Michigan Public Service Commission

Net Metering & Solar Program Report

For Calendar Year 2016

December 2017

This document is an annual report prepared by Staff from the Michigan Public Service Commission's Electric Reliability Division, Renewable Energy Section. The main source of the data provided is from reports filed by Michigan electric providers. Staff thanks all of the electric providers for their efforts to provide timely and accurate data and information used in preparing this report.

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

Net Metering & Distributed Generation Program Update

The Michigan Public Service Commission Staff (MPSC Staff) issues an annual net metering 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 also includes information describing solar photovoltaic (solar) programs offered by Michigan electric providers and summarizes the MPSC Staff's estimate of the amount of solar currently operational and planned for the state.

The net metering program, available to customers of Michigan's rate-regulated utilities and cooperatives, and alternative electric suppliers (AESs), has encouraged the development of on-site renewable energy electric generation projects to offset some or all of a customer's electric energy needs and reduce electric bills.

2016 PA 342, signed by Governor Snyder in 2016, includes a new distributed generation program and directs the Commission to establish the program. The new energy law states "…the Commission shall conduct a study on an appropriate tariff reflecting equitable cost of service for utility revenue requirements for customers who participate in a net metering program or distributed generation program under the clean and renewable energy and energy waste reduction act…"

According to the timeline in the law, the cost-of-service based distributed generation tariff study must be completed by April 2018 in order for consideration as part of utility rate cases filed after June 1, 2018. The new distributed generation tariff will go into effect at the conclusion of each utility's rate case.

The Commission issued an order on July 12, 2017 finding that the net metering program shall continue as the distributed generation program until the new distributed generation tariffs are approved. Existing net metering customers and new customers who enter the distributed generation program during this interim period may continue to net meter for 10 years from the date of their enrollment.

Net Metering Data and Analysis

Customer participation in the net metering program increased from 2,155 customers and 2,289 installations[1] in 2015 to 2,582 customers and 2,684 installations in calendar year 2016.[2] At the end of 2016, the total capacity of net metering installations was approximately 21,888 kilowatts (kW), an increase of 4,823 kW from the previous calendar year. This represents a 28% increase in program size over 2015 but still represents only 0.024% of Michigan's total retail electricity sales.[3]

[1] The number of net metering installations exceeds the number of net metering customers due to some customers having multiple installations.

[2] A complete list of net metering projects by utility, ZIP code, type and size is provided at the MPSC's Net Metering website http://www.michigan.gov/documents/mpsc/Total_by_Category_2_576593_7.pdf

[3] Calculation is based on MPSC Staff's estimate of Michigan's 2015 retail sales equal of 103,362,287 MWh from electric provider's 2015 renewable energy annual reports.

Table 1 summarizes net metering customers and capacity by electric provider for all three size categories of net metering.[4] During this reporting period Alger Delta, Consumers Energy, DTE Electric, Great Lakes Energy, Indiana Michigan, Homeworks Tri-County, and Thumb Electric report a combined total of 72 customers participating in the Category 2 size range, which is an increase from 44 customers reported last year. Even with the growth in Category 2 projects, Category 1 projects still account for 75% of the total net metering program capacity. The state's two largest utilities, Consumers Energy and DTE Electric, host 84% of the statewide total net metering program capacity.

The Category 1 net metering program is available to customers until the program size reaches 0.5% of the electric provider's peak load during the previous year.[5] Consumers Energy and DTE Electric have 33 megawatts (MW) or 90% and 47 MW or 82% of space remaining, respectively. Tables 2 and 3 show peak load and program size information for each rate regulated electric provider for Category 1 and Category 2 net metering, respectively. Participation in Category 3 net metering is limited with only 2 customers.

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

[5] UPPCO's Category 1 net metering program reached its program size cap was closed on July 22, 2016. http://efile.mpsc.state.mi.us/efile/docs/15787/0235.pdf

Table 1: Net Metering Program Customer and Capacity 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)
Alger Delta	33	155	1	90		
Alpena	20	70				
Cherryland*	31	94				
Cloverland*	26	90				
Consumers Energy	544	3,444	40	2,968	1	190
DTE Electric	1,418	10,165	27	1,561		
Great Lakes Energy	98	542	1	52	1	400
Homeworks Tri-County	26	160	1	46		
Indiana Michigan (AEP)	42	238	1	52		
Midwest	23	119				
Ontonagon	28	132				
Presque Isle	25	119				
Thumb	19	161	1	40		
UPPCo	132	729				
We Energies	37	252				
WPSC	5	15				
Xcel	1	4				
Total	2,508	16,489	72	4,809	2	590

Alger Delta, Cherryland, Cloverland, Great Lakes, Midwest, Ontonagon, Presque Isle, Thumb and Tri-County are member-regulated cooperatives and are not required to offer net metering.
***Cherryland and Cloverland data from previous reporting years.**
Source: 2016 Net Metering Reports Case U-15787

Table 2: Net Metering Program Capacity
Rate Regulated Electric Providers
Category 1: 20 kW and Under

