April 16, 2007 Comments

Under 10 kW Net Metering & Interconnection Procedures Workgroup

Faster & Less Complex Interconnection Procedures

Staff Draft Interconnection Procedures Document
Staff Draft Interconnection Standards Revisions Document

Net Metering

Staff Draft Net Metering Proposal

Comment Summary

Commenter Name	Page Number
1. Steve Collini	3
2. David C. Tarsi, PE	4
3. Tom Basso, NREL	5
4. Richard Sloat	8
5. Joshua Barclay	9
6. Mel L. Barclay	10
7. Chris Coon, Sustainable Systems, Inc.	11
8. Don Lee, Independent Biodiesel, LLC	12
9. Lary Bannasch, Great Lake Solar	14
10. Michigan Regulated Electric Industry	15
11. John Sarver, Michigan Energy Office	27
12. Garth Ward, Michigan Wind Power	28
13. Tom Kervin	29
14. Pierre Marcotte	30
15. John Wakeman, S.U.R. Energy Systems	31

Steve Collini

Julie, Brian

I put into service an inverter based 3k wind system in 1999. At that time the utility (Consumers Energy) required any excess generation sell back to be classified as a NUG with exoribant costs to qualify. I was forced to use a large battery bank for storage purposes. The cost of batteries, maintenance, etc. makes this type of system not very user friendly for any one considering alternate energy. I applaud the efforts to make things much simpler. This leaves me with a dilema though. In 1999 I bought a very high end inverter with the safegaurds for utility interconnection. The inverter is one of the most expensive parts of any system so one does not want to replace them if not absouletley necessary. The proposed rules use the IEEE 1547 standard. This standard was developed after the manufacture date of my inverter, so there is no way to get my inverter to comply with the standard. The manufacturer of my unit is Trace engineering, Model # SW4048. Trace has since been bought by a company called Xantrex and they continue to support the product. My question would be is there any way in the ruling to incorporate equiptment that is known as safe to use in interconnections but was manufactured prior to the IEEE 1547standard? I've sent all my inverter specs to Consumers Energy to try and get an answer from them, about 3 weeks ago and haven't heard back yet. It would be very nice if the rules could be made to adress this type of situation.

Thank You
Steve Collini
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989-821-5900
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David C. Tarsi PE

Dear Sir,
I live in the western part of the upper peninsula of Michigan in the northwest corner of Iron county. I live off grid and have a 4.3KW set of solar panels. My home is a standard home and even in this remote area of Michigan I get almost 95% solar coverage. Who says solar does not work in Michigan. I am a retired engineer from Consumers Energy and understand the workings of a utility system. ***I believe we should not stop at net metering.*** This just does not offer the investment opportunity to the individual. They can only defray their yearly electric load. ***When you are on the grid, installing either a solar system or a wind generation system, this just does not even come close to the economics of service from the grid.*** Its better and cheaper to buy green energy through the utility companies and still participate in lowering our consumption of fossil fuels. As an example, I have reduced my dependency of over 1400 gallons of propane per year through solar. I hope to increase this when I install a solar hot water system this year. However, my electric system has cost me near $15,000. ***How can we expect the average to invest $10,000 to $20,000 to just eliminate their electric draw from the utility.*** Solar and wind generation costs have really gone up in the last two years. The European demand. What we need is the opportunity to invest in a renewable generation system that can effectively produce an offset to the initial capital cost. Of course one way is to have state and federal rebates, but the existing federal system is a weak attempt to promote an incentive to reduce a dependency on fossil fuels. ***The real Michigan incentive is to promote a fair system of energy sell-back to the utility.*** Such a system would provide a better way for one to offset costs. The equipment today provides for a safe inter-connect with the utility. They make grid-tie inverters that immediately disconnect themselves in the event of a loss of system. ***A fair system will provide a reasonable rate of sell-back KWH and at the same time not overload the dispersed generation with unreasonable costs in disconnect equipment costs.*** I truly believe the utilities can pitch in and work through different operational and maintenance procedures that would allow for more of these connections. It is just a different set of problems. ***I believe if we are going to make headway in promoting the use of renewable resources, we must solve these problems.***
I would appreciate any status you can provide or any other information you would like from me.

David C. Tarsi PE
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906.367.9251

Tom Basso
National Renewable Energy Laboratory

-----Original Message-----
From: Basso, Thomas [mailto:Thomas_Basso@nrel.gov]
Sent: Monday, April 02, 2007 3:53 PM
To: Stanton, Thomas S (DLEG)
Cc: bwjohnson@acninc.net
Subject:

Tom,

See below for background/up-to-date approach for interconnection of distributed resources, especially in that is the approach to 10 kW and less.

Let me know if you have questions on below.

Brad Johnson, NREL contractor, and I have been involved with various state activities for interconnection (not necessarily for rate design/tariff activities - however, separately, Brad has, and continues to be involved with tariff/rate design issues).

Generally, states have been separating "net metering" and "interconnection requirements/procedures/agreements" and "tariff issues" and RECs. Generally, net metering by definition simply means in a colloquial sense "run the meter backwards."

It seems the net metering guidelines you are proceeding under get fairly complex (unduly complex?) when you (state legislation?) start bringing rate design and RECs into "net metering" arena. The basic philosophy of net metering is simplicity. Perhaps the standard term/definition of "net metering" needs to be addressed/clarified for your purposes/approach. It appears that in one fast-track rule-making you are addressing much more than net metering. That appears as an interesting problem(s) but maybe for instance, opting as a net metering customer means giving up potential RECs.

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At March 22, 2007 MD Interconnection working group meeting unanimous consensus was reached by the stakeholders for new statewide interconnection rules and standard interconnection agreements. These rules and agreements reflect enhancements of the MADRI model and draw heavily from recent use of the MADRI model in Pennsylvania and Oregon. Highlights include the following:

1) A provision for expedited review for "field approved" interconnection equipment in addition to "certified equipment". (To become field approved, identical interconnection equipment must have been previously approved by an EDC under a study process). What this means is that a 250 kW micro turbine would qualify for expedited review, even if it did not have an inverter or a UL listing, if it used identical interconnection equipment already approved by the utility.

