



Electric Utility Interconnection & Net Metering

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Presentation Available @
www.michigan.gov/rendocs

MPSC Background

- Michigan Public Service Commission
 - Three Governor-appointed Commissioners
 - Regulates 16 investor-owned and cooperative (member owned) electric utilities
 - Regulatory responsibilities for distribution-level electric utility interconnections and the new Renewable Energy Standard (RPS) & net metering program



What is Electric Utility Interconnection?

- A generator must properly interconnect with the utility if it will operate “in parallel” with the utility’s distribution system

Parallel Operation

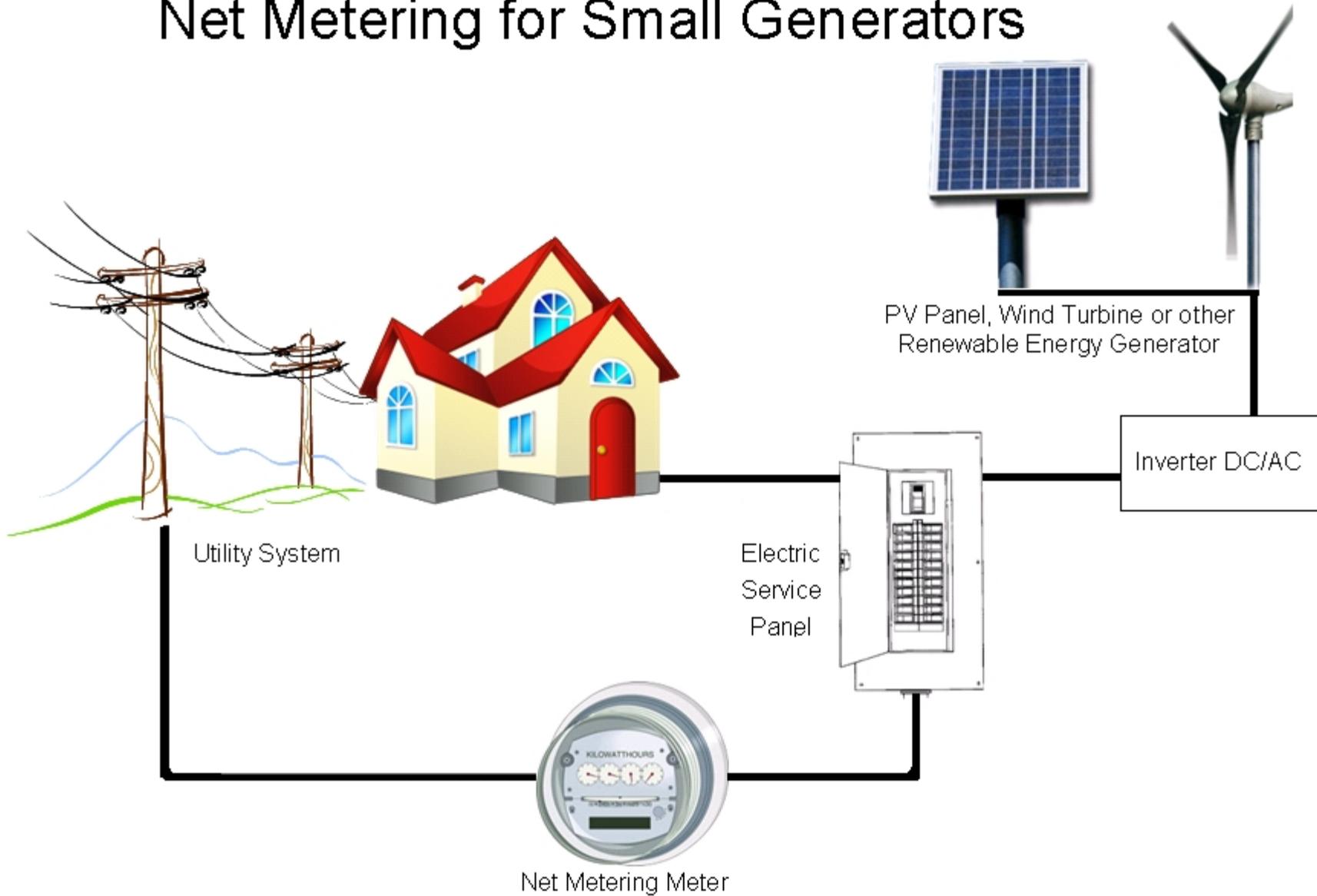
- Both the electric utility and the generator provide electricity to meet the customer’s electrical needs (grid tied)
- The customer’s excess generation can flow out to the utility grid (flow back)
- The customer will not have any excess generation (non-flow back)

