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From: Randy Smith [mailto:randy@trashbuddy.com]

Sent: Saturday, December 16, 2006 10:49 AM

To: MPSC EFILE CASES

Cc: SenJAllen@senate.michigan.gov; howardwalker@house.mi.gov

Subject: Case No. U-15113 interconnection

Please see attached comments.

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Michigan Public Service Commission
Executive Secretary
MPSC
PO Box 30221
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By e-mail: mpscefilecases@michigan.gov

Subject: Michigan Public Service Commission's independent power producers' connection to an electric utility system, Case No. U-15113. Commonly known as "Net Metering".

Dear Commission Members:

In the last 18 months Renewable Services, LLC has been involved in the design and installation of about 22 KW of solar electric projects throughout Michigan. As well as, worked extensively with the development of the Michigan Energy Demonstration Center at Northwestern Michigan College and I thank you for this opportunity to comment on utility interconnection with solar and wind.

Independent power producers or dispersed electricity production for small scale (say under 1MW) are restricted in Michigan and needs revision. Policy that impacts net metering systems that produce electricity need to change to provide incentives and designed for simplicity. Please consider the following:

Interconnection to utility grid systems is proven technology around the world and in over 30 states in the US. Simple verification of the manufactures UL listing for grid connection should be satisfactory for grid interconnection. A lockable disconnect, serviceable by the utility should suffice for redundant safety concerns when utility work is required.

Michigan manufactures are producing solar equipment that could be utilized in this effort. However currently this equipment is being shipped overseas where incentives exist for dispersed electric production. A change in this policy could provide for expanded renewable energy economy in Michigan and meet the growing energy demands in the State.

Even though grid interconnection is popular around the world some Michigan utilities seem to be unfamiliar with the technology. The Public Service Commission could change that.

At the same time public utilities are clamoring to produce more electricity to meet demand roadblocks are placed on reliable available sources of wind and solar. Wind and solar energy production complement one another in that the wind blows when the sun does not shine. Not every business or home is going to apply the technology. State policy should encourage dispersed

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renewable energy production by willing customers/residents/business throughout the State. And provide incentives. A sample of the technology sophistication follows:

For example: a standard off the shelf Xantrex Inverter has the following "Islanding Protection".

All of the major brands of inverter/chargers include the protective systems. These systems are used to protect the inverter and the installer/operator/utility personnel from hazardous conditions. The following excerpts are from the Xantrex manuals :

- **Grid shorted** -- Normally, when the utility power fails, the inverter momentarily tries to power the entire neighborhood. This condition looks like a short circuit to the inverter and causes it to reach the over current protection setting and shuts off. It then opens its internal relay and disconnects from the utility grid. This protective system operates instantly (under four milliseconds).
- **Grid open** -- The inverter can tell when there is no current being delivered to the grid and it will disconnect. This is used when a disconnected switch is opened or the power line which feeds the installation is cut. This protective system may require up to one second to respond.
- **Islanding** -- This occurs when the grid has failed and the "neighborhood" that the inverter is powering requires the same amount of power that the inverter can supply. This balanced condition is often called "**islanding**". The islanding detection circuit checks the grid condition on each cycle. The inverter watches the utility grid and waits for it to rise a couple of volts before it begins to invert again. This is done on each cycle when SELL mode is activated. Typically, disconnection is achieved in a few cycles after the utility has failed. If a large electric motor is connected, it may provide enough generator capacity that the inverter thinks the grid is still connected. This can fool this protective system. Two additional protective systems are provided to then handle this condition over/under frequency and over/under voltage detection.
- **Over/Under Frequency** -- Since the inverter locked onto the frequency of the "Islanded" utility grid, the frequency of the system will drift out of regulation in a short amount of time during an islanding condition. This protective system may require up to one second to respond. The inverter will shut off and disconnect after the frequency exceeds +/- 1 hertz of the nominal frequency.
- **Over/Under Voltage** -- Since the inverter does not regulate the voltage of the utility grid while selling power into it, the AC voltage will drift out of regulation in a short amount of time during an islanding condition. This protective system may require up to one second to respond. The inverter will shut off and disconnect after the voltage exceeds +/- 10% of the nominal AC voltage.

Each SW series inverter/charger is individually tested to ensure operation of the islanding protection system. A signed certificate by the test technician of the test results is included with each unit.

Net Metering needs to regulate as if is an electric bank account for electricity. Allowing the utility to keep the net proceeds of electricity at the end of the year is like saying the bank can keep our savings interest at the end of the year because we did not spend it. This is irresponsible and stifling for dispersed electrical generation. All electrical production placed on the utility grid is being used in some fashion and those who produce it should get rewarded – not penalized. Create an incentive

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based economy by requiring higher net metering revenue to the producer. There are utilities (not in Michigan) that credit net metering rates 50% greater than the charge to their customers.

Dispersed electrical production and net metering should be incentive based. Such that, a higher rate is paid to the “generator” (owner of solar/wind) than is charged for their use. Why? The capital cost to construct a large central power plant is a cost avoidance/savings to the utility. Avoided costs for land purchase, design, litigation, disposal and financing are just a few of the cost savings areas.

Dispersed electricity generation by “customers” requires little more than the capital investment for a new meter. As you know, nearly every public utility is seeking additional electric capacity at this time. Dispersed generation should be utility or State financed. A large 100Megawatt power plant would be financed by the utility and incentives would be provided by the State. Why not dispersed generation? Power lines are in place, business and residences are willing, the equipment is readily available. Just tweak the current policy for incentives and simplicity and you will fulfill the energy deficiency in the State.

Summary:

Dispersed generation will reduce the exposure to power failures/outages, is incremental in supply and if balanced between wind and solar provides a reliable source for the majority of the expanding electricity needs of our State. This reduces the liability and exposure to power plant pollution events, rising costs for fuel, disposal uncertainties and the people want it. They see it happening at their cousin’s place in NY, California, Pennsylvania, Wisconsin etc. This could expand Michigan jobs and economy too.

Equipment should be UL listed for safety, external disconnect should be required anytime there is PV or wind production (one disconnect per interconnect). There should be penalties for a utility that is non-responsive (say everyday delay adds another cent to the net meter benefiting the producer).

To solve the energy growth needs for Michigan an incentive based structure should be put into place. I would recommend a 25% increase over the utilities charge to the customer. So, a \$0.09 per KWH cost to the resident becomes an incentive of \$0.1125.

Thank you for this opportunity and do not hesitate to contact me if I can be of further assistance.

Renewable Yours,

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CC: Jason Allen, Senator
Howard Walker, Representative
Jennifer Alvarado, GLREA