2) A provision that small generators up to 10 MW qualify for expedited review if they do not export power (50kW if they connect to area networks)

3) Technical requirements based on IEEE 1547, no exceptions and no additions.

4) Adherence to the requirements for <10kW systems that were developed by FERC with no changes to the review timelines

5) Agreement to use standard application forms and interconnection agreements throughout the entire state. There was considerable debate over the details of these documents. From my perspective, final forms and agreements being sent to the Commission for approval strike a fair and equitable balance between the interests of small generators and utilities.

The Working Group plans to issue its report to the MD Commission along with the final version of the documents by April 1. The MD Commission is expected to issue its order (hopefully a favorable one) by August. I will provide a copy of the working group report and a link to the final documents when they become available in a week or so.

Following is a brief summary of the 4 Levels of review that the Working Group developed (the first 3 are expedited):

Level 1 <10kW Expedited Review . These systems are inverter based and must be tested to IEEE and UL standards by a nationally recognized test laboratory. Household photovoltaic systems are an example of the type of small generator that is expected to qualify for Level 1 expedited review.

Level 2 - **10kW to 2 MW Expedited Review.** These systems must use equipment approved by a nationally recognized testing laboratory or must have been previously approved by an electric utility under a study process (field approval) .Systems in this size range do not have to be inverter based and are expected to use a variety of technologies including, photovoltaics, reciprocating engines, micro turbines, fuel cells, small wind generators and combined heat and power.

Level 3 - 10kW to 10 MW Expedited Review . These systems qualify for expedited review if they use special equipment to ensure they will not export power from the customer premises on to the electric distribution system. The vast majority of small generators that qualify for review under this category are expected to be standby generator facilities that interconnection at distribution system voltages and operate in parallel for more than 100 milliseconds. Net metered small generators are not be eligible for a Level 3 Review.(<50kW systems using lab certified equipment connecting to area networks, also qualify for expedited review under Level 3).

Level 4 - 2MW to 10 MW Study Process. Small generators that do not qualify for expedited review or have not been accepted under an expedited review already conducted will be evaluated under the procedures spelled out in this category. Because the small generators reviewed in this category are larger and are expected to use non-standardized interconnection equipment, there needs to be a more in-depth evaluation of the potential impacts of the small generator on the electric distribution system. For this reason, reviews conducted under a Level 4 evaluation are expected to be more costly and are expected to take more time. distribution network.

-----Original Message-----
From: Mansueti, Lawrence [mailto:Lawrence.Mansueti@hq.doe.gov]
Sent: Thursday, March 22, 2007 11:42 AM
To: Hoffman, Patricia; DeBlasio, Dick (NREL); Lippert, Alice; pielli.katrina@epa.gov; Miles Keogh; Lightner, Eric; Bindewald, Gilbert; Rich Sedano; Brad Johnson
Subject: EE/OE statement of best practices on DG interconnection

As posted the other day at EE's solar page of http://www1.eere.energy.gov/solar/

Attached…. <<doe_interconnection_best_practices.pdf>>

Respectfully, Tom Basso; thomas_basso@nrel.gov
Voice (303) 275-3753; FAX (303) 275-3835
T. Basso: NREL Distribution and Interconnection R&D;
IEEE Secretary SCC21, & 1547 series;
IEC/USNC/TAG/TC8 Technical Advisor & Administrator
NREL Thomas S. Basso MS1614
1617 Cole Blvd.
Golden CO 80401-3393
National Renewable Energy Laboratory http://www.nrel.gov/eis/activities.html
Distributed Energy and Electricity Reliability http://www.nrel.gov/programs/oeea.html
DOE Office of Electricity Delivery and Energy Reliability http://www.electricity.doe.gov

Richard Sloat

Greetings Brian,

The biggest draw back to the net metering issue is the disparity in credits i.e. that Michigan residents who want to interconnect to the grid can only expect to receive 25% discount (being charged $0.10/kwh for energy being created by the utility company and only getting reimbursed $0.025/kwh for the energy being created by themselves).

If this country wants to be serious about energy independence a one to one payback e.g. if a persons charge is $0.10/kwh by the utility company, the utility company should be charged $0.10/kwh for the energy produced by an individual espically when the utility company charges an additional 38% for "green energy" used by an individual.

Lets get going. I wouldn't worry so much about the utility companies making a profit, lets think more about having individuals creating clean renewable energy.

Sincerely,

Richard Sloat
223 8th Ave.
Iron River, Mi., 49935
(906) 265-0751

Joshua Barclay

I am strongly in favor of the proposed net-metering guidelines primarily because of their simplicity. Simple interconnection policies could make Michigan a haven for those wishing to produce clean, renewable energy. Clear equipment guidelines, simplest metering requirements, and a real net-metering approach make the entire process easier and cheaper for all participants, and make Michigan more attractive to new-energy-economy entrepreneurs, innovators and investors.

Prior to these new proposed guidelines, DTE's "net-metering" billing policy was so complex, I was still unable to understand how it worked after a full half-hour explanation from a very helpful and friendly engineer at DTE (I'm no math slouch either-I teach university level physics). I was confounded by why the interconnection process and billing formula needed to be so difficult, and why anyone would want to discourage me or anyone from making non-polluting, locally-harvested energy. This new proposal is certainly a breath of fresh air, and I mean that literally.

Augmenting the grid with a widely decentralized system of small PV and wind systems dotting the countryside has only advantages. It will increase the efficiency of the grid by lowering line-loss. Peak demand times neatly coincide with the highest power production of PV. Terrorists can't shut down our power grid if it's decentralized. Pollution is reduced. And we don't have to send dollars out of state, nor transport coal or uranium in--we get to power Michigan with local sunlight and wind delivered free, right to our door.

