

RCI-6. Incentives to Promote Renewable Energy Systems Implementation

Policy Description

Customer-sited distributed generation powered by renewable energy sources provides electricity system benefits such as avoided capital investment and avoided transmission and distribution losses, while also displacing fossil-fueled generation and thus reducing greenhouse gas emissions. Increasing the use of renewable distributed generation in Michigan can be achieved through a combination of regulatory changes and incentives.

Distributed generation technologies exist across the spectrum of residential, commercial and industrial facilities. Customer-sited renewable distributed generation can include solar photovoltaic systems, wind power systems, biogas and landfill gas-fired systems, geothermal generation systems, and systems fueled with biomass wastes or biomass collected or grown as fuel. Policies to encourage and accelerate the implementation of customer-sited renewable distributed generation can include direct incentives or requirements for power purchases, market incentives related to the pricing of electricity output by renewable distributed generation, state goals or directives, and favorable rules for interconnecting renewable generation systems with the electricity grid. Incentives for non-electric renewable energy applications should also be included.

Other potential technologies or elements that could be encouraged under this policy option include:

- Solar roofs (roofing materials with built-in solar photovoltaic cells, or solar PV panels erected on roofs).
- Solar water heating and solar space heating systems.
- Wind powered systems, particularly for rural areas.
- Biomass-fired generation, space, or water heating systems.
- Programs targeted at specific customer sectors (e.g., residential, commercial, industrial), or specific markets within sectors.
- Tax credits, and/or utility or other incentives to lower the first cost of distributed energy systems to users.

Potential supporting measures for this option include training and certification of installers and contractors, net metering and other pricing arrangements, interconnection standards, and the creation or support of markets for biomass fuels. Through an educational campaign (see policy options RCI-5 and CCI-5), individuals and businesses can also gain a better understanding of renewable energy options and of the requirements of the program ultimately adopted in Michigan.

Policy Design

The TWG recommends that Michigan set as a minimum target the addition of small-scale customer-sited distributed renewable generation consistent with its overall annual goals

for renewable generation. Renewable generation in Michigan at this time is recognized to be ~3-4%, but most of this is large-scale, centralized renewable generation.

Goals: Increase total annual electrical generation from small-scale customer-sited distributed renewable sources in Michigan to 1% of total annual MWh by 2010, then increasing by an additional 1% per year through 2025 (i.e., 5% in Year 2; 6% in Year 3, etc.).

Timing: As noted above.

Parties Involved: MPSC, utilities, small-scale renewable generators, and others depending on implementation mechanisms selected.

Implementation Mechanisms

- One approach that has proven effective in encouraging renewable generation is feed-in-tariffs (FITs), also known as Fixed-Rate or Advanced tariffs. FITs typically obligate utilities to pay an incrementally higher (above market) price to distributed generators reflecting the cost disadvantages of investing in renewable resources. There could be a single tariff for a set of renewable sources, or a series of tariffs for specified types of renewable resources. Utilities typically purchase renewable energy from an independent generator at a fixed price over a long-term period. The price is set so the independent generator can earn a return sufficient to cover capital costs and a reasonable profit. Prices vary by technology type (e.g., solar photovoltaic generators typically receive a higher price than utility-scale wind generators) and by location (e.g., wind turbines in regions with lower wind resources may receive a higher price than wind turbines in higher wind resource areas). FITs are reviewed on an on-going basis with the goal of reducing the power purchase price as markets for renewable energy generation mature. The widespread use of solar photovoltaics and other renewables in Germany is widely attributed to that country's adoption of a feed-in-tariff policy.
- Information and education: Would include training and education programs and certification for building planners, builders/contractors, energy managers and operators, renewable energy contractors, and state and local officials on the incorporation of distributed renewable generation and solar space/water heat in building projects. Would also include programs for consumer and elementary/secondary education.
- Technical assistance: Assistance in siting, designing, planning renewable systems.
- Funding mechanisms and or incentives: These might include low-interest loan programs, rebates on capital costs, tax incentives, attractive rates for power purchases/net metering, and other incentives.
- Voluntary and or negotiated agreements
- Codes and standards: Common interconnection rules and standards are needed. A national IEEE standard, IEEE #1547, has been adopted to facilitate DG installations.

- Market based mechanisms: Net metering for some renewable distributed generation systems, and possibly avoided-cost pricing rules for others²⁶.
- Pilots and demonstration projects, such as renewable systems in government buildings
- Research and development: Support for development of distributed renewable generation systems research.
- Regulatory: Complete Environmental Portfolio Standard (EPS) process at the State level and complete Sustainable Energy process for the State.
- The Governor's Energy Office could set up an audit program (with audits to be outsourced). Wisconsin's performance-based system could serve as a model for implementation of this policy.