Company	No. of Customers	2015* In-State Peak Load (kW)	Cap 0.5% of 2015 Peak (kW)	Current Nameplate Capacity (kW)	Space Remaining (kW)	% Remaining
Alpena	**20**	**63,000**	**315**	**70**	**245**	**78**
Consumers Energy	**544**	**7,231,000**	**36,153**	**3,444**	**32,709**	**90**
DTE Electric	**1,418**	**11,422,000**	**57,110**	**10,165**	**46,945**	**82**
Indiana Michigan	**42**	**888,000**	**4,440**	**238**	**4,202**	**95**
UPPCo[6]	**132**	**131,000**	**655**	**729**	**0**	**0**
We Energies	**37**	**256,000**	**1,279**	**252**	**1,027**	**80**
WPSC	**5**	**46,000**	**230**	**15**	**215**	**93**
Xcel	**1**	**27,000**	**135**	**4**	**131**	**97**

*In-State Peak Load is based on previous year's data

Table 3: Net Metering Program Capacity
Rate Regulated Electric Providers
Category 2: >20 kW – 150 kW

Company	No. of Customers	2015* In-State Peak Load (kW)	Cap 0.25% of 2015 Peak (kW)	Current Nameplate Capacity (kW)	Space Remaining (kW)	% Remaining
Consumers Energy	**40**	**7,231,000**	**18,077**	**2968**	**15,109**	**84**
DTE Electric	**27**	**11,422,000**	**28,564**	**1561**	**27,003**	**95**
Indiana Michigan	**1**	**888,000**	**2,220**	**52**	**2,170**	**98**

*In-State Peak Load is based on previous year's data

Table 2 & 3 Source: 2016 Net Metering Reports Case U-15787

[6]UPPCO's Category 1 net metering program reached its program size cap was closed on July 22, 2016. http://efile.mpsc.state.mi.us/efile/docs/15787/0235.pdf

Figures 1 through 3 show net metering program growth and participation information. Maps showing location information, based on ZIP code and county, for total net metering customers, solar net metering and wind net metering are displayed in Figures 4-6. Figures 7 through 9 show a histogram illustration of net metering generation projects.