We are inevitably entering a regime where net carbon emissions will be limited-either legislatively, or by technologies competing to bring the world cleaner and safer energy. Michigan could propel itself to the leading edge of this new economy and technology. To do so, we must present clear advantages to the new energy economy entrepreneurs and innovators who could make Michigan a leader rather than a laggard. We must learn from the mistakes of the big three, who not heeding the global demand for lowering carbon emissions, have been surpassed by carmakers that do.

To attract the business of the future, Michigan must compete with New Jersey rebating $4.40 per watt for builders of PV systems, and Wisconsin where We Energies will buy PV production for 22.5 cents/ kwh. The proposed net-metering guidelines are a great start, but we need to go farther to encourage clean energy if we truly want Michigan to be a leader in the economy of the future.

Joshua Barclay
Whitmore Lake, MI

Mel L Barclay

We have recently built a 3.2 KW sun-tracking photovoltaic device along side our home.

The construction was not particularly difficult.

We make a lot of clean, non-polluting electrical energy of which we use only a portion.

The technology for converting DC to AC is mature and the logical processes performed in the intertie curcuitry make the possibility of islanding remote.

Our system works now and the meter sometimes runs backwards. Why do we need two additional meters ?

Our system shows how simple it could be to develop distributed power production given the right incentives.

The power industry should stand aside as it will facilitate these developments. They benefit as well by having more clean electricity to sell.

We should be sure we have learned all the lessons of Carterfone.

Mel L Barclay
Ann Arbor, MI

Chris Coon
Sustainable Systems, Inc.

Hi Julie and Brian-

Thanks for your work on these interconnection and netmetering procedures.

Re: DRAFT Proposal for Simplified Net Metering Program for Inverter-Based Systems 10 kW or Less

Looks good. Two considerations:

1.) I assume that the "minimum monthly fixed charge" referred to in number 4 will be based on rate information that will be examined carefully by MPSC staff to ensure it does contain major extraneous costs.

2.) Since the next level of interconnection / netmetering agreements is 30 - 150 kW, what rules will apply to a 12, 20, or 25 kW inverter-based system?

Re: Generator Interconnection Requirements ... Inverter-Based ... 10 kW or Less

Within the limits of my technical understandings of the implications of the interconnection procedures, it looks okay. I have been attempting to get Bob Pratt to examine these in detail, as he worked for DTE for many years dealing with the issues of interconnection of solar systems. I defer to him and hope that he comments on the interconnection requirements.

Thank you again for your work on these issues.

Sincerely,

Chris Coon
Solar Contractor
Sustainable Systems, Inc.
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< sustainablesystems@ic.org >
734-428-9249

Don Lee
Independent Biodiesel, LLC

Julie and Brian,

I'm a student in the Master's of Management/Sustainable Business program at Aquinas College. I currently own a building at 700 Wealthy in Grand Rapids where I'm attempting to justify the cost of a carbon-emissions free energy system for my building. To this end I have been researching the implementation of a combination solar PV and thermal system for my facility. I would like to thank you for your effort to create a more fair and less complicated process for consumers to utilize renewable energy. I would like to add some points to the conversation.

The optimal outcome is the use of solar electricity to offset the costs of both the capital investment required for solar equipment, and the external costs of pollution, especially greenhouse gas emissions. Currently there is inequity between the natural gas and electric utilities and the consumer/producer of solar electricity. Presently in Michigan, there is no penalty associated with the external costs of extraction and consumption of fossil fuel-derived electricity and no method of "evaluating competing resources in which the most environmentally disruptive resource (a new coal plant) under the most unfavorable circumstances" creates external costs. (National Academy of Sciences, et al p. 709)

Monetary incentives are low as net metering, (the process of returning solar power that is generated by consumers to the grid) is currently difficult and cost prohibitive. A customer purchasing power from Consumer's Energy will pay an application fee of $100 to enroll in the program. In addition, the customer must complete and send to Consumers Energy the Net Metering Program application to ensure the proper metering configuration is installed, which will enable the customer to receive "Net Excess Generation Credits." After Consumers Energy has completed the interconnection study and has approved the proposed interconnection and net metering project, the customer will be required to enter into an 'Interconnection and Operating Agreement.' The customer is responsible for any costs associated with the interconnection." (http://www.consumersenergy.com/welcome.htm) It's not clear what these "costs" are.

Neither is it clear how much the consumer can expect to receive for electricity that is returned to the power company other than to say that it is defined as a "Net Excess Generation Credit. "Net Excess Generation (NEG) is the amount of electricity generated by a Net Metering participant using a renewable energy source, in excess of the customer's own electric metered use in any billing month. "One NEG Credit equals the Energy Charge portion of the Power Supply Charges – of one kilowatt-hour of electricity as shown on the customer's rate schedule, including the associated Power Supply Cost Recovery, but excludes Surcharges." (http://www.consumersenergy.com/welcome.htm)

It is difficult to determine a timeframe to recover the cost of installing a solar PV system. What is the current cost of a kWh of electricity? Why isn't the consumer able to sell that electricity back to Consumer's Energy at an equitable rate? Other considerations for cost include times of peak power output (returning energy to the grid). "…the peaking units, those generating facilities fired up only during the peak periods produce electricity at a much higher marginal cost than do base-load plants, those fired up virtually all the time. Peaking units are typically cheaper to build than base-load plants, but they have higher operating costs." (National Academy of Sciences, et al p. 709) Power returned to the grid during peak operating hours should therefore be eligible for a premium (higher) rate of return. During off peak hours or low sunlight and night time operation when demand is lower and while solar powered units are either not functioning or functioning at diminished capacity and the consumer is drawing energy from the grid, peak and non-peak rates are applicable. To be fair these rates should not be unilateral in favor of utilities, "Since renewable energy and conventional energy are physically indistinguishable, both are sold in the energy market at the same price." (Tietenberg p. 153)

There are incentives for utilities to provide equitable compensation for solar energy producers/consumers during peak periods because "slowing the growth in peak demand may delay the need for new, expensive capacity expansion" (Tietenberg p. 152) by transferring capital costs directly to consumers and reducing the higher marginal costs of peak period energy production. If there is an "environmental adder" (National Academy of Sciences, et al p. 709) for example "New York adds 1.4 cents per kilowatt-hour to the estimated cost of electricity produced from fossil fuel sources to account for the various negative environmental effects." (Tietenberg p. 153) The period of time required by the consumer to recoup those dollars is decreased as the cost of the externality (greenhouse gas emissions) are considered. This will also provide increased demand for renewable energy and bring capital costs down.

