

Michigan Public Service Commission

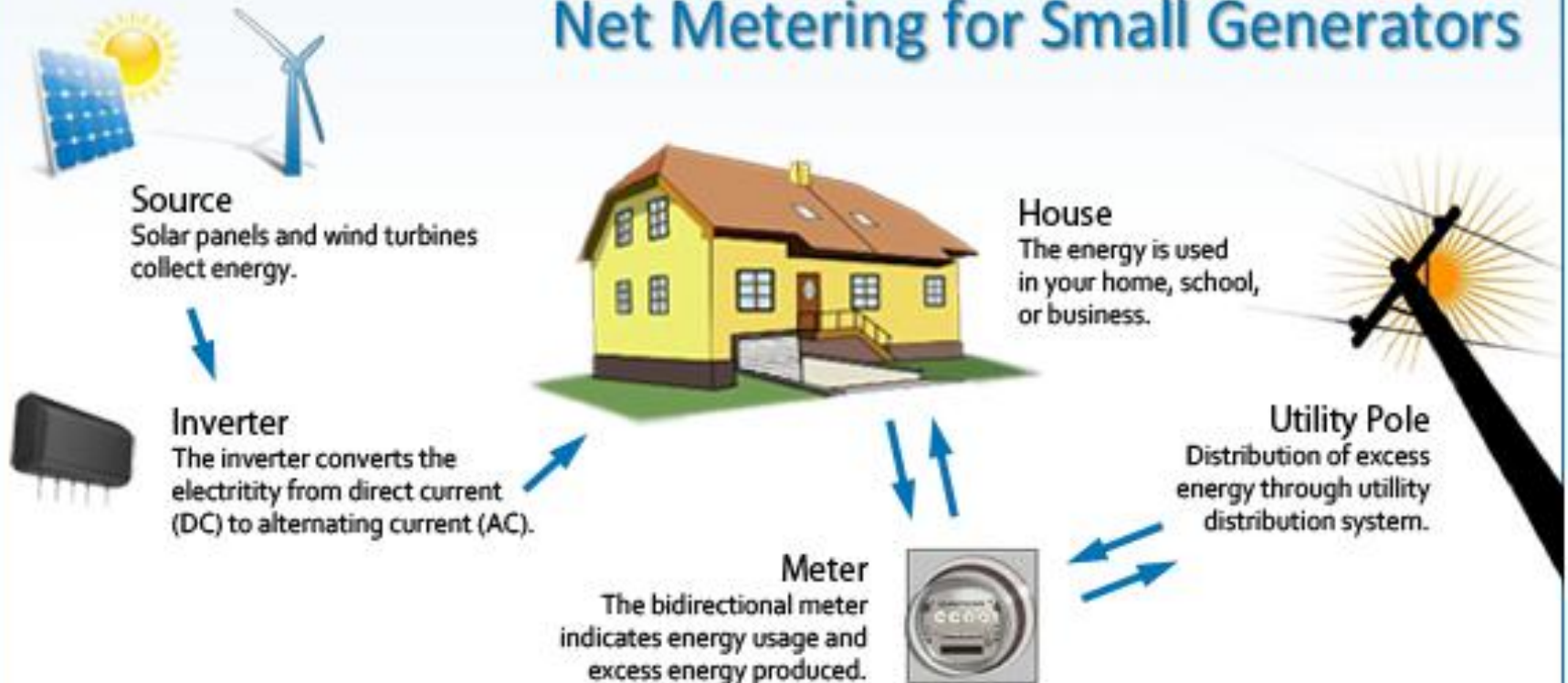
Michigan Net-Metering Case Study

Commissioner Orjiakor N. Isiogu



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Net Metering for Small Generators