Figure 1: Number of Michigan Net Metering Installations by Technology

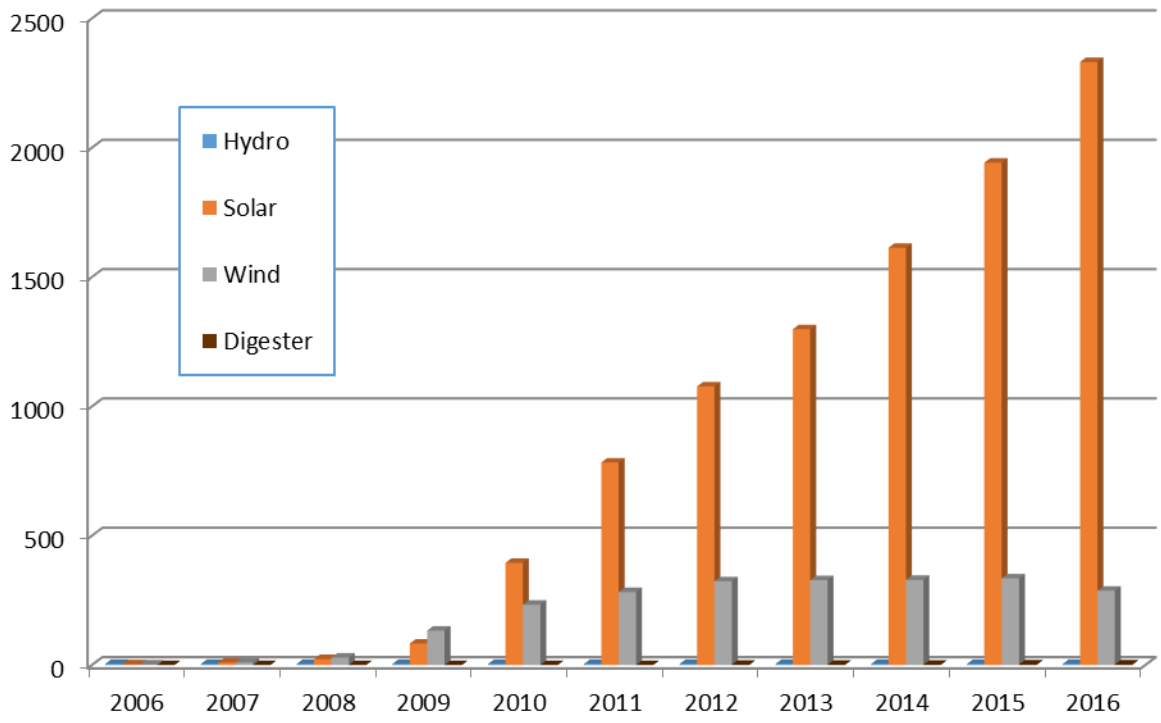


Figure 2: Number of Total Michigan Net Metering Customers

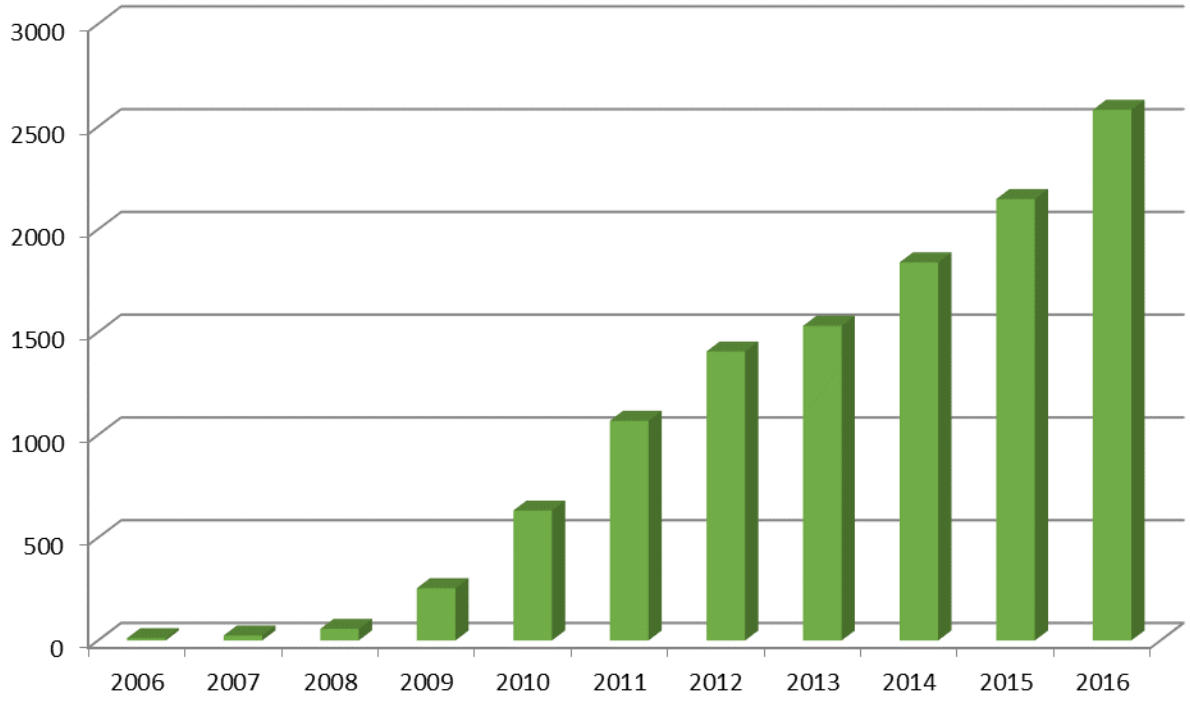


Figure 3: 2016 Net Metering Program - Installed Capacity (kW) & Number of Installations