In summary, the cost of energy provided from sources that create emissions should have the external costs of greenhouse gas emissions associated with them in order to make renewables more competitive. The benefit to the consumer should also include the substitution of solar electric for natural gas and an "environmental adder" would accomplish that. Investment in solar energy equipment equates to the consumer providing dollars for capital improvement of a utility owned power system which diminishes peak output and reduces costs for utilities. Based on this assertion, the consumer should not be subject to enrollment or metering fees. Additionally, the consumer should receive equitable consideration in the market for the energy they produce.

"Emerging markets for clean technologies could create millions of new American jobs. It's the single biggest global economic opportunity on the horizon."
- Democratic Congressman Tom Udall, New Mexico (*Outside,* February 2007)

References

Panel on Policy Implications of Greenhouse Warming, National Academy of Sciences, National Academy of Engineering, Institute of Medicine. Policy Implications of Greenhouse Warming: Mitigation, Adaptation, and the Science Base. The National Academies Press, 1992.

Tietenberg, Tom. Environmental Economics and Policy. 5th ed. Boston: Pearson Education, Inc, 2007.

Consumers Energy. Search 'Net Metering'. n.d. 7 Apr. 2007 <http://www.consumersenergy.com/welcome.htm>.

Best Regards,

Don Lee
Independent Biodiesel, LLC
--
Aude Sapere
"Dare to Know"

Independent Biodiesel

Lary Bannasch
Great Lake Solar

Hi Julie and Brian

As a new Michigan Small Business I'm pleased to see the focus on less than 10kW net metering Workgroup

As a start up supplier of BIPV Grid Tied Systems to Michigan residents having this focus will be helpfull to all (residents, installers and suppliers)

thank you for your efforts

Lary Bannasch
Great Lake Solar
810 895 1141

MICHIGAN REGULATED ELECTRIC INDUSTRY

MICHIGAN REGULATED ELECTRIC INDUSTRY COMMENTS ON MPSC STAFF INTERCONNECTION AND NET METERING PROPOSALS

These informal comments are submitted by the Michigan Electric and Gas Association on behalf of Michigan regulated electric utilities including MEGA members, the electric distribution cooperatives, Detroit Edison and Consumers Energy. The MPSC Staff circulated proposals for consideration by the "Under 10 kW Net Metering and Interconnection Procedures Workgroup" regarding (1) faster and less complex interconnection procedures, and (2) net metering, with draft documents containing an initial proposal. The electronic notice of the proposals requested comments by e-mail to the Staff with a deadline of Monday, April 16, 2007. The participating regulated electric utilities established a group to coordinate these responses, referred to here as the "Industry Group". These comments reflect the initial joint position of the Industry Group, recognizing that this is part of a working group process with opportunity for further discussion and participation as the informal workgroup procedures continue.

These comments are organized based on the framework of the Staff proposals, with headings adopted based on the proposals. Except where indicated for general Industry comments, the headings and bold language in subheadings below correspond to the order of items in the proposals. The industry comments are developed for each item, without repeating the entire provision in the proposal.

A. GENERAL INDUSTRY COMMENTS

The following comments are directed to the overall process of considering changes in the interconnection and net metering rules and procedures.

1. The working group is just being formed and there have been no meetings to discuss procedures for the small projects. Development of any new procedures is supposed to occur through a working group effort. This response should be part of the framework for discussion at future workgroup meetings.

2. The MPSC Staff (Staff) proposes to start with a model procedure developed by a renewable energy group, Interstate Renewable Energy Council (IREC). The IREC model is a 52 page document described as a compilation of best practices from various sources, with 11 sections and 8 attachments. Staff modified the IREC document to 13 pages and the working group should be given an explanation of why the IREC document is a better starting point than the Michigan procedures with which interested parties are already familiar. There should also be a review and explanation of the specific changes from the original IREC compilation.

3. All determinations <u>must</u> give primary consideration to safety of utility workers and the public. Measures that call for deemed approvals or presumed acceptance must be avoided. The procedures should not create any expectation or impression that projects can be energized without the necessary communication among all parties and appropriate testing.

4. The interconnection rules and related procedures were revised in 2003. These provisions continue to be applied and while there have been developer complaints and varying issues for some projects, there is no indication or finding that

any specific item of the current procedures is functioning as a barrier to development of projects. The pace of development is influenced by many factors, including the degree of interest of customers in generating electricity, the cost of generating equipment, cost-benefit analysis and the level of financial incentives or subsidies. The workgroup process should avoid any "rush to judgment" of changes based on a few complaints because there are indeed projects achieving successful interconnection, as reported in Case No. U-15113. There is time to do this right and avoid measures that will lead to further controversy and calls for revision.

5. A net metering consensus policy was approved by the Commission on March 29, 2005 in Case No. U-14346, implemented through tariff filings that year. The approved net metering policy contained time provisions for duration and the Commission called for an evaluation through the Michigan Renewable Energy Program (MREP) after the fourth year (in 2009). This would allow a reasonable study period based on actual results over time. Early involuntary termination of this program and mandates to provide economic benefits to developers raise fundamental policy questions beyond the scope of a workgroup collaborative. Legislation developed as a result of the 21st Century Energy Plan may affect the net metering program and the interconnection procedures and rules.

B. Proposed Interconnection Procedures for Inverter-Based Generators of 10kW or Less (IREC Model as modified)

1. Organization and Table of Contents: See general comment No. 2 above regarding the draft. Further, the document uses a number of capitalized terms (e.g. Project Developer, Point of Common Coupling, Customer, Spot and Area Network) that are not specifically defined in the definitions section.