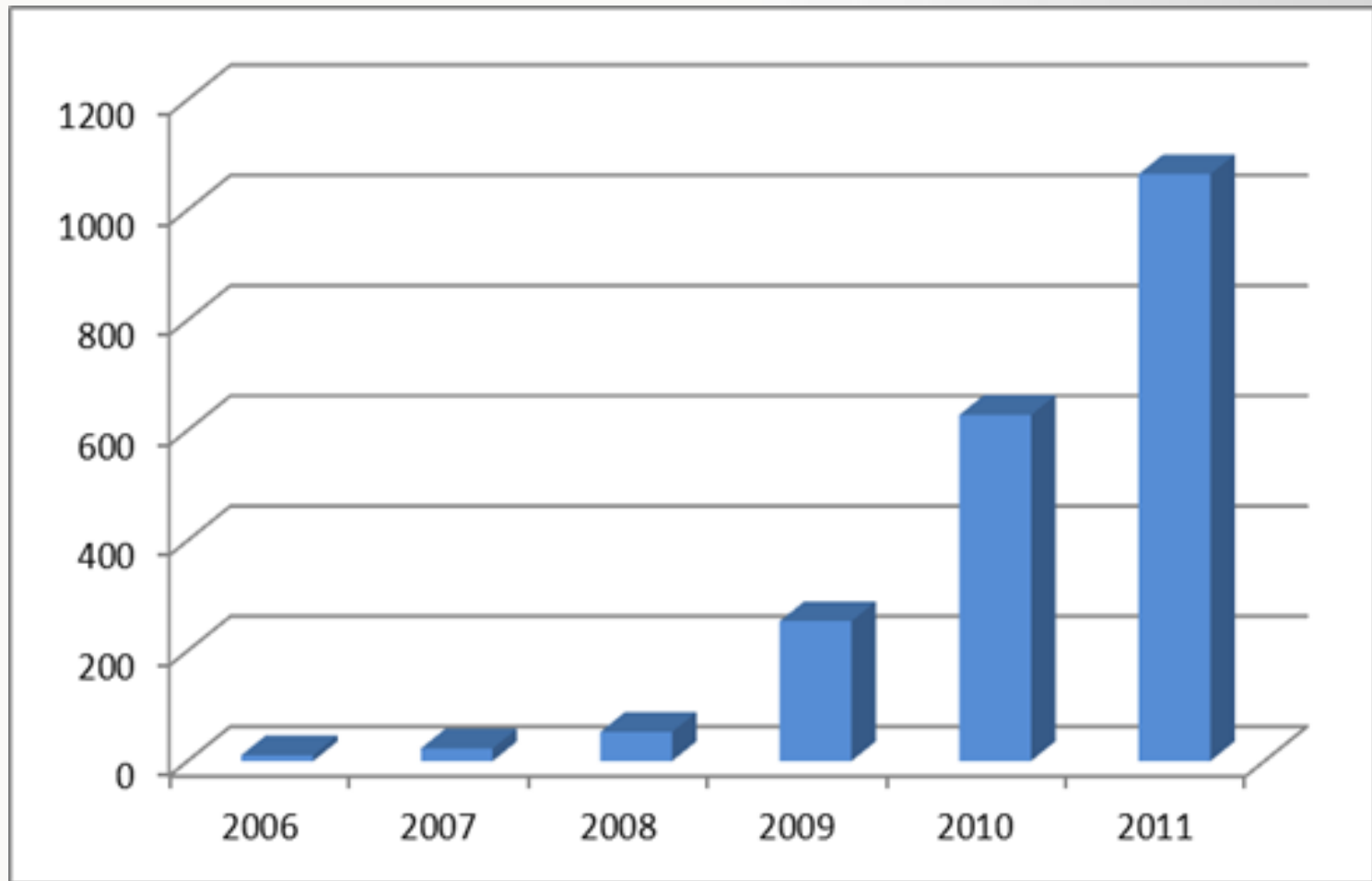


Status of Electric Interconnection & Net Metering Standards

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

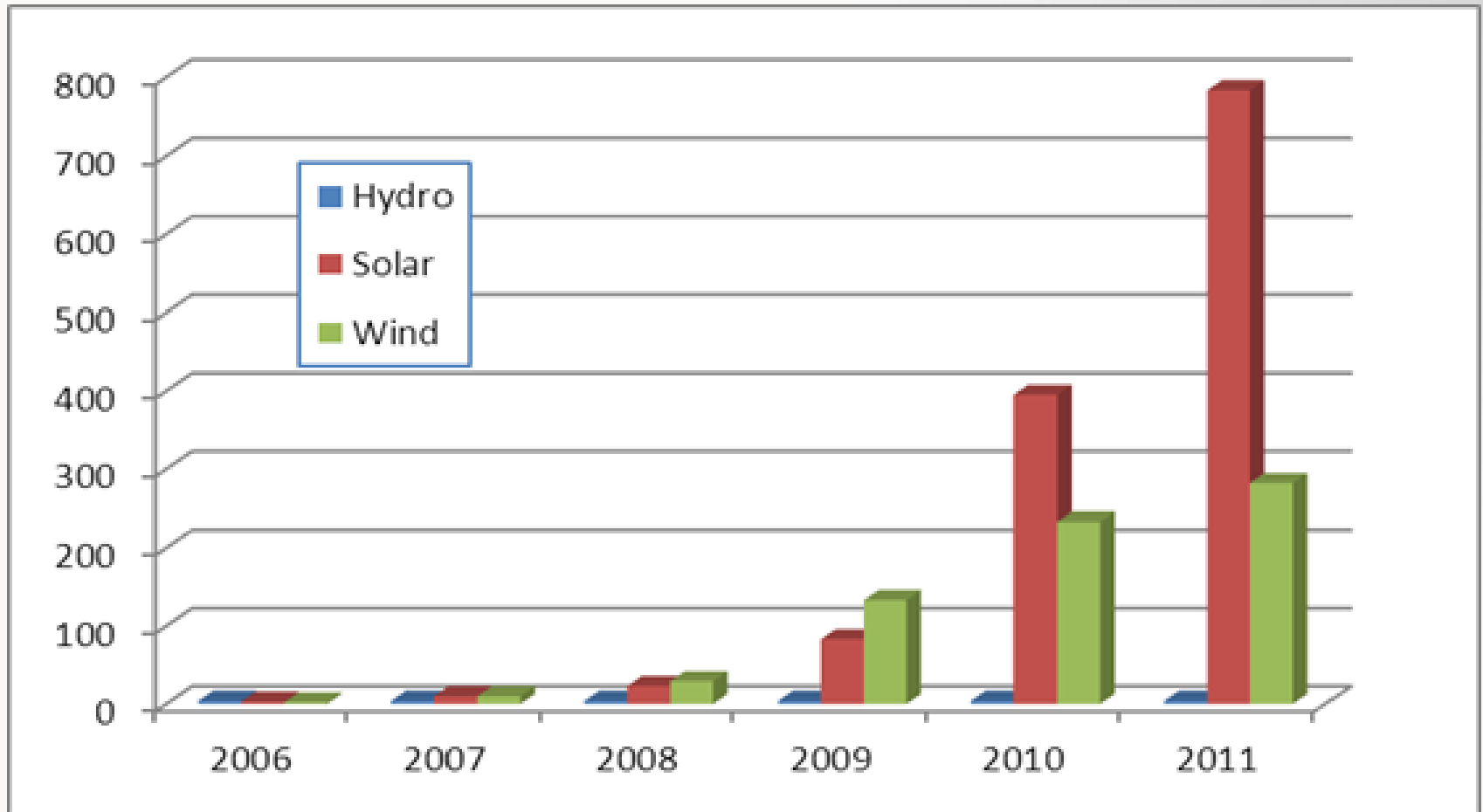


Number of Net Metering Customers



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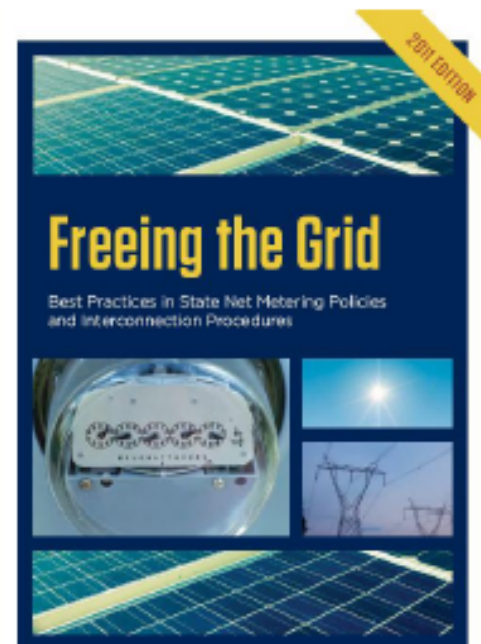
Number of Net Metering Projects by Technology Type



