792**	**131**	**7,313**		
Indiana Michigan	**287**	**2,305**	**14**	**761**		
NSP	**4**	**24**				
UPPCO	**238**	**1,460**	**7**	**280**		
UMERC	**55**	**345**	**1**	**23**		
Total	**13,128**	**91,028**	**396**	**27,454**	**1**	**190**
Member-Regulated Cooperative Utilities with Programs for Small Scale Distributed Generation						
Alger Delta	**33**	**155**	**1**	**90**		
Cherryland	**31**	**94**				
Cloverland	**41**	**169**	**1**	**27**	**1**	**208**
Great Lakes	**295**	**2,065**	**2**	**124**	**1**	**400**
Homeworks Tri-County	**111**	**948**	**6**	**298**		
Midwest	**108**	**821**				
Ontonagon	**40**	**205**				
Presque Isle	**30**	**143**				
Thumb	**35**	**290**	**1**	**40**		
Total	**724**	**4,890**	**11**	**579**	**2**	**608**
Total	**13,852**	**95,918**	**407**	**28,033**	**3**	**798**

Member-regulated cooperatives are not required to offer the statewide DG program. Data provided reflects voluntary programs. Alger Delta, Cherryland Midwest, Ontonagon, Presque Isle, and Thumb data is from previous reporting years.

Alternative electric supplier program data is included in utility reporting.

Source: 2021 Electric Provider Annual Program Reports, Case No. U-15787

Table 2: Distributed Generation Program Size Details
Rate Regulated Electric Providers
Category 1: 20 kW and Under

Company	No. of Customers	In-State Peak Load (5-Year Avg) (kW)	Category 1 Program Size For 2021 (kW)	Current Participating Nameplate Capacity (12/31/2021) (kW)	Space Remaining (12/31/2021) (kW)	% Remaining (12/31/2021)
Alpena	**23**	**64,000**	**320**	**110**	**210**	**66%**
Consumers Energy[8]	**6,315**	**7,429,200**	**74,292**	**46,992**	**27,300**	**37%**
DTE Electric	**6,206**	**10,919,800**	**54,599**	**39,792**	**14,807**	**27%**
Indiana Michigan	**287**	**647,800**	**3,239**	**2,305**	**934**	**29%**
NSP	**4**	**25,800**	**129**	**24**	**105**	**81%**
UPPCO[9]	**238**	**142,000**	**2,130**	**1,460**	**670**	**31%**
UMERC	**55**	**224,600**	**1,123**	**345**	**778**	**69%**

Source: 2021 Electric Provider Annual Program Reports filed in Case No. U-15787, Utility MPSC P-521 Annual Reports, and Staff communications with electric providers.

[8] On December 21, 2020 Consumers Energy voluntarily increased its program size to 1% for Category 1 customers (2% total) https://mi-psc.force.com/s/filing/a00t000000JAztrAAD/u157870329

[9] UPPCO's Category 1 program reached its program size cap and was closed on July 22, 2016. https://mi-psc.force.com/s/filing/a00t0000005pZWIAAM/u157870235. However, the Commission approved settlements in two UPPCO cases which increase the program size. See MPSC Case No. U-20276 and MPSC Case No. U-20995. Table 2 reflects the increased Category 1 program size of 1.5% of average peak load.

Table 3: Distributed Generation Program Size Details
Rate Regulated Electric Providers
Category 2: >20 kW to 150 kW

Company	No. of Customers	In-State Peak Load (5-Year Avg) (kW)	Category 2 Program Size For 2021 (kW)	Participating Nameplate Capacity (12/31/2021) (kW)	Space Remaining (12/31/2021) (kW)	% Remaining (12/31/2021)
Consumers Energy[10]	**243**	**7,429,200**	**37,146**	**19,077**	**18,069**	**49%**
DTE Electric	**131**	**10,919,800**	**27,300**	**7,313**	**19,987**	**73%**
Indiana Michigan	**14**	**647,800**	**1,620**	**761**	**859**	**53%**
UPPCo[11]	**7**	**142,000**	**1,065**	**280**	**785**	**74%**
UMERC	**1**	**224,600**	**562**	**23**	**539**	**96%**

Source: 2021 Electric Provider Annual Program Reports filed in Case No. U-15787, Utility MPSC P-521 Annual Reports, and Staff communications with electric providers.