Related Policies/Programs in Place

- A voluntary statewide net-metering policy is in effect (MPSC Case No. U-14346). A commission is currently looking at net-metering, fossil fuel plant efficiencies (generation), and fuel sources, and additional legislation is currently pending (SB 1246).
- Voluntary green energy programs through municipal and major utilities. According to MPSC, there are eight utilities in Michigan that offer green pricing programs.

Type(s) of GHG Reductions

- CO₂ reduction from avoided fossil-fueled electricity production.
- Modest reduction in emissions of CH₄ from avoided fuel combustion in electricity generation and avoided natural gas pipeline leakage. Likely small reductions in N₂O and Black Carbon emissions from avoided fuel combustion in electricity generation.

Estimated GHG Reductions and Costs or Cost Savings

TBD – [The benefits and costs of this policy are to be analyzed and quantified over the coming months.]

Data Sources: [Not Applicable, or TBD, as approved by the TWG]

Quantification Methods: Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval.

Key Assumptions: [TBD, as approved by the TWG]

Key Uncertainties

It is unclear at this time how many customers would be interested in installing customer-sited, distributed renewable energy generation.

Additional Benefits and Costs

- Reducing dependence on imported fuel sources
- Reducing energy price increases and volatility
- Reducing peak demand and improving the utilization of the electricity system
- Reducing the risk of power shortages
- Supporting local businesses and stimulating economic development
- Enabling avoidance of energy supply projects
- Reducing water consumption by power plants
- Reducing pollutant emissions by power plants and improving public health
- Increased flexibility of electricity supply for consumers hosting generation.
- Central-station power plant cooling water savings
- Potential local air quality impacts (may be positive or negative, depending on technology)
- Saving consumers and businesses money on their energy bills (and/or offering a new income stream)
- Reducing dependence on imported fuel sources, and reducing vulnerability to energy price spikes
- Where waste biomass fuels are used, possible reduction in disposal cost, reduction in environmental impacts related to disposal
- Electricity (grid) system benefits, including reduced peak demand, reduced capital and operating costs, improved utilization and performance of the electricity system, reduced pollutant emissions from power plants and related health improvements
- Supporting local businesses (related to renewable system sales, installation, and service, and possibly biomass fuel supply) and stimulating economic development.

Feasibility Issues

- Costs could be very high for monitoring and verification.
- This effort is contingent upon state approval and appropriation of funding and/or funding mechanisms.

Status of Group Approval

Pending – [until MCAC moves to final agreement at meeting #7 or #8]

Note: The RCI TWG recognizes that this policy option is parallel with and may be nearly identical to the Energy Supply TWG's policy option ES-12. RCI-8 also relates closely to distributed renewable generation. RCI and ES are in discussions as to if and how it may be appropriate to consolidate RCI-6 and/or RCI-8 together with ES-12. Currently, RCI understands that ES-12 targets 1% of summer peak load (~240 MW of new small-scale distributed renewable generation) by 2015, growing to 3% (~715 MW) by 2025, and that opportunities for non-electric and other energy sources would be included (e.g., off-grid applications, geothermal, solar hot water, etc.).

Level of Group Support

TBD – [blank until MCAC meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the MCAC]

RCI-8. Net Metering For Distributed Generation

Policy Description

Net metering in a broad sense refers to policies that provide the opportunity for individuals or businesses to obtain financial benefits from small electricity generators installed at their home or business location. A basic form of net metering allows the consumer to deliver any excess generation from its small generator to the utility through the standard energy meter, which runs both forward and backward during the billing period. The customer is charged by the utility only for the net amount of energy taken from the utility during the period, which provides a financial benefit at the utility's retail charge for all electricity produced by the customer generator (i.e., the displaced utility kWh's plus credit on future bills for power beyond the customer's usage delivered to the grid). Variations on the basic form of net metering include: (i) limiting the benefit to the value of grid power offset by customer generation during the billing period (no carryover); (ii) a net purchase and sale method that measures flow separately in each direction, with customers paying the utility retail rate and receiving a wholesale rate for the excess generation; and (iii) one or more methods combined with a separate charge to maintain the customer's contribution for distribution and any transmission related costs.

Whatever form it takes, the purpose of a net metering arrangement is to provide financial benefits to the customer which can offset part of the cost of the small generator.