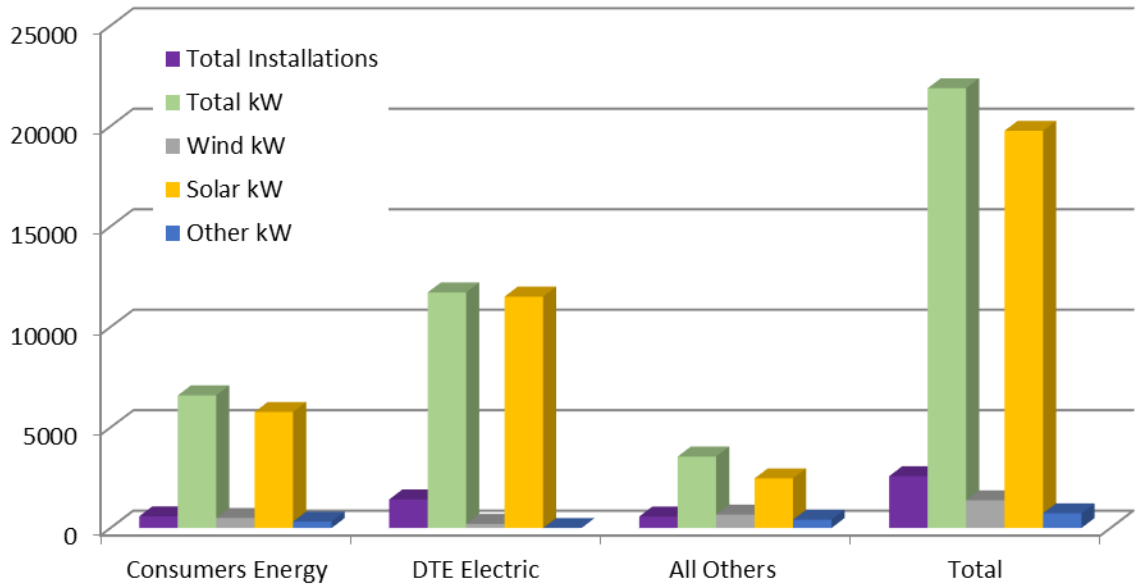
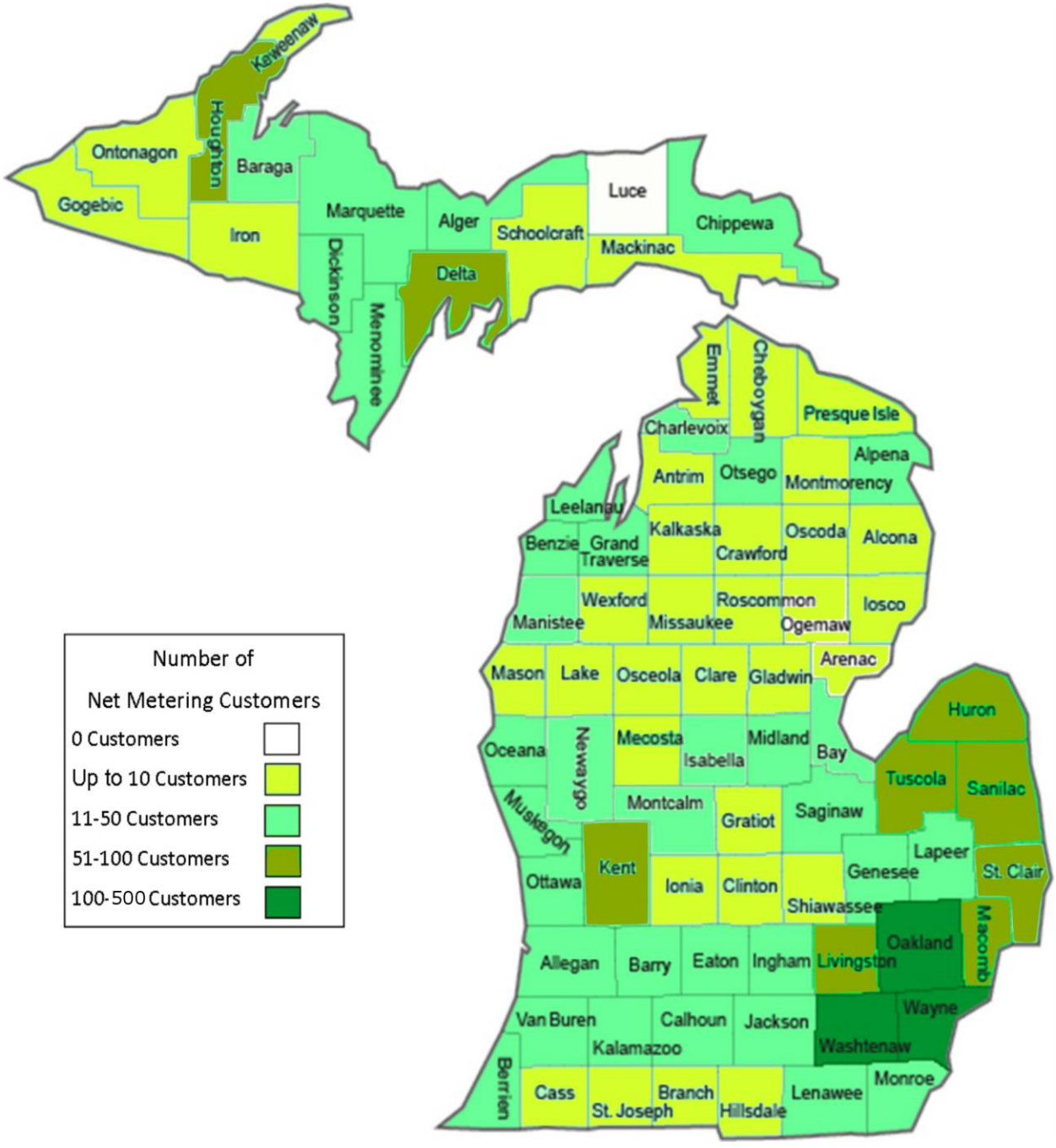