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Scorecard - Update

Net Metering				
F 2007	F 2008	B 2009	A 2010	A 2011
Interconnection				
D 2007	D 2008	C 2009	C 2010	C 2011



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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



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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



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Current and Past Issues (Growing Pains)

- Customers (or their solar/wind installer) begin operating their net metering project without fully completing the interconnection process with the utility
 - If the customer's account isn't set up for net metering, the customer will likely lose credits for any kWh their project sends to the grid
- Time-of-use rate complications
- Who pays for upgraded meters
- Some utilities do not like net metering



Michigan's Net Metering Program

- 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



Category 1 (up to 20 kW) – Sample Bill

Residential Customer

True Net Metering

Wind Turbine Output During Month (2 kW Turbine): 300 kWh
Monthly Usage: 500 kWh

Residential Rate Schedule

Monthly Rate:

Energy Charge: \$0.070923 per kWh

Delivery Charges:

System Access Charge: \$6.00 per month

Distribution Charge: \$0.027489 per kWh

Example Monthly Bill Calculation

500 kWh – 300 kWh = 200 kWh billed usage

200 kWh * (\$0.070923 + \$0.027489) + \$6.00 = \$25.68

(without wind turbine monthly bill would have been \$55.21)



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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



Category 2 (>20 kW to 150 kW) – Sample Bill

Small Commercial Customer

Modified Net Metering

Wind Turbine Output During Month (50 kW Turbine): 7,300 kWh

Meter Info - Inflow: 4,000 kWh Outflow: 3,500 kWh Generator: 7,300 kWh

Total Site Usage: Inflow + Generator – Outflow = 4,000 + 7,300 – 3,500 = 7,800 kWh

General Service Rate Schedule

Monthly Rate:

Energy Charge: \$0.085164 per kWh

Delivery Charges:

System Access Charge: \$15.00 per month

Distribution Charge: \$0.036791 per kWh

Bill Calculation

$4,000 \text{ kWh} * (\$0.085164 + \$0.036791) - 3,500 \text{ kWh} * \$0.085164 + \$15.00 = \204.74

(without wind turbine bill would have been:

$7,800 \text{ kWh} * (\$0.085164 + \$0.036791) + \$15.00 = \966.25)



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Category 2 – Sample Bill

Demand Rate Commercial Customer

Modified Net Metering

Wind Turbine Output During Month (50 kW Turbine): 7,300 kWh

Meter Info - Inflow: 4,000 kWh Outflow: 3,500 kWh Generator: 7,300 kWh

Total Site Usage: Inflow + Generator – Outflow = 4,000 + 7,300 – 3,500 = 7,800 kWh

Peak Demand: 15 kW

General Service Rate Schedule

Monthly Rate:

Capacity Charge: \$12.70 per kW for all kW of Peak Demand

Energy Charge: \$0.046354 per kWh

Delivery Charges:

System Access Charge: \$25.00 per month

Capacity Charge: \$1.95 per kW for all kW of Peak Demand

Distribution Charge: \$0.018664 per kWh

Bill Calculation

$$15 \text{ kW} * (\$12.70 + \$1.95) + 4,000 \text{ kWh} * (\$0.046354 + \$0.018664) - 3,500 \text{ kWh} * \$0.046354 + \$25.00 = \$342.58$$

(without wind turbine bill would have been:

$$15 \text{ kW} * (\$12.70 + \$1.95) + 7,800 \text{ kWh} * (\$0.046354 + \$0.018664) + \$25.00 = \$751.89$$



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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 - What it's not...

- Most common misconceptions
 - I can make money by net metering
 - Net metering is offered by every electric provider in Michigan
 - I'll install my project, start generating and then apply for interconnection and net metering
 - The net metering credit is calculated by dividing the total bill by the number of kWh



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