Program participants are increasingly pairing their generation with battery storage. The annual reporting form scope was expanded to gather data about whether customers were participating in the legacy net metering or DG tariff programs and collect customer battery storage information. The Commission Staff will continue working with electric providers as they transition to the new reporting format. At year-end 2021, electric providers reported 2,304 DG program customers with battery storage for a total battery storage capacity of 12,941 kW. A summary of battery storage capacity by utility is provided in **Table 4**.

[10] On December 21, 2020 Consumers Energy voluntarily increased its program size to .5% for Category 2 customers. https://mi-psc.force.com/s/filing/a00t000000JAztrAAD/u157870329

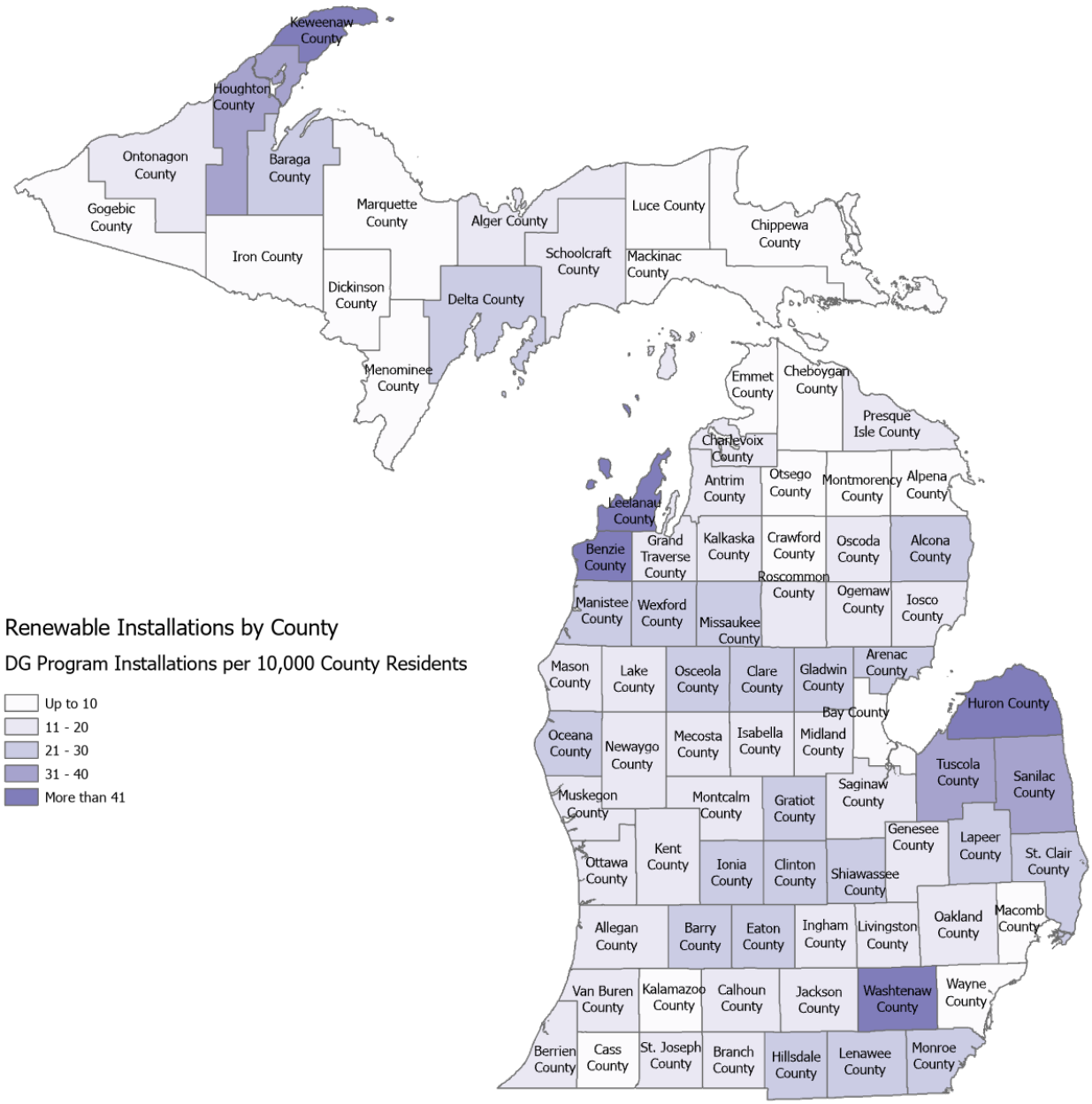
[11] The Commission approved settlements in two UPPCO cases which increase the program size. See MPSC Case No. U-20276 and MPSC Case No. U-20995. Table 3 reflects the increased Category 2 program size of 0.75% of average peak load.