Figure 4: 2016 Summary of Michigan Net Metering Customers By County



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

Figure 5: 2016 Summary of Michigan Solar Net Metering Customers By County

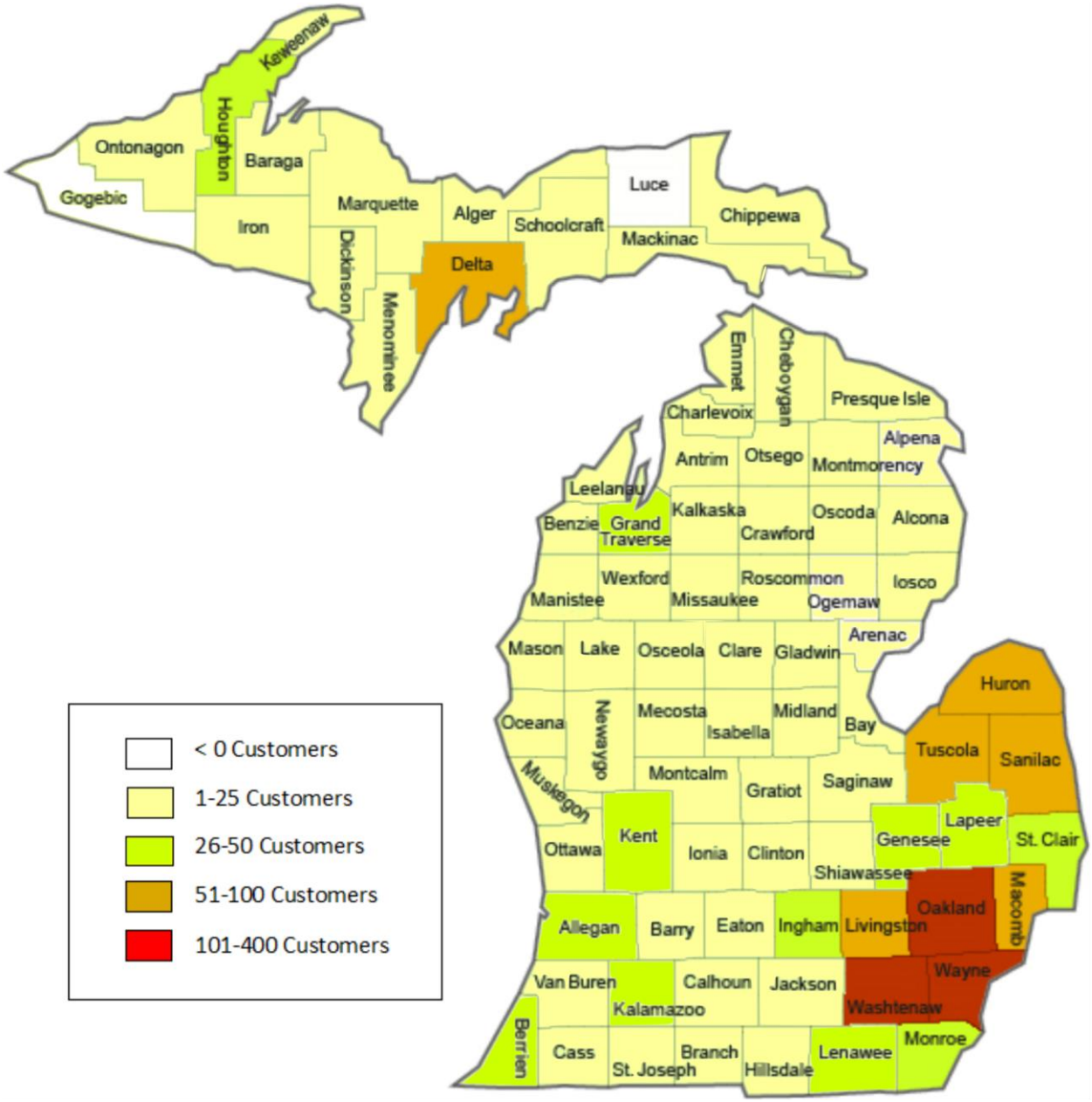


Figure 6: 2016 Summary of Michigan Wind Net Metering Customers By County

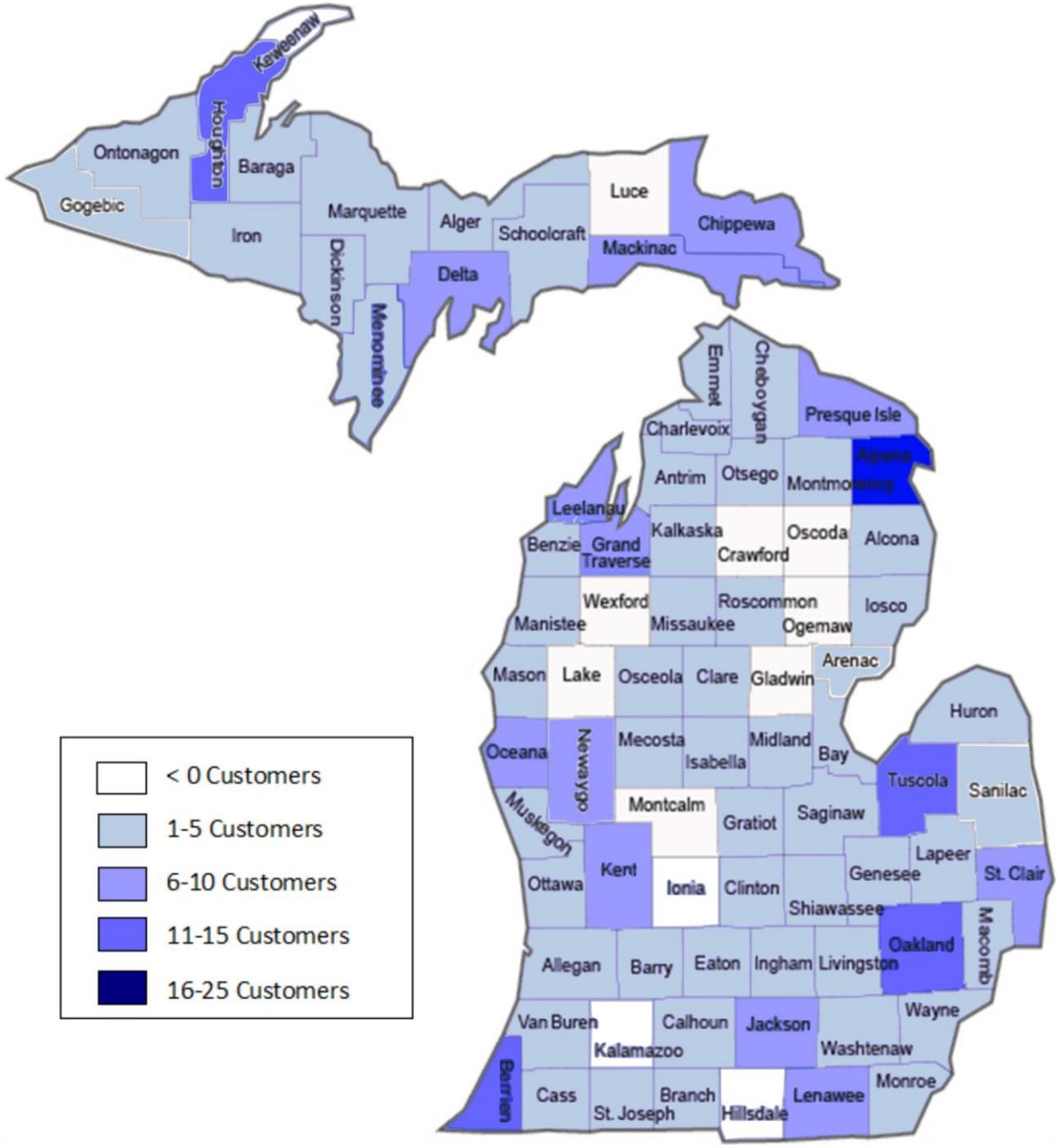


Figure 7: Histogram of 2016 Total Net Metering Installations by Capacity Size

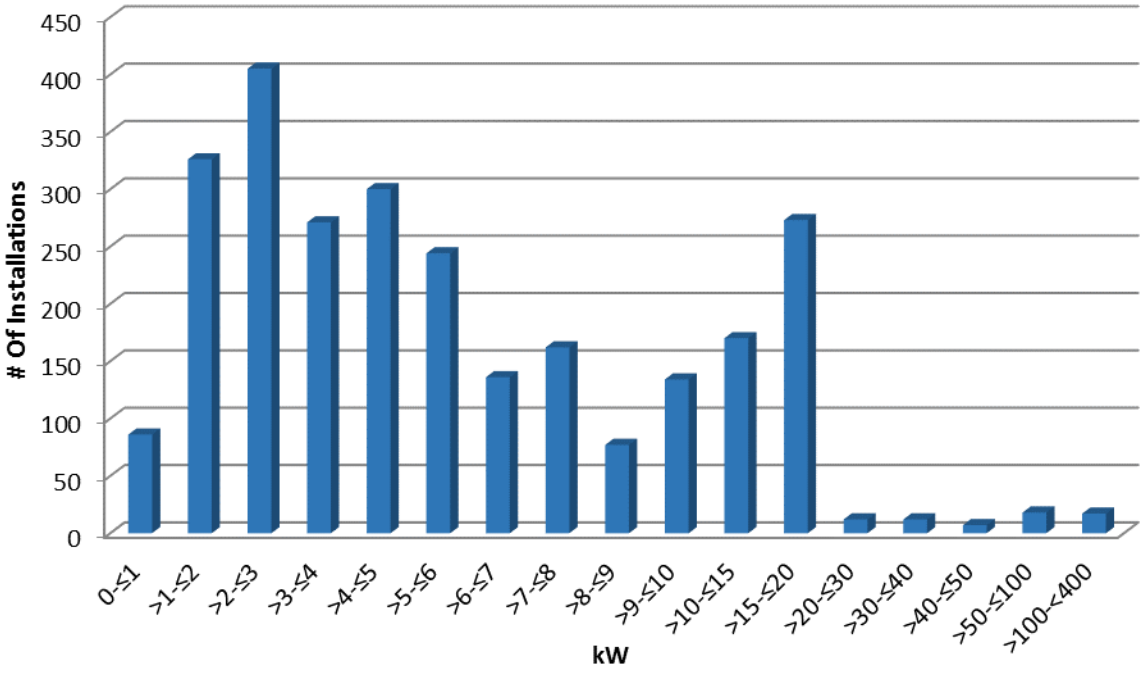


Figure 8: Histogram of 2016 Solar Net Metering Installations by Capacity Size

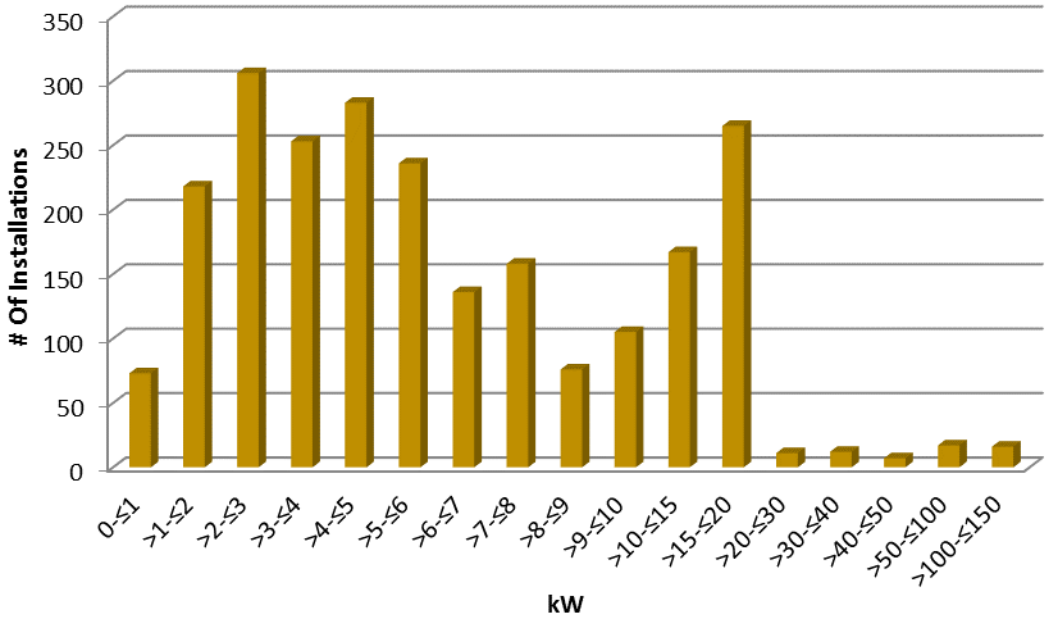
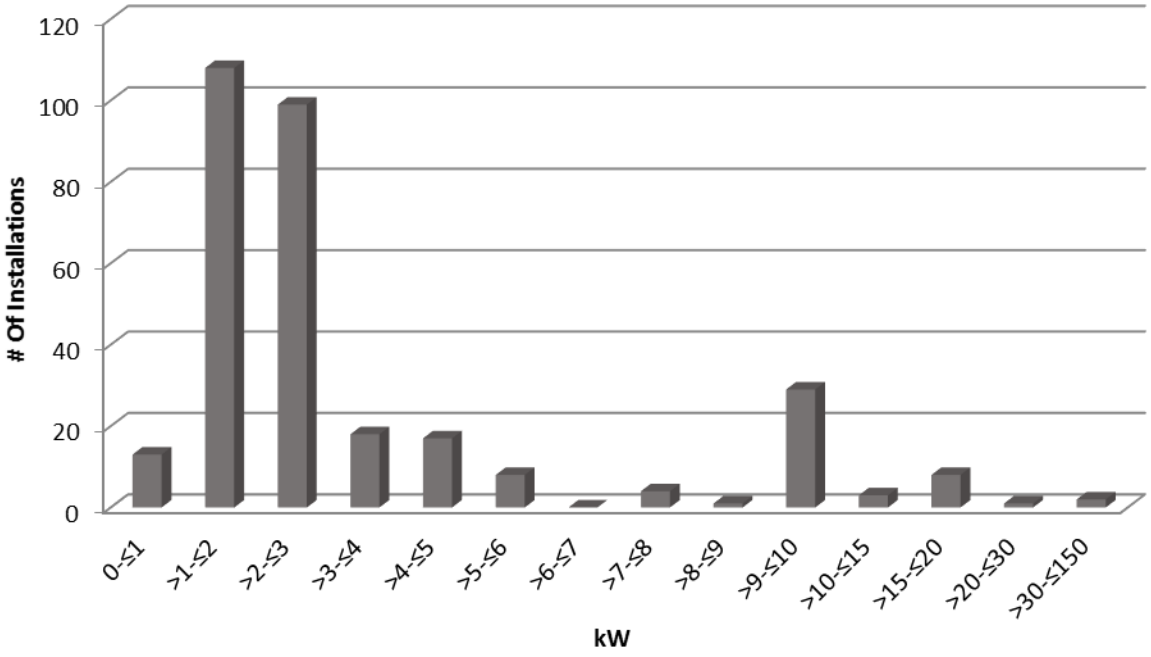


Figure 9: Histogram of 2016 Wind Net Metering Installations by Capacity Size



Michigan's Solar Programs

DTE SolarCurrents

DTE launched SolarCurrents in 2009. The 7 MW customer-owned portion of the program is closed. The company-owned program includes 26 utility-owned solar arrays. New projects include: Greenwood Energy Center, a 1.95 MW solar array which began operation on January 29, 2016; Romulus Solar Array, a 750 kW solar array which began operation on December 21, 2015; and Brownstown Township, a 500 kW solar array which began operation on December 29, 2015.

