



MPSC DG Tariff Workgroup

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Central Question

What DG tariff will create fair and reasonable cost allocation for DG customers?

Trend in Utility Rate Design

“Utilities are increasingly considering alternative rates structures that are designed to recover fixed utility from residential PV customers with low net electricity consumption...Demand charges resulted in an increase in utility bills of 35% or higher for PV customers in three of the five utilities evaluated.... The impact of demand-based rates on customer bills critically depended on the rate design, load profile and coincidence of PV production with load.”

Ref NREL Impact of Rate Design, “Alternatives on Residential Solar Customer Bills: Increased Fixed Charges, Minimum Bills and Demand-Based Rates”



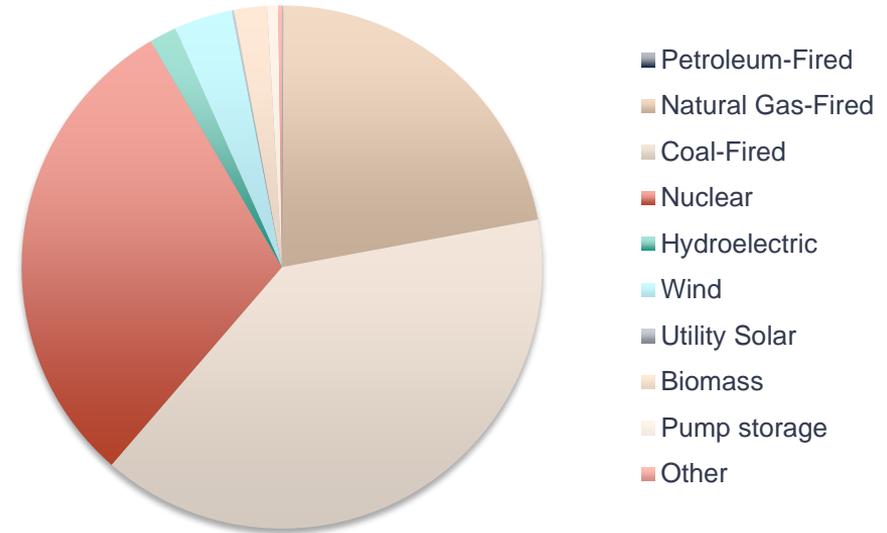
DG benefits

Customers with solar reduce their energy usage but also:

- Create grid support
- Reduce transmission cost
- Reduce costs energy generation cost
- Reduce peak energy generation cost
- Reduce capacity costs
- Reduce outages
- Improve power quality

Where are we now?

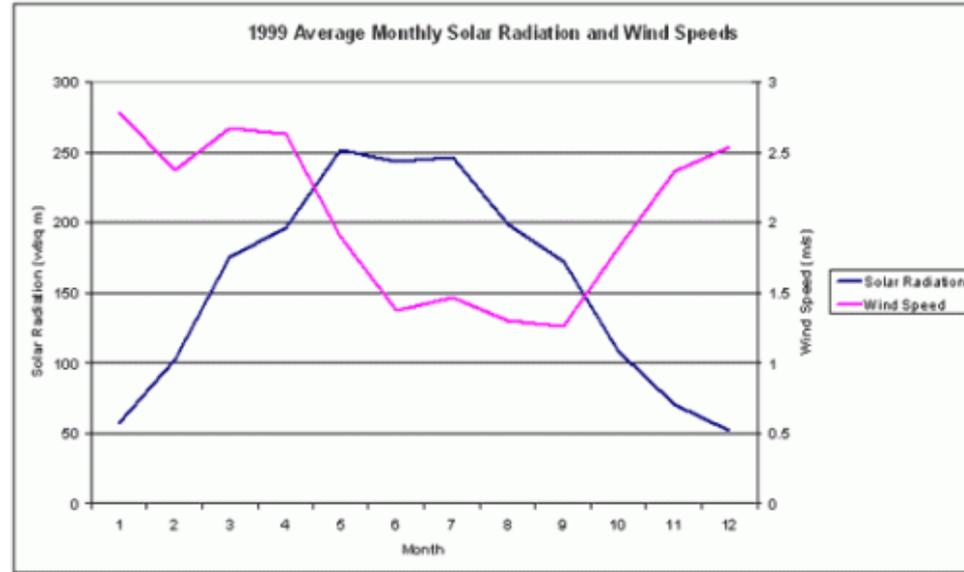
Michigan generating technologies Jun 17



Net metering customers represent 0.02% of generating capacity

Balancing Technologies

Wind and Solar are complementing generating technologies.