Table 4: Michigan Distributed Generation Program Customers with Battery Storage

Company	No. of Customers	Battery Storage Capacity (kW)
Consumers Energy	803	4,447
DTE Electric	1,449	7,988
Indiana Michigan	52	506
Total	2,304	12,941

Figure 2 displays location information, based on ZIP code and county, for DG program participation.

Figure 2: Distributed Generation Program Installations per 10,000 County Residents



Source: ZIP codes of participating customers are provided to MPSC Staff by Michigan electric providers. Customer identification information (name, address, account number, etc.) is confidential and protected from disclosure.

Figures 3 through 5 show a histogram breakdown of DG program project sizes.

Figure 3: Histogram of Distributed Generation Program Installations by Project Size

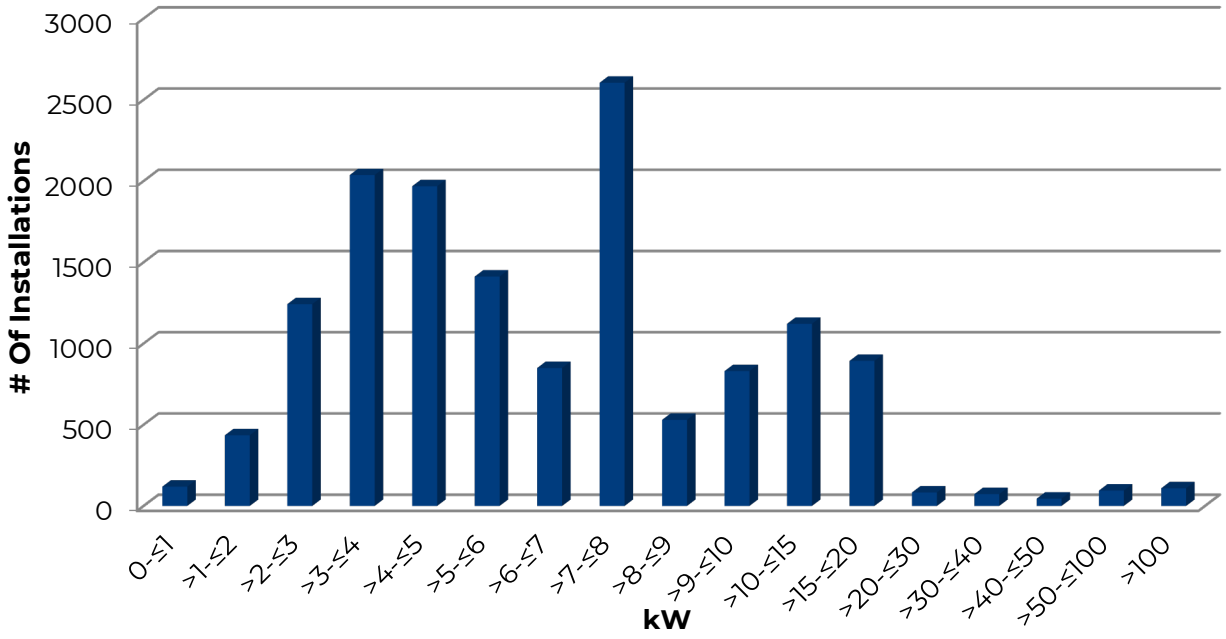


Figure 4: Histogram of Solar Distributed Generation Program Installations by Project Size