Consumers Energy Rooftop Solar Pilot Program

Consumers Energy is offering this pilot program to customers who want to have solar on their property. Customers will own the solar system and can choose from financing options. Consumers has partnered with Sun Power to offer a streamlined process to its customers. Solar distributed generation customers can earn bill credits when they generate more energy than they use. The pilot program will be available for 100 installations through December 31, 2018. The Commission authorized Consumers to offer this program to customers under Case No. U-17875.

Community Solar

Electric providers including Consumers Energy, DTE Electric, the Marquette Board of Light and Power (MBLP), Wolverine Power Cooperative, and most recently Lansing Board of Water and Light offer community solar projects that allow customers to realize the benefits of solar without the upfront cost or on-going maintenance associated with self-generation.

On May 14, 2015, the Commission approved Consumers Energy's application to add up to 10 MW of community solar to its renewable energy plan in Case No. U-17752. On March 29, 2016, the Commission approved an application for contracts related to the Solar Gardens program and the construction contract for the 3 MW project to be located at Grand Valley State University (GVSU). On July 22, 2016 the Commission approved a construction contract for 1 MW of solar at Western Michigan University campus. Consumers Energy's Community Solar program, referred to as Solar Gardens, was the first community solar program offered by a rate regulated utility in Michigan. Participants will purchase half kW blocks up to their annual usage and receive a bill credit based on their subscription elections over the 25-year term. Customers can purchase their subscriptions via four options: upfront payment of $1,339; three-year monthly payments of $42 per month; seven-year monthly payments of $21 per month; or, 25-year monthly payments of $10 per month.[7] As of March 31, 2017, the Solar Gardens program is 81.3% subscribed.