Analysis

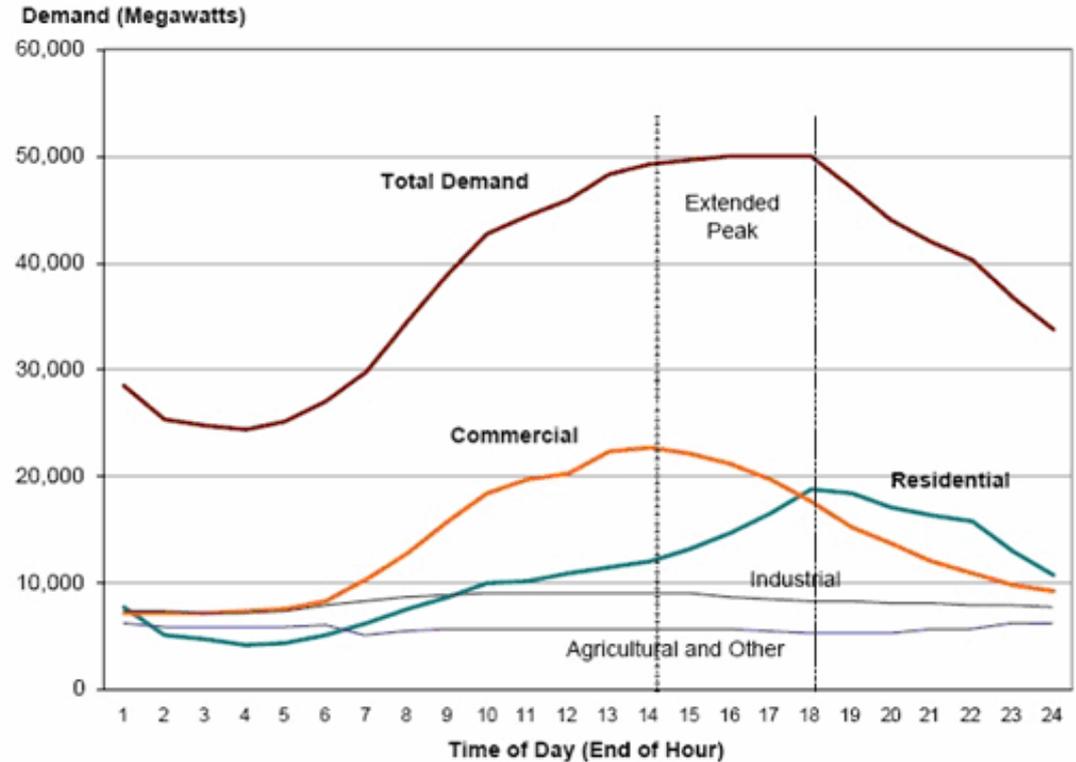
Simulations were run for the average DG customer

- Each class (monthly or hourly (for rates with time of use))
- Compared to the non-DG customer cost (thus cost allocated)

Resulting in DG Tariff applied to each class and rate. This methodology can be applied to subsequent changes in rates.

Energy

Energy generated should be credited based upon the time of day and/or year produced



Demand

Demand charges allocate costs mostly for generating equipment.