Not Parallel Operation

- Directly wiring the generator to provide electricity only to certain dedicated circuits in the home that are not served by utility power
- An emergency/backup generator
- The customer only receives power from their generator and is not a utility customer (off grid)



Net Metering for Small Generators



Interconnection Process for Category 1 – 20 kW and less, Inverter-Based, UL Certified Projects

1. Select generator and project installer
2. Complete and submit interconnection application to electric utility with filing fee
\$75 for interconnection & \$25 for net metering
3. Receive application approval from electric utility
4. Receive and review the Interconnection Agreement from electric utility
5. Install your project according to applicable codes and standards
6. Complete the local inspection
7. Utility meter installation, final inspection & testing, final approval from electric utility
8. **Start generating your own electricity!**

New PA 295

Net Metering Program

Background & Highlights



Where we were...Pre-Act 295

- No explicit legislative authority to establish a net metering program
- 2005 program was designed using a voluntary collaborative process
- Very complicated billing – generally not “net” metering for most utilities
- Billing, metering requirements, agreements were not standard across participating utilities
- Low customer participation and satisfaction

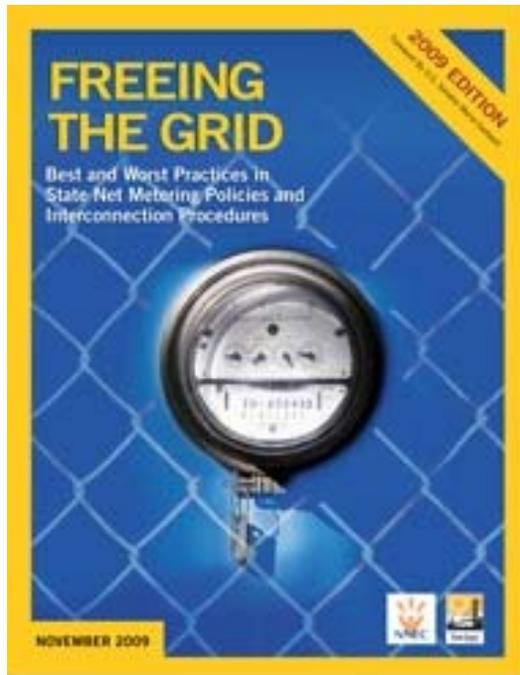


With Act 295...Much Improved Program

- Excellent program for small generator projects
- Increased customer interest
- Expands program with a “modified” net metering offering for renewable generators up to 150 kW and methane digesters up to 550 kW
- Standard application and agreement
- See www.michigan.gov/netmetering



Net Metering State “Grade”



- *Freeing the Grid* 2009 Edition awards Michigan a “B” grade for new net metering program
 - Improved from an “F” (in 2007 & ’08)
 - Michigan now ranks 15th of 44 states with graded net metering programs
- www.freeingthegrid.com

Status of Electric Interconnection & Net Metering Standards

- New Electric Interconnection & Net Metering Standards implementing Act 295 became effective on May 27, 2009
- www.michigan.gov/customergeneration

Net Metering

- Net metering program size can grow to at least 1% of each provider's peak load
- The 1% is allocated among three net metering categories, based on generator size
 - 0.5% for ≤ 20 kW
 - 0.25% for > 20 kW up to 150 kW
 - 0.25% for > 150 kW up to 550 kW (methane digesters only)



Net Metering

Small Projects 20 kW and Under

- Generally, residential customer projects
- Customer is billed based on net usage
- Customer receives a credit equal to the full retail rate for all excess kWh
- Credit is applied to kWh charges in future months and unused credits carry forward indefinitely
- Customer will pay monthly customer charge or system access fees
- No study, testing/inspection or interconnection fees
- Generally approved in under 14 days