DTE began offering its Voluntary Renewable Energy Pilot Program (MI Green Power) in 2017. This program helps customers offset their energy usage with renewable energy. Customers can subscribe in 5% increments up to 100% of their energy use. The subscription charge is $0.072 per kWh and will remain fixed for the life of the program. Customers will receive a credit of $0.041 per kWh; that credit could increase in the future, so the net cost for the program is $0.031 per kWh currently.

Renewable energy is sourced from solar and wind facilities owned by DTE. The most recent solar installations include Lapeer Solar and Detroit Solar. The Lapeer Solar project is 48 MW and the Detroit Solar project is 2 MW.

This program will be open to participants until space has been filled, or for a two-year period ending April 30, 2019.[8] As of October 30, 2017, the program had 4,898 MWh subscribed for non-residential customers and 3,756 MWh subscribed for residential customers.[9]

Lansing Board of Water and Light is developing a community solar program that is expected to produce 300 kW. Customers can lease 300-watt panels for $399. The lease term is 25 years and customers receive a credit on their bills based on the prorated amount of solar energy the customer has purchased.[10] Customers can lease as many panels as desired, as long as their panels are not producing more energy than consumed at the owner's business or

[7] https://www.consumersenergy.com/content.aspx?id=8210
[8] http://www.migreenpower.com/portal/index.html
[9] http://efile.mpsc.state.mi.us/efile/viewcase.php?casenum=18076&submit.x=0&submit.y=0
[10] https://micommunitysolar.org/

residence. Construction of the solar park will begin when 800 panels have been leased. As of June 2017, 400 panels have been leased.

The Marquette Board of Light and Power (MBLP) Community Solar Garden began producing energy September 19, 2017. The Solar Garden consists of 480 panels capable of producing 315 watts each. MBLP customers can purchase a panel for $499. Each panel purchased will result in a $0.063 per kilowatt credit on their bill for power generated by the solar panels. To date, 322 panels have been purchased. Customers can purchase as many panels as they desire as long as they are not producing more energy than they are consuming over the course of a year, up to a maximum purchase of 30 panels. The pay back period is estimated to be 20 years.[11]

Spartan Solar's 1.2 MW solar garden in Cadillac, located across from Wolverine Power Supply Cooperative's facility, has started generating power. Through Wolverine Power Supply Cooperative, five other co-ops across the state (Cherryland Electric, Great Lakes Energy, HomeWorks Tri-County Electric, Midwest Energy, and Presque Isle Electric and Gas) can give their customers a new solar option. Co-op members make an initial investment and in return get a share in the array and a credit on their electric bill. Customers can choose from either a one-time payment of $600, or paying $10 per month for 5 years, for a 15-year subscription. It is estimated that participants can expect an average bill credit of $40 per year. This credit will be based on total monthly array output, and may vary from month-to-month based on weather conditions.[12]

MPSC Staff's Solar Estimate

Each year MPSC Staff compiles an estimate of installed and planned solar in Michigan based on utility filings, the MIRECS (Michigan Renewable Energy Certification System), and other publicly available information. The most recent estimate is shown in Table 6. Installed solar is identified as either kWac or kWdc.

The amount of installed solar grew from 36,118 kW at the end of 2015 to 57,999 kW in 2016. At the end of 2017, the projected estimate of installed solar expected is 120,530 kW, which shows that there was significant solar project construction in Michigan during the year.

[11] https://mblp.org/news/solar-project
[12] https://www.spartansolar.com/

Table 6: MPSC Staff's Estimate – Total Michigan Installed Solar kW

Program	Number of Installations	Total Solar Installed Capacity kW
Experimental Advanced Renewable Program (Consumers Energy's EARP)	379	6,400 (dc)
Consumers Energy Solar Gardens	2	4,000 (dc)
SolarCurrents (DTE Electric-owned projects)	28	20,571 (dc)
IKEA-Canton Store*	1	1,220 (dc)
Lansing Board of Water & Light	3	165 (dc)
Cherryland/Traverse City Light & Power Community Solar	1	52 (ac)
Tri-County Homeworks Community Solar	1	21 (ac)
Spartan Solar	1	1,200 (ac)
Indiana Michigan	1	4,600 (ac)
Solar Net Metering**	2,331	19,770
Total Through 2016	2,748	57,999 kW
Garden Solar	1	1,100 (dc)
Heritage Sustainable Energy (Traverse City)	1	1,000 (dc)
Marquette Community Solar	1	151 (dc)
DTE Lapeer Solar	2	48,280 (ac)
DTE O'Shea Solar	1	2,000 (ac)
MSU	1	10,000 (ac)
2017 Total	7	62,531 kW
Total	2,755	120,530 kW

**IKEA January 27, 2016 company press release:
http://www.ikea.com/us/en/about_ikea/newsitem/012716_pr-IKEA-Canton-solar

*Solar Net Metering is reported in both kWac and kWdc