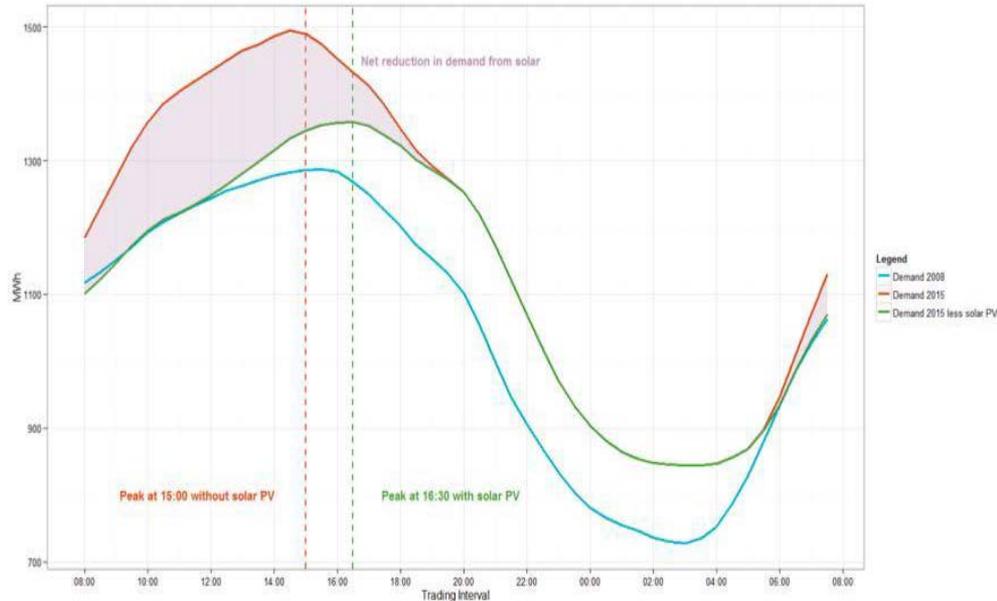
Solar systems should be credited for AC size of the solar system weighted for time of day and/or year of solar power produced.



Distribution

Solar produces power when the grid is most stressed

- Reducing line losses
- Increasing distribution capacity at critical times
- Reducing the need for additional investments in distribution infrastructure



Service Charge

DG customer is being overcharged for customer charges.

Average residential customer generates nearly 100% of annual consumption, thus the customer charge is nearly all of their bill.

Service charges should be based upon the % of the average usage in the class.

Recommended DG tariff

Energy

DG tariff should credit
excess energy at retail
rate plus the listed
credit

Class	Energy kWh outflow
RS	<\$0.01602/kWh>
RDP	<\$0.13854/kWh>
Exp Plug-in	<\$0.13927/kWh>
RT	<\$0.03053/kWh>
GS	<\$0.07255/kWh>
GSTU	<\$0.08946/kWh>
GSD	<\$0.04610/kWh>
GP (CVL 1)	<\$0.06959/kWh>
GP (CVL 2)	<\$0.07459/kWh>
GP (CVL 3)	<\$0.07279/kWh>
GDP (CVL 1)	<\$0.02291/kWh>
GDP (CVL 2)	<\$0.02791/kWh>
GDP (CVL 3)	<\$0.02613/kWh>

Delivery

Power generated
decreases system
delivery costs

DG tariff should
credit delivery for all
kWh generated
(offsetting delivery
charges)

Class	Delivery
	kWh generated
RS	<0.047220/kWh>
RDP	<0.047220/kWh>
Exp Plug-in	<0.047220/kWh>
RT	<0.047220/kWh>
GS	<0.042154/kWh>
GSTU	<0.042154/kWh>
GSD	<0.030042/kWh>
GP (CVL 1)	<0.047220/kWh>
GP (CVL 2)	<0.047220/kWh>
GP (CVL 3)	<0.047220/kWh>
GDP (CVL 1)	<\$20.72382/KW>
GDP (CVL 2)	<\$22.65348/KW>
GDP (CVL 3)	<\$24.66541/KW>

Demand

DG decreases
system demand
reducing Demand
allocated costs.

DG tariff should be a
Credit for solar
system size

Class	Demand or Capacity PV system size credit
GSD	<\$9.82411/KW>
GDP (CVL 1)	<\$20.72382/KW>
GDP (CVL 2)	<\$22.65348/KW>
GDP (CVL 3)	<\$24.66541/KW>

Customer Charge

Allocated cost for customer charge should relate to % of customer utility usage as compared to non-DG customer

Class	System access charge Per customer
RS	<\$6.93>
RDP	<\$6.93>
Exp Plug-in	<\$6.93>
RT	<\$6.93>
GS	<\$8.60>
GSTU	<\$8.60>
GSD	<\$12.90>
GP (CVL 1)	<\$0.40>
GP (CVL 2)	<\$0.40>
GP (CVL 3)	<\$0.40>
GDP (CVL 1)	<\$0.80>
GDP (CVL 2)	<\$0.80>
GDP (CVL 3)	<\$0.80>

Thank You

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