Modified Net Metering

Projects from > 20 kW to 150 kW

- Typically, agricultural, commercial, industrial, or institutional customer projects
- Customers pay the full retail rate for electricity deliveries from their electric provider and are credited at the generation portion of the retail rate or a wholesale rate for deliveries of excess generation to the grid
 - For example, one utility's General Service rate: Total retail rate is 12 cents, Generation is about 8.5 cents

Modified Net Metering

Projects from > 20 kW to 150 kW (2)

- No charge for the engineering review or testing/inspection
- Customers pay all interconnection costs, distribution study fees and any required distribution system upgrades
- Customers with generators up to 150 kW can use their generation on-site (behind the meter) without paying a standby charge

Modified Net Metering Methane Digester Projects

- Typically, on-farm projects
- For projects >150 kW up to 550 kW
- Nearly the same as the >20 kW to 150 kW program
- Customers pay the costs of any additional meters, plus “standby charges” equal to imputed distribution charges as if they bought all their energy from the utility

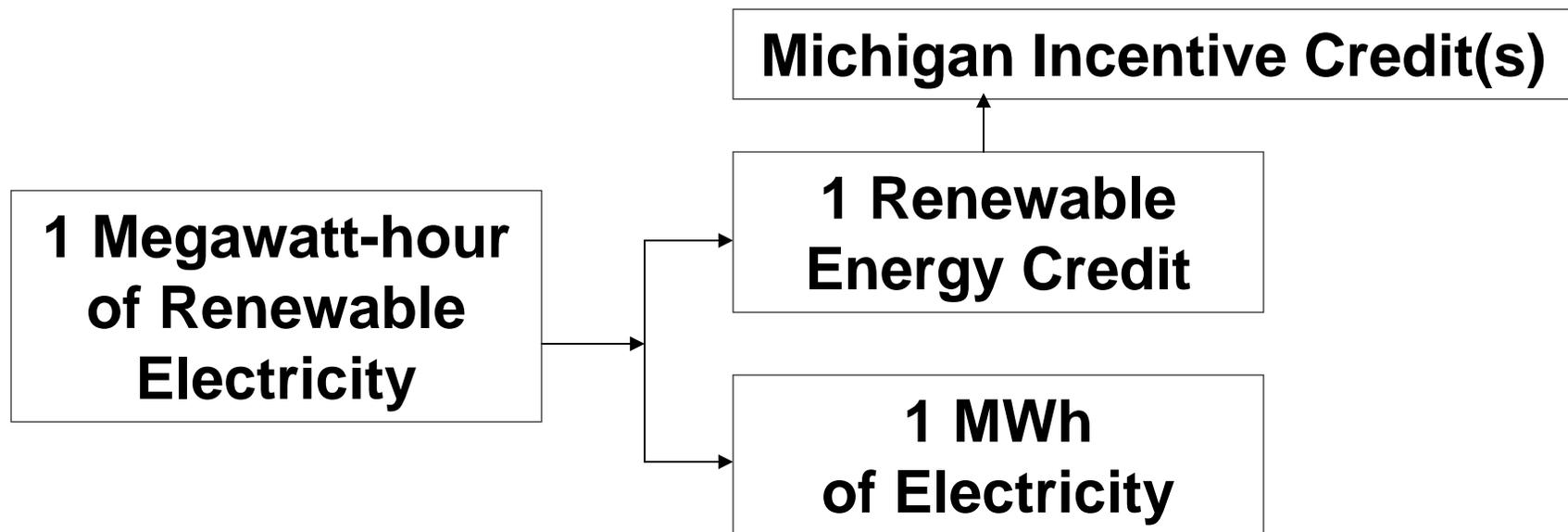
Net Metering Customers Own Their MI Renewable Energy Credits

- Michigan Renewable Portfolio Standard (RPS) compliance is based on Michigan Renewable Energy Credits (MIRECS; www.mirecs.org)
- One REC is created for every megawatt-hour (MWh) of renewable energy generated (1 MWh = 1,000 kWh)
- REC price will be market based. REC price estimates range from 0.7 to 7.0 cents per kWh

Michigan Incentive RECs are like extra credit

- Solar earns two extra RECs per MWh
- Michigan Manufactured Components
- Installation by Michigan workforce
- On-peak generation (not wind)
- Off-peak energy stored in an advanced storage facility and then used to generate on-peak