There should be a discussion by the workgroup regarding the role of the "Customer" versus that of the "Developer" (or installer). In many cases the installer rather than the customer will control the interconnection process and have the expertise regarding equipment. This should be recognized in the procedures and agreements.

The table and list of attachments should be revised to reflect changes in the contents as the procedures are modified. It appears that section (e) regarding special screening criteria for interconnection to distribution networks may not be needed as a separate section. If all interconnections covered by these procedures are to distribution systems, as expected, the requirements for different distribution networks can be addressed as separate items in the listed criteria, particularly if each requirement applies to a defined type of network (e.g. "Spot" or "Area" networks).

2. Scope (section a): No comments at this time.

3. Standard for Certification (b): There are related concepts of "qualification" (for these procedures) and "certification" (of equipment, as a requirement for qualification). Defining these terms might aid in understanding the differences.

4. Certified Equipment (c): This section is written as if it applied to all sizes of projects as a general matter, rather than the "under 10kW" generators.

Provisions like this one in the proposal need to be worded so they cannot be construed to limit the right of utilities to test facilities to be interconnected, and for consideration of the entire interconnection package as a unit, as opposed to accepting that the use of pre-certified equipment as items of the package automatically means that the entire interconnection as a unit is qualified or certified.

Is it intended that this provision deal with "pre" certified equipment?

5. General Technical Screening Criteria (d): Some of the measures included in this section are restatements and possibly modifications of the IEEE provisions. If the IEEE standard is incorporated by reference, there is no need to repeat its provisions and many of the subsections in (d) could be eliminated as redundant. Subsections (d)(2, 3, 4 and 7) could be omitted for this reason. If the provisions are retained and there are wording variations from the IEEE, these need to be identified and discussed in the working group.

Subsections (d)(2,3,4,7 and 8) are listed here but are not identified as "applicable" screens in subsection (f)(2), which is confusing. In fact, the entire concept of screening calls for more explanation and perhaps definitions.

For subsection (d)(1), if fuses are used as automatic sectionalizing devices, installed on a single phase tap, the fused tap would be a line section (perhaps only serving 2 or 3 customers). The section peak load in this instance can't be measured at the substation and if estimated the permissible generation for the section could be a very low amount.

Subsection (d)(10) is a potential source of controversy, insofar as the question whether a proposed generator requires improvements to utility facilities may be difficult to answer.

6. Special Screening Criteria ... (e): This section introduces undefined terms such as Area and Spot Networks. Items (e)(2, 3) are not listed as applicable screens in section (f)(2) and should therefore be eliminated here. These provisions may not need to be identified as "special" criteria in a separate section in the document since they would apply generally for the identified situations.

7. Screening Criteria and Process ... (f): The acknowledgment of application per (f)(1) should take place in 3 "business" days after receipt by the utility, rather than calendar days measured from "submission" (to avoid a mailbox rule). The 10 day evaluation period (and all identified processing periods for that matter) should also be measured in "business" days. The determination of incomplete application should occur in the 10 business day period, as well as any determination that the project is not eligible (with explanation).

These time frames may be appropriate for a modest pace of projects seeking interconnection as presently experienced. If there is a significant increase or wide fluctuations in the number of requests for interconnection requiring more dedicated personnel, the costs and time requirements would need to be addressed. Permanent staffing at the levels required to address a sudden short-term increase in the number of applications within the timeline would not be an efficient use of utility resources. Projects take months to develop, plan and install and in some cases the time frames for response could be too short as proposed. One utility reported that developers have dropped off applications late on the day before the Christmas holiday, for example. A

procedure should be developed that allows a longer time period in some circumstances instead of putting the utility in a noncompliance situation.
Including the list of "applicable screens" here in (f)(2) seems confusing – why wouldn't that be addressed in sections (d) and (e)?
The additional language in (f)(4) about a possible fully executed interconnection agreement is not needed. No time benefit is gained using a pre-executed agreement by one party.
Section (f)(6) with its concept of automatic approval for non-response by a utility should be removed entirely. There is no reasonable basis to provide for "deemed approval" allowing interconnection to proceed without consent or knowledge of all parties. There are other ways to deal with refusals to respond and there is little indication that this has been a problem in the investigation reports. With proper consideration of safety of the public and utility workers, as well as preventing harm to the distribution system, the procedures should not embrace concepts that can be characterized as default approval.

8. General Provisions and Requirements ... (g): Section (g)(4) is one sided and too restrictive. It should be entirely eliminated from the draft. Incorporating a concept of "presumed compliance" will be an invitation to energizing projects prematurely without adequate testing and communication. In consideration of any matter that involves public and employee safety and protecting the system, there must not be a measure in the standards that absolutely bars additional testing and possible controls, or gives the entire discretion to developers. The unreasonable and one-sided nature of this provision calls into question the use of the IREC model as a starting point for the working group discussions. Further, this section introduces the liability insurance issue with a restriction on requiring it, a matter which needs to be fully aired in the working group process. Persons who enter into commercial activities and seek the right to use the utility grid, creating additional risks to others, should not be given blanket exemptions from liability insurance requirements.
There is an issue regarding the requirement for an external disconnect switch that allows utility workers to disconnect the generator without pulling the meter and cutting off all service to the location. Developers object to the costs associated with this switch. This is a safety and reliability issue and deserves full discussion as opposed to adopting language that simply bars the requirement and resolves the issue in favor of complaining developers.
Section (g)(5) calls into question what protection equipment is included in a "certified equipment package." It incorporates a standard that restricts use of additional protective equipment if the developer equipment performance is "negatively impacted in any way" which is a very broad and undefined standard.
Section (g)(8) is worded as a limitation on the ability of a utility to require additional testing (after "approval under this rule"). Utilities reserve the right to require and/or observe testing before interconnection to their systems and to inspect the interconnection and these procedures should not restrict that right. To follow the 1547 standard, the customer will have to perform the commissioning tests. The utility should

also have the option to see the proposed test plan, witness the testing, and/or review the results of the tests at its discretion.
Section (g)(9) is worded to require both noncompliance with IEEE 1547 and adversity to safety and reliability of the distribution system as the basis for disconnecting a project. The latter situation (safety and reliability) alone should be a basis for disconnection.