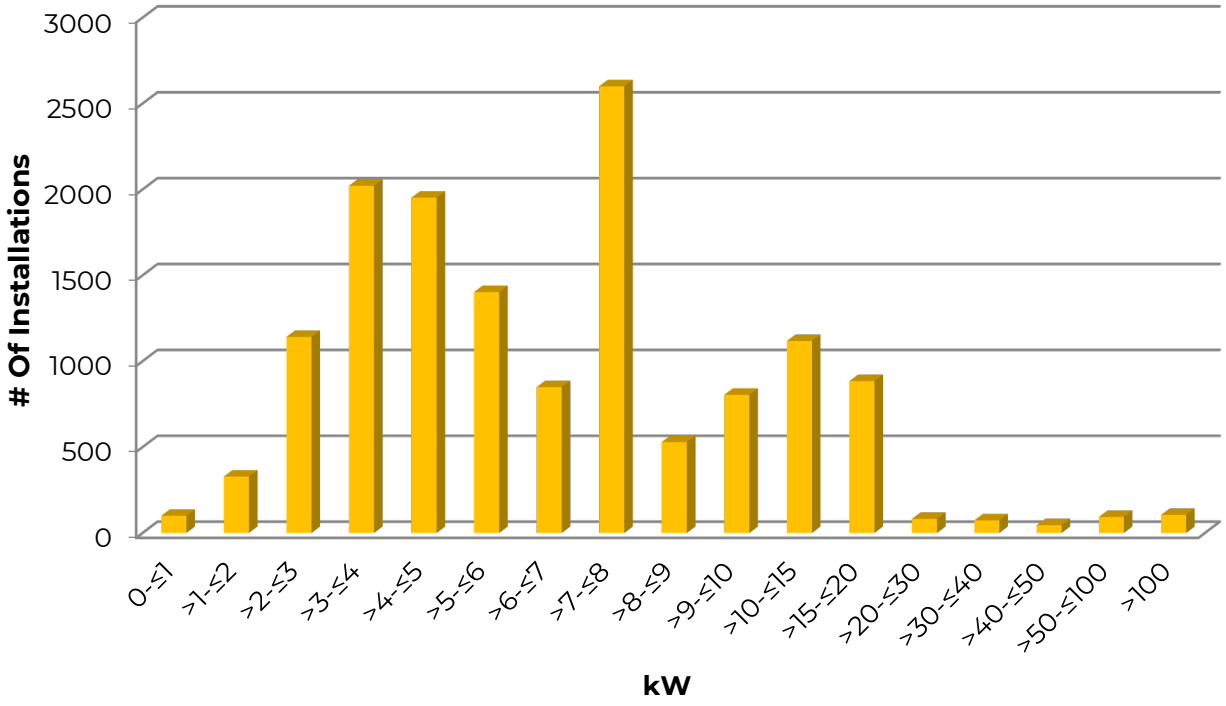
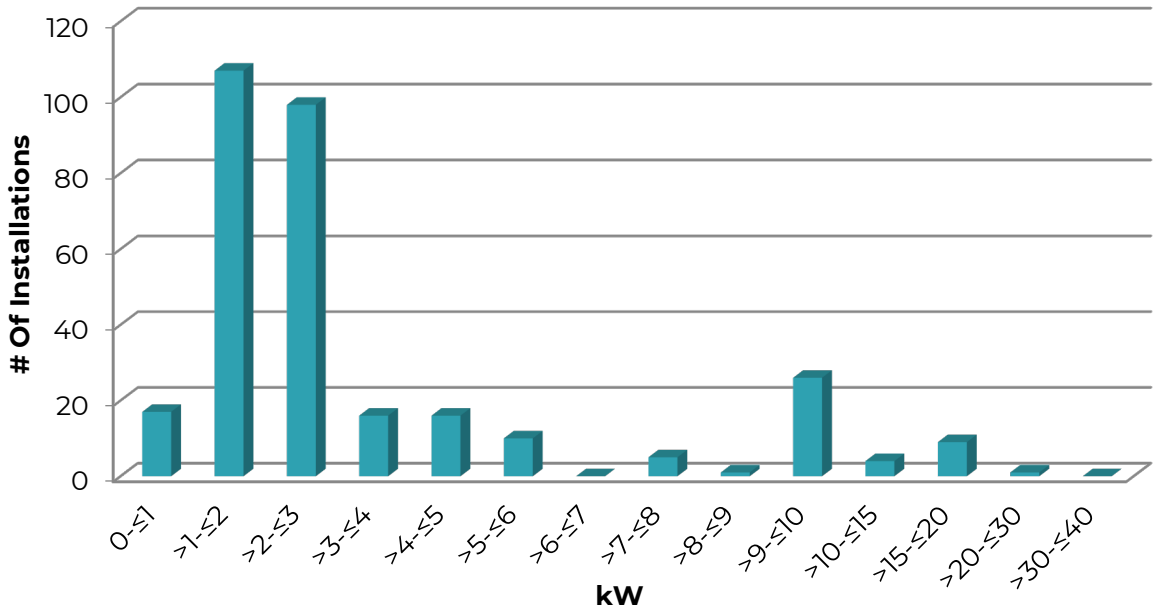