Distributed generation (DG) refers to small electric generation sources dispersed throughout the grid on the premises of utility customers. It is sometimes referred to as on-site, dispersed or decentralized generation. Benefits of DG can include reduced transmission losses because the power is generated near the point of use, a reduction in the size of distribution power lines, and environmental benefits where renewable or cleaner fuel sources are used. Examples include rooftop solar panels, small wind turbines, natural gas fueled micro-turbines, or micro-hydroelectric generators.

Policy Design

A voluntary, statewide net metering program was adopted by the MPSC in March, 2005 (Case No. U-14346) limited to renewable energy facilities with capacity under 30 kW and capped at the greater of 100 kW or 0.1% of a utility's peak load. Qualifying facilities must be sized no larger than necessary to meet the customer's needs. Several billing configurations are permitted at the option of the utility starting with the basic net metering form, with credits for excess generation being for allowed up to 1 year. Any excess credits after one year go to the utility to offset program costs. All regulated investor-owned and cooperative electric utilities are participating.

The Federal Energy Policy Act of 2005 requires the state to consider adopting a new standard whereby all public utilities would have to offer net metering service to their customers. The MPSC is considering whether to adopt this standard and is also considering possible changes to the voluntary program described above.

The Michigan Legislature is considering measures that would establish a statewide program requirement with larger size limits on the facilities and total program, a mandate to use the basic net metering format, and related measures on interconnection of facilities.

Goals: Secure 2% of statewide summer peak electrical demand (~475 MW¹) through net metered distributed generation sources by 2012, continuing at this percentage through 2030 as electrical demand grows.

Timing: As noted above.

Parties Involved: MPSC, utilities, distributed generation sources.

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

- Newly passed legislation (Public Act 295 of 2008) requires a statewide net metering program to be developed and implemented. Specifically, the legislation includes the following provisions: (1) MPSC order and rule promulgation in 180 days; program applies to regulated electric utilities and AESs; all classes eligible; 10 year minimum program life; capacity limited to customer need; (2) program limit at 1% of in-state peak load for prior year; allocated 50% to systems < 20 kW, 25% to systems from 20 kW-150 kW and 25% above 150 kW; notify MPSC when program reaches limit; (3) select eligibility in the order applications are received (where eligibility means renewable energy systems < 150 kW or methane digesters < 550 kW); (4) no retaliatory electric service denials; (5) program to include uniform interconnection, code compliance (e.g. IEEE 1547), uniform application, true net metering for systems ≤ 20 kW (single meter), modified net metering above 20 kW (power supply component of retail rate); (6) records maintained by utility/AES.
- Michigan 21st Century Energy Plan
- A voluntary, statewide net metering program was adopted by the MPSC in March, 2005 (Case No. U-14346) as noted above.

Note: With the August 6, 2008 MPSC order in U-15316, the discussion might shift to unspecified maximum net metering potential up to the total amount of utility generation. (Net metering is defined as available to all customers to offset up to 100% of utility supplied energy during a billing period.) The uncertainty lies with what level of subsidy is needed to have customers will be willing to incur the capital costs and other duties of operating their own generation. This order may end discussion around currently pending legislation SB 1246. Net metering could be considered as available, with further decisions/filings coming by the end of 2009.

¹ According to Michigan's 21st Century Plan, 2% of statewide summer peak electricity demand in 2006 of 23,756 MW equates to approximately 475 MW.

Type(s) of GHG Reductions

TBD – [as approved by the TWG]

Estimated GHG Reductions and Costs or Cost Savings

TBD – [as approved by the TWG]

Data Sources: [TBD, as approved by the TWG]

Quantification Methods: [e.g., Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]

Key Assumptions: [TBD, as approved by the TWG]

Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

TBD – [as needed and approved by the TWG]

Status of Group Approval

Pending – [until MCAC moves to final agreement at meeting #7 or #8]

Note: The RCI TWG recognizes that this policy option is related closely to the Energy Supply TWG's policy option ES-12, as does RCI-6 concerning distributed renewable generation. The RCI and ES TWGs are in discussions as to if and how it may be appropriate to consolidate RCI-8 and/or RCI-6 together with ES-12. Currently, RCI understands that ES-12 targets 1% of summer peak load (~240 MW of new small-scale distributed renewable generation) by 2015, growing to 3% (~715 MW) by 2025, and that opportunities for non-electric and other energy sources would be included (e.g., off-grid applications, geothermal, solar hot water, etc.).

Level of Group Support

TBD – [blank until MCAC meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the MCAC]