9. Attachment 1 – Definitions: As noted above, there are many terms that call for definition. Some were defined in the IREC source document but these were removed.
The definition of "Equipment Package" (or sections where this term is used) should explain the need for both the system and components to be IEEE compliant and also compliant with the interconnection policy.
A definition of U.L should be included.

10. Attachment 2 – Application: The application should identify both the customer and the developer/installer if different.
Identification and contact information for the inverter (salesperson, supplier) should be included.
The inverter serial number may not be available at the application stage. There may be a need to have identification of multiple inverters for some projects (larger systems or 3 phase output).
A one-line diagram and site drawing should be included with the application.
The "meter removal non-liability" wording should be changed to recognize that it is the utility, not the developer, who may elect not to require an accessible manual disconnect device.
The applicable certification standard should be included in the table for components.

11. Attachment 3 – Interconnection Agreement: This is a complex document that requires full consideration in the working group, since this draft was prepared by nonparticipants (IREC).
The 2 hour limit on operational testing in Section 1.0 should be removed.
The phrase "at its own expense" in Section 2.3.1 should be removed.
The deemed waiver of the witness test in Section 2.3.2 should be removed and this section and 2.3.3 should require any waivers to be in writing to eliminate future contention.
In section 2.4 the written explanation of improper installation should be due in 5 business days after disconnection instead of at the time of disconnection. Problems may warrant immediate disconnection and time should be allowed for the report.
The indemnification language in Section 6.0 was not acceptable and there have been several suggestions of alternative approaches attached hereto. This issue requires full discussion.
Why is the draft proposing to have no insurance requirement for developers (Section 7.0)? New risks are associated with these projects and indemnity provisions alone provide little protection if many of the developers are just homeowners. Some states require $300,000 as was recognized in the IREC model rules.
In general, the provisions on indemnity, insurance and limitation of liability require more discussion and the use of the proposed draft should not create any presumptions

that its provisions are reasonable. One utility suggests adding a provision to escalate the level of coverage over time to keep up with inflation. See language added at the end of Attachment A.

The provision in Section 10.0 should provide for termination if the new owner does not accept the agreement in writing.

Consideration should be given to having the installer and the customer sign the agreement, since the installer will be responsible for the interconnection at least up to the time the project starts operating.

12. Attachment 4 – Certificate of Completion: The only comment so far is to add a heading for the "Witness Test" waiver.

C. Proposed Interconnection Rule Revision

The only proposal is to add the "under 10kW facility" item in Rules 3 and 6. The primary comment so far is to define "qualified inverter-based projects" or refer to the definition.

In Rule 6, the change leads to a longer period (20 days) for the smallest projects, with a shorter period (2 weeks) for other projects under 30 kW. The procedures under Rule 3 would cover the "under 30 kW" group, for most situations.

As indicated in the earlier interconnection investigation, utilities believe the time deadlines in general need revision and this issue would be addressed in the rulemaking proceedings as well, along with other possible rule changes applicable generally and not just to small projects.

D. Simplified Net Metering Program Proposal

The numbers below correspond to the numbered paragraphs in the Staff proposal. See also general comment No. 5 in Part A.

1. Pre-certified Inverters: Use of the standards is acceptable; however, utilities reserve the right to require testing and inspection of all projects, which should not be limited.

2. Inverter Listing: Individual utilities should not be assigned the task of identifying and listing inverter models. A statewide effort through MEGA, Staff, utilities and developers could be developed. Otherwise, the manufacturers should contact the utilities to pre-certify equipment. Important requirements include passing the anti-islanding test and providing test results.

3. Additional Equipment: This issue should be handled on a project specific basis through the interconnection agreements. The identification of acceptable equipment could be included in a statewide coordinated effort as for the inverter listing above.

4. Net Metering Charges: The current net metering policy established by consensus contains provisions for alternate methods of metering and describes the method of charging and crediting customers for various meter configurations. One of the permitted methods allowed use of a single meter measuring flow in both directions, with the customer to pay for transmission and distribution costs through a separate rate charge. This concept is similar to the proposal and the separate charge could be the

delivery component of the customer's base rate charged against the site use. Site use could either be estimated or established through metering of power in and generation at the site. Thus, the existing consensus does provide the framework for the simplified approach for small projects although the option to elect the full metering configurations should be left to the customer. There is benefit to the customer in knowing the site generation amount, for example. The current 3-meter option used by Detroit Edison provides data the customer can use for selling RECs.

As described in reports filed previously, various utilities have developed different metering configurations under the net-metering consensus agreement scheduled to run through at least 2009. Why not continue to allow alternate measures that comply with the consensus agreement, to provide data to determine customer preferences and workability of the different approaches?

Any agreement regarding a new net metering consensus such as the one proposed should contain a provision recognizing that the minimum monthly fixed charge is not a matter of absolute discretion but should be set at a level adequate to recover the customer's share of all appropriate costs. In other words, once an arrangement is established, the proponents of net metering should not be able to argue that the Commission should set the minimum bill at zero as an incentive measure to promote net metering with costs borne by other utility customers.

5. Reverse Meter Rule Change: Use of a single meter set to run backwards can create significant billing problems. If the end reading is less than the start reading, some billing systems would recognize this as meter rollover causing incorrect bills for the net metering customer. Customers with a concern about costs associated with metering could be allowed the option to have flow measured in and out, without separate metering of the generation under the existing consensus agreement.

6. Net Metering Single-Meter Approach: The comments above apply to this section.

7. Additional Metering Data – Utility Request: This issue needs further discussion. If power quality issues and the need for troubleshooting arise, it is unclear that policy should favor assigning all metering costs to the utility. This matter may be more appropriate for case-by-case evaluation.