MIRECs Explained



**Renewable Energy Credit
can be sold separately from the electricity.**

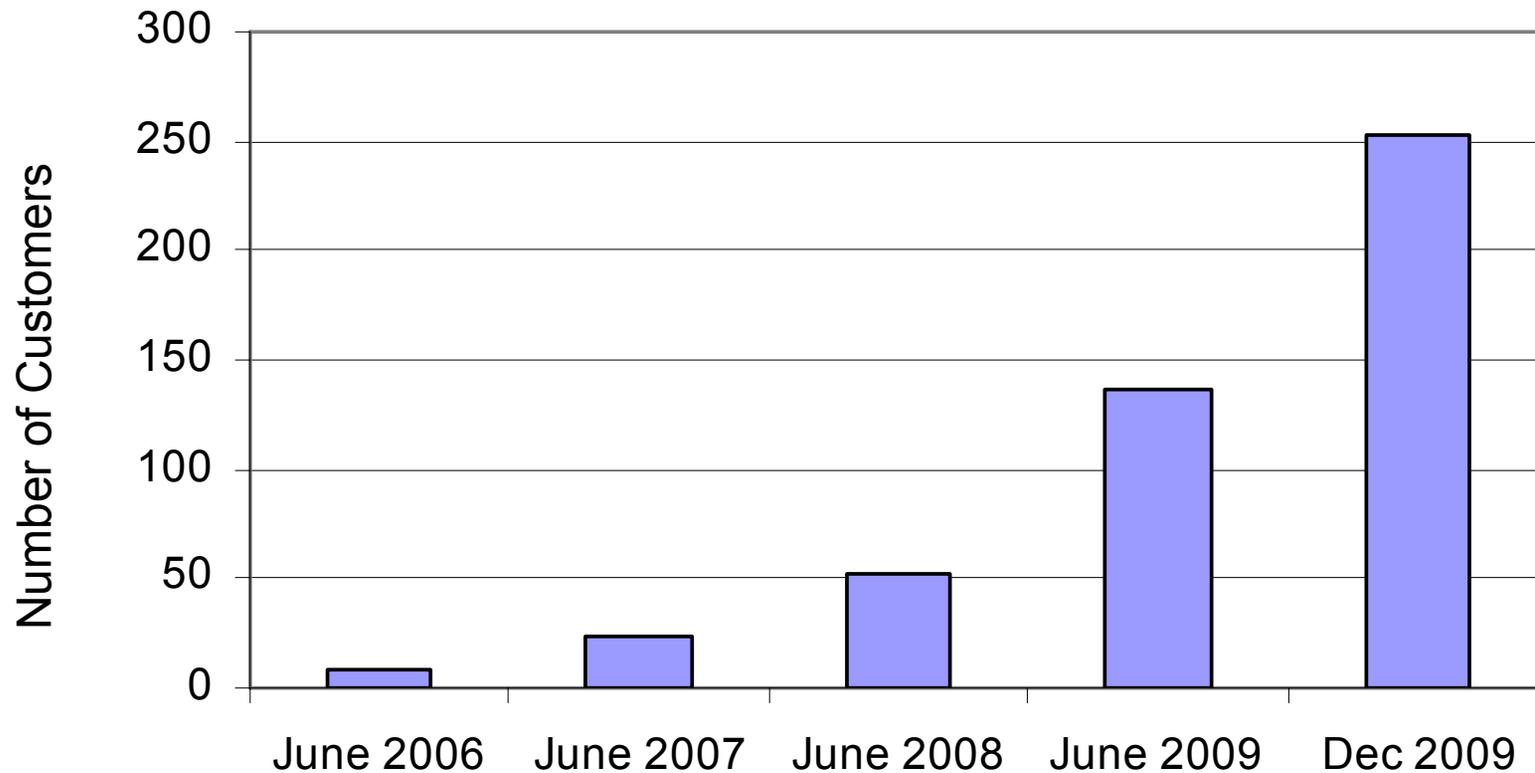
Summary of Michigan Interconnections Projects Completed by Generator Size

Types of Energy	Number of Projects	20 kW and under	>20 kW to 150 kW	>150 kW to 550 kW	>550 kW to 2 MW	>2 MW
Wind	135	133	1	0	0	1
Solar	78	78	0	0	0	0
Other*	21	0	4	0	5	12
Total	234	211	5	0	5	13

Other category includes: landfill gas, dynamometers, diesel & methane digesters
Data includes projects from approximately 2005 until September 30, 2009.