Figure 5: Histogram of Wind Distributed Generation Program Installations by Project Size



Distributed Generation Program Tariff Implementation Status

Public Acts 341 and 342 provide for the Commission to implement a new Distributed Generation (DG) program. The Commission issued an order on July 12, 2017 in Case No. U-18383 finding that the net metering program shall continue as the distributed generation program (legacy net metering program) until the new DG program tariffs are approved as part of a utility's rate case. Existing legacy net metering customers and new customers who enter the legacy net metering program during this interim period may continue to net meter under the legacy net metering program for 10 years from the date of their initial enrollment. A summary of activity related to the DG tariff is provided in **Table 5**.

In 2021, Consumers Energy, DTE Electric, Indiana Michigan, and UPPCO had DG program tariffs in place. Alpena Power began enrolling customers for service under its new DG program tariff in January 2022. Consumers Energy's program was temporarily closed due to enrollments reaching the statutorily maximum participation level; however, Consumers Energy notified the Commission of its decision to voluntarily double its program size by filing a letter in the docket for Case No. U-15787 on December 21, 2020. UPPCO doubled its program size as part of a rate case settlement agreement approved in May 2019 in Case No. U-20276, then again agreed to further increase the program size from 2% to 3% as part of a settlement agreement approved by the Commission May 2021 in Case No. U-20995.

Table 5: Summary of Distributed Generation Program Tariff Implementation

Utility	Date of Commission Order Approving New DG Program Tariff	Beginning DG Program Enrollment Date
Alpena Power	December 22, 2021	January 1, 2022
Consumers Energy	December 17, 2020	January 1, 2021
DTE Electric	May 2, 2019	May 9, 2019
Indiana Michigan	January 23, 2020	February 1, 2020
NSP	March 17, 2022	January 1, 2023
UPPCO	May 23, 2019	May 24, 2019

Alpena Power

Alpena Power filed a rate case on June 18, 2021, in Case No. U-21045. On December 22, 2021, The Commission issued an order in Alpena Power Company's rate case approving a settlement agreement which included approving the Company's DG program utilizing the inflow/outflow billing methodology. The approved tariff allows customers to begin enrollment starting January 1, 2022.

Consumers Energy Company

On December 17, 2020, the Commission issued an order in Consumers Energy's rate case No. U-20697, which included approving the Company's DG program tariff utilizing the inflow/outflow billing method. Consumers Energy filed a letter on November 19, 2020 in the docket for Case No. U-15787 notifying the Commission that it had reached the program size limits under MCL 460.1173(3) for Category 1 and Category 2 projects and was no longer accepting new Category 1 or Category 2 customers into its Net Metering/Distributed Generation program as of that date. Consumers Energy also noted that "following [its] review of the Distributed Generation tariff approved in [Consumers' rate case], Consumers Energy will consider voluntarily raising its Distributed Generation program limit from the 1% limit provided for in MCL 460.1173(3) to 2% of the average in-state peak load for the preceding 5 calendar years." On December 21, 2020, Consumers Energy filed a subsequent letter notifying the Commission that it "will voluntarily raise its Distributed Generation program limit from the 1% limit provided for in MCL 460.1173(3) to 2% of the average in-state peak load for the preceding 5 calendar years. This 2% limit will be allocated as follows: (i) no more than 1% for customers with an eligible electric generator capable of generating 20 kilowatts or less; (ii) no more than 0.5% for customers with an eligible electric generator capable of generating more than 20 kilowatts but not more than 150 kilowatts; and (iii) no more than 0.5%

for customers with a methane digester capable of generating more than 150 kilowatts."

DTE Electric

DTE Electric's rate case including its initial proposed distributed generation program tariff was filed on July 6, 2018 and an order was issued in Case No. U-20162 on May 2, 2019. The order adopted an inflow/outflow billing method. The inflow portion is billed based on standard retail rates for electricity delivered to the customer by DTE Electric. The outflow credit is based on power supply less transmission charges (i.e., the credit represents DTE Electric's full retail power supply costs for capacity and energy). The Commission prepared an Issue Brief describing DTE Electric's distributed generation program tariff.