8. Net Excess Generation Carrying: The existing consensus agreement provided for reducing the NEG balance to zero at year-end to: (1) provide a disincentive to over-sizing units, and (2) provide a potential source of funds to offset program costs. Eliminating the annual reset may remove all consequences to disregarding the provision requiring that units be sized based on the customer's annual energy needs. Net metering customers benefit from the use of excess funds for program costs. An alternative approach to consider may be to allow customers to time the billing month for the NEG balance reset, since their balance should approach zero at some point during the year if the unit is properly sized.

Utilities have not yet developed a consensus position on this issue, which requires further discussion in the workgroup.

Comments compiled for:

MICHIGAN ELECTRIC AND GAS ASSOCIATION
April 16, 2007 MICHIGAN ELECTRIC COOPERATIVE
ASSOCIATION

CONSUMERS ENERGY COMPANY
THE DETROIT EDISON COMPANY

Attachment A – Ideas for Liability/Indemnity Language

Detroit Edison provided the following provisions in order of preference:

17. INDEMNIFICATION

A. Customer covenants and agrees that it shall defend, indemnify and hold Company, and all of its officers, agents and employees harmless for any claim, loss, damage, cost, charge, expense, lien, settlement or judgment, including interest thereon, whether to any person, including employees of Customer, its Subcontractors and Suppliers, or property or both, arising directly or indirectly out of or in connection with Customer's or any of its Subcontractor's or Supplier's performance of the Agreement or in connection with the performance of the Agreement, to which Company or any of its officers, agents or employees may be subject or put by reason of any act, action, neglect or omission on the part of Customer, any of its Subcontractors or Suppliers or Company, or any of their respective officers, agents and employees. Without limiting the foregoing, said obligation includes claims involving Customer's, Supplier's or Subcontractor's employees injured while going to and from the premises. If the Agreement is one subject to the provisions MCL 691.991, then Customer shall not be liable under this section for damage to persons or property directly caused or resulting from the sole negligence of Company, or any of its officers, agents or employees.

B. In the event any suit or other proceedings for any claim, loss, damage, cost, charge or expense covered by Customer's foregoing indemnity should be brought against Company or any of its officers, agents or employees, Customer hereby covenants and agrees to assume the defense thereof and defend the same at Customer's own expense and to pay any and all costs, charges, attorney's fees, and other expenses, and any and all judgments that may be incurred by or obtained against Company or any of its officers, agents, or employees in such suits or other proceedings. In the event of any judgment or other lien being placed upon the property of Company in such suits or other proceedings, Customer shall at once cause the same to be dissolved and discharged by giving bond or otherwise.

The following is the full Indemnity provision taken from the IREC Model Rules, with some minor clarifying modifications that don't change the meaning of the Model Rules, as proposed).

12. Liability Provisions

12.1 Limitation of Liability

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, consequential, exemplary or punitive damages of any kind whatsoever. This provision does not limit the obligations identified in Paragraph 12.2.

12.2 Indemnification

a. The Company shall assume all liability for and shall indemnify the Customer for any claims, losses, costs, and expenses of any kind or character to the extent that they result from the Company's negligence in connection with the design, construction, or operation of its facilities as described on Exhibit A; provided, however, that the Company shall have no obligation to indemnify the Customer for claims brought by claimants who cannot recover directly from the Company. Such indemnity shall include, but is not limited to, financial responsibility for:

(a) the Customer's monetary losses; (b) reasonable costs and expenses of defending an action or claim made by a third person; c) damages related to the death or injury of a third person; (d) damages to the property of the Customer; (e) damages to the property of a third person; (f) damages for the disruption of the business of a third person.

In no event shall the Company be liable for consequential, special, incidental or punitive damages, including, without limitation, loss of profits, loss of revenue, or loss of production. The Company does not assume liability for any costs for damages arising from the disruption of the business of the Customer or for the Customer's costs and expenses of prosecuting or defending an action or claim against the Company. This paragraph does not create a liability on the part of the Company to the Customer or a third person, but requires indemnification where such liability exists. The limitations of liability provided in this paragraph do not apply in cases of gross negligence or intentional wrongdoing.

b. The Customer shall assume all liability for and shall indemnify the Company for any claims, losses, costs, and expenses of any kind or character to the extent that they result from the Customer's negligence in connection with the design, construction, or operation of its facilities as described on Exhibit A; provided, however, that the Customer shall have no obligation to indemnify the Company for claims brought by claimants who cannot recover directly from the Customer. Such indemnity shall include, but is not limited to, financial responsibility for:

(a) the Company's monetary losses; (b) reasonable costs and expenses of defending an action or claim made by a third person; (c) damages related to the death or injury of a third person; (d) damages to the property of the Company; (e) damages to the property of a third person; (f) damages for the disruption of the business of a third person. In no event shall the Customer be liable for consequential, special, incidental or punitive damages, including, without limitation, loss of profits, loss of revenue, or loss of production.

IREC MR-I2005: IREC Model Interconnection Standards
Limitation of Liability

The Customer does not assume liability for any costs for damages arising from the disruption of the business of the Company or for the Company's costs and expenses of prosecuting or defending an action or claim against the Customer. This paragraph does not create a liability on the part of the Customer to the Company or a third person, but requires indemnification where such liability exists. The limitations of liability provided in this paragraph do not apply in cases of gross negligence or intentional wrongdoing.

Consumers Energy presented the following based on the IREC language and its current interconnection operating agreement, to be project specific:

Each Party shall at all times assume all liability for, and shall indemnify and save the other Party harmless from, any and all damages, losses, claims, demands, suits, recoveries, costs, legal fees, and expenses for injury to or death of any person or persons whomsoever occurring on its own system, or for any loss, destruction of or damage to any property of third persons, firms, corporations or other entities occurring on its own system, including environmental harm or damage arising out of or resulting from, either directly or indirectly, its own Interconnection Facilities, or arising out of or resulting from, either directly or indirectly, any electric energy furnished to it hereunder after such energy has been delivered to it by such other Party, unless caused by the sole negligence or intentional wrongdoing of the other Party.