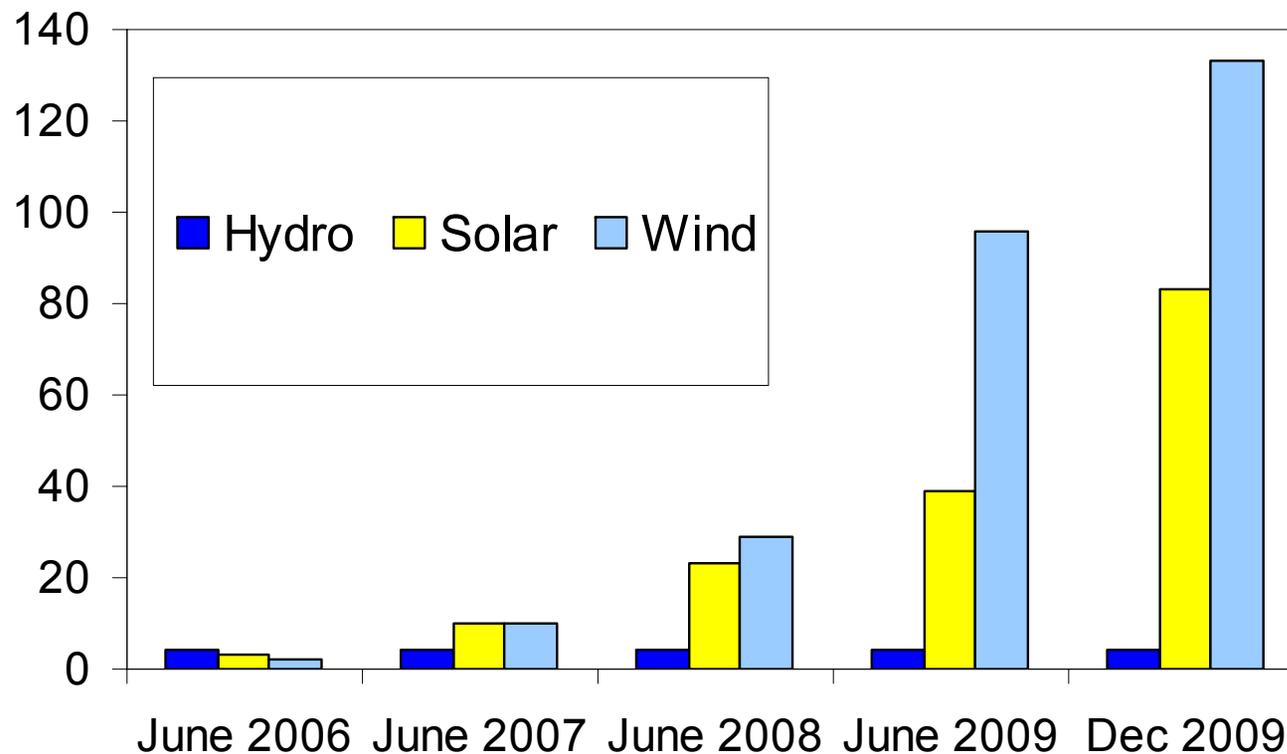
MPSC-regulated providers only. Does not include municipal utilities or member-regulated cooperatives.