Indiana Michigan

Indiana Michigan filed its rate case including a proposed distributed generation program tariff on June 24, 2019. The Commission approved the new DG tariff as part of a Settlement Agreement approved on January 23, 2020 and customers could enroll beginning February 1, 2020. The order adopted an inflow/outflow billing method. The inflow portion is billed based on standard retail rates. The outflow credit is based on the customer's specific rate schedule's power supply charges.

On April 3, 2020, Indiana Michigan filed an application requesting to temporarily revise its DG tariff. Indiana Michigan stated that the waiver is necessary so that it may implement necessary billing system modifications to support the original tariff language approved in Case No. U-20359, which does not allow the outflow credits to be applied to the monthly customer service charge. The Commission approved the waiver on May 19, 2020 and directed Indiana Michigan to file tariff sheets to reinstate the original tariff language within 30 days of notifying the Commission Staff that its billing system has been updated.

Northern States Power

Northern States Power filed a rate case on September 22, 2021, in Case No. U-21097. The filing included a proposed tariff for the DG program. On March 17, 2022, an order was issued by the Commission approving a settlement agreement that approved the implementation of the DG program utilizing the inflow/outflow billing methodology. The approved DG tariff allows customers to begin enrolling in the DG program on January 1, 2023.

UPPCO

UPPCO filed a rate case including a proposed DG program tariff on September 21, 2018. An order in Case No. U-20276 approving a settlement agreement was issued on May 23, 2019. In the settlement, UPPCO agreed to expand the size of its program to 2% of its average in-state peak load for the preceding five years. Within the 2% program capacity, 1% will be reserved for Category 1 DG customers. The remaining 1% will be split evenly, with 0.5% allocated to Category 2 DG customers and 0.5% allocated to Category 3 DG customers. The settlement included a DG program tariff based on the inflow/outflow billing method. The inflow portion will be billed based

on standard retail rates. The outflow credit is equal to the power supply component of the retail rate.

On May 26, 2021, the Commission issued an order in case No. U-20995 in which UPPCO voluntarily agreed to increase its program size cap for its DG program from 2% to 3% of its average load. This increase in program capacity will maintain the same allocations between Category 1, 2, and 3 program size percentages.

Commission Activities Related to Distributed Energy Resources

In October of 2019 the Commission launched the MI Power Grid (MPG) initiative[12] which was a focused multi-year stakeholder initiative to maximize the benefits of the transition to clean distributed energy resources for Michigan residents and businesses One of the workgroups that resulted from the MPG initiative was the Interconnection Standards and Worker Safety Workgroup with the goal of updating and standardizing rules for Interconnecting Distributed Energy Resources (DER). The Commission approved these rules on October 5, 2022 in Case No. U-20890 and has submitted them to the Legislative Service Bureau and the Michigan Office of Administrative Hearings and Rules for their formal approvals. According to the rules, electric utilities will file proposed interconnection procedures and forms for Commission review within 120 calendar days of the effective date of the rules.

In addition, the Commission evaluated DG rate design elements as part of a study conducted pursuant to Senate Resolution 142, with continued evaluation of DG related issues as part of the MPG workgroup, New Technologies and Business Models. This workgroup was established on February 4, 2021 and explored new business and ownership models with a focus on understanding the opportunities and deployment barriers for a variety of technologies. These technologies included behind the meter and community solar, energy storage, and microgrids. The Commission Staff issued a report on December 1, 2021 that highlighted a range of issues related to distributed energy resources. In its July 27, 2022 Order in Case No. U-20898, the Commission posed several questions related to community solar ownership, utility ownership of generation on the customer side of the meter, and microgrids. On September 26, 2022, six organizations filed comments. These comments are currently under review.

Conclusion

At the end of 2021, the total DG program capacity was approximately 124,750 kW, an increase of 33,761 kW and 37% over the previous calendar year. While the program continues to grow, it still represents only 0.15% of Michigan's total retail electricity sales at the end of 2021. The Commission continues to closely monitor ongoing developments relating to DG and DERs.

[12] https://www.michigan.gov/mpsc/commission/workgroups/mi-power-grid