Michigan Net Metering Cumulative Installations - December 2009

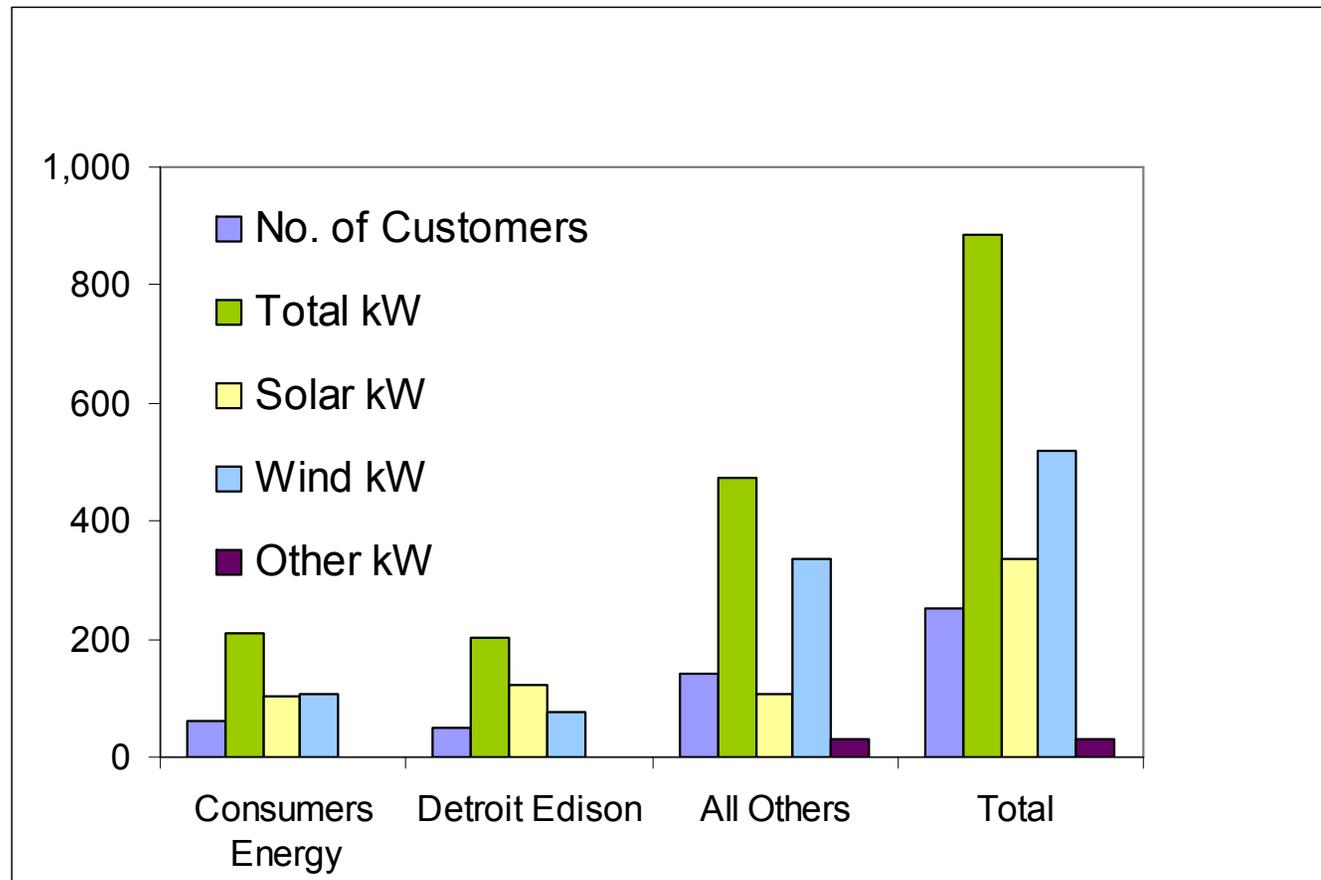


Michigan Net Metering - by System Type

December 2009

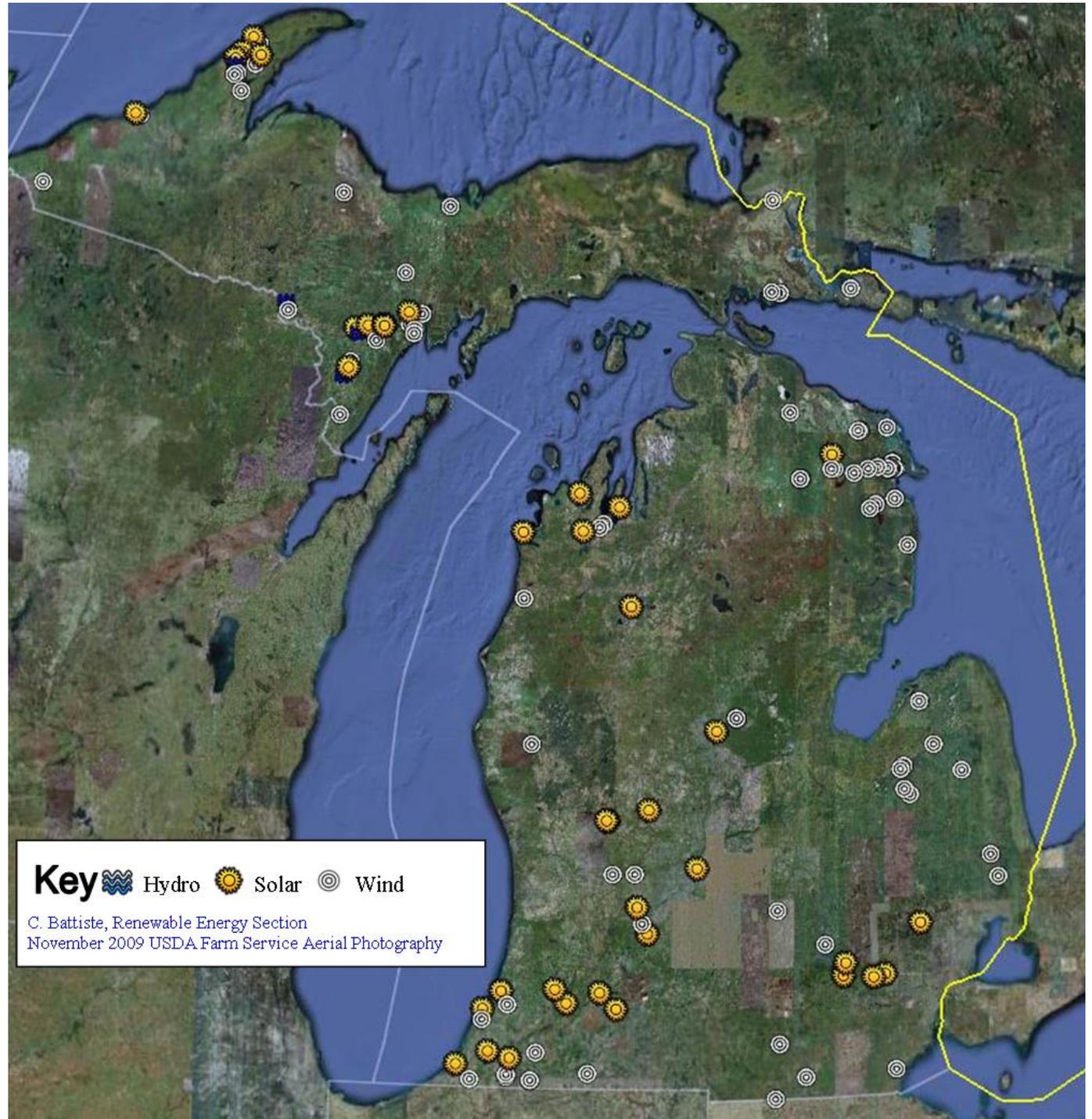


Michigan Net Metering 2009 Participation Summary



Locations of Michigan Net Metering Customers

(Cumulative installations through June 30, 2009, by Zip Code)



Future program improvements?

- Frequently requested net metering scenarios
 - A group of customers (neighbors) invest in a renewable generator
 - A customer installs a renewable generator off-site
 - Generation from a renewable generator project applied to more than one customer billing meter



U-15919 Status

Interconnection Procedures

- Interconnection procedures contain detailed technical information about interconnecting with a utility, applications and interconnection agreements
- There are five sets of interconnection procedures:
 - 20 kW and less, inverter-based and UL 1741 certified
 - >20 up to 150 kW and non-inverter/UL certified 20 kW and under
 - >150 kW up to 550 kW
 - >550 kW up to 2 MW
 - >2 MW



U-15919 Status

Interconnection Procedures (2)

- New rules require utilities to file interconnection procedures for Commission approval
- A 30-day public comment period was held
- Over 200 pages of comments were filed
- We are working on incorporating some of the comments
- A September final order is anticipated



Questions?

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