The provisions of this Section 6 shall survive termination or expiration of this Agreement.

Consumers Energy insurance provision language:

Insurance: Project Developer shall obtain and continuously maintain throughout the term of this Agreement liability insurance covering bodily injury and property damage liability with a per occurrence and annual policy aggregate amount of at least:

Project Capacity	**Minimum Limit**
Less than 30 kW	$500,000

When requested in writing by Consumers, said limit shall be increased each year that this Agreement is in force to a limit no greater than the amount arrived at by increasing the original limit by the same percentage change as the Consumer Price Index - All Urban Workers (CPI-U.S. Cities Average). Such policy shall include, but not be limited to, contractual liability for indemnification assumed by Project Developer under this Agreement.

Evidence of insurance coverage on a certificate of insurance shall be provided to Consumers upon execution of this Agreement and thereafter within ten (10) days after expiration of coverage; however, if evidence of insurance is not received by the 11th day, Consumers has the right, but not the duty, to purchase the insurance coverage required under this Section and to charge the annual premium to Project Developer. Consumers shall receive thirty (30) days advance written notice if the policy is cancelled or substantial changes are made that affect the additional insured. At Consumers' request, Project Developer shall provide a copy of the policy to Consumers.

JOHN SARVER
MICHIGAN ENERGY OFFICE

COMMENTS ON UNDER 10 KW
NET METERING & INTERCONNECTION PROCEDURES
U-15113
BY JOHN SARVER
MICHIGAN ENERGY OFFICE
April 16, 2007

The Commission's February 27, 2007 Order, in Case No. U-15113, directed the Engineering Section of the Commission's Operations and Wholesale Markets Division to establish a workgroup to develop faster and less complex interconnection procedures for 10 kW and under interconnection projects. The Commission additionally directed the Michigan Renewable Energy Program (MREP) Ratemaking and Net Metering Committee to form a task force to seek a new consensus and report to the Commission within 90 days on a simplified approach for net metering for inverter based systems smaller than 10 kW.

These comments pertain to draft staff documents prepared in response to the Commission order. Small photovoltaic and wind energy systems can provide clean, renewable power while reducing demands on the electric distribution system and, in the case of photovoltaic systems, providing power at peak times when power is most needed. Michigan citizens, businesses, and public institutions are making investments in small electric renewable energy systems in order to reduce electric costs but also to capture the societal benefits that come from clean, renewable energy. State policies should encourage these investments whenever possible.

Draft staff documents provide a more simplified approach for net metering and interconnection for inverter based systems smaller than 10 kW. Staff has addressed the key issues that can make net metering a viable program in Michigan.

- All inverters certified under UL 1741 shall be considered pre-certified, with no additional testing or certifications required.
- A rule change to R480.3605 to allow meters to reverse register (that is, to spin backward).
- Customer credit per kWh for net excess generation shall be based on the retail price paid by the customer, including all energy and power supply cost recovery charges.
- If a participating utility seeks additional metering data, the utility could be allowed to install and operate additional meters, but all costs associated with the additional meters would not be the responsibility of the net metering customer.
- At the end of a net metering year, the utility will carry the customer’s net excess generation forward to the next year or issue a check to the customer with the net excess generation valued at the utility’s average annual avoided cost rate for the year.

The Energy Office supports these proposed revisions and believes they can make net metering a viable program in Michigan. Thank you for the opportunity to make comments.

Garth Ward
Michigan Wind Power

Hi,, I think the Drafts look great,, In the "Interconnection Requirements" draft,, I am going to assume with more of these smaller household units that the "Project Developer" will in some cases be the homeowner...Right???

Garth Ward, Michigan Wind Power - Power to the people

See us at, www.michiganwindpower.net

Tom Kervin

Julie Baldwin,

First, thank you for your efforts on this important project. I am a home owner who would like to be environmentally friendly. Someday, if conditions are right, I would like to put a small solar (photovoltaic) system up at my residence for electricity creation. With that in mind, I would like to see any policies put into place that would assist a home owner on a small project of this nature. I would also like to see "solar" as an official part of the documentation. Any advice for me at this time?

Thanks Again,

Tom Kervin
tkkervin@hotmail.com

Pierre Marcotte

Julie Baldwin

Line item #4 states that net metering customers will pay a minimum amount each month to cover an appropriate portion of customer- based fixed charges.

Are customers paying this charge right know

What is this based fixed charge?

As it is right know the customer electricity that he or she produces is consumed on site and excess is credited to the customers at the end of the month.

If the system is not producing more than it peak power output or more than one megawatts

Why is the customer paying additional fees?

Line item #6 as it is the customer has to purchase this meter, what is wrong with the meter that he already has on his house, it is an electromechanical energy-only meter.

Explain why I need to purchase a new meter.

What dose the last line in paragraph 6 mean (including all energy power supply cost recovery charges?)

Please respond

Pierre Marcotte

Sr. Field Operation Tech.

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Kalamazoo MI.

PIERRE.J.MARCOTTE@SPRINT.COM

S.U.R. ENERGY SYSTEMS, LC
Suburban Urban Rural
.
Design, Sales, and Installation of Renewable Energy Systems

In the matter, on the Commission's own)
Motion, to commence an investigation)
Into the interconnection of independent Case No. U-15113
Power producers with a utility's system)

COMMENTS OF S.U.R. ENERGY SYSTEMS, LC- UNDER 10K INTECONNECTION PROCEDURE

We would like to thank the commission for the recent attention given to the matter of the ease of interconnection for small residential scale systems, and the improvements that the IREC model brings to the current interconnection procedure. The 4 hours or so required to fill out the current document, even for those with the expertise to do so, seems more than a little excessive for a simple inverter based system with standard listings, especially when the size is unlikely to exceed the energy use in the home or business. The two page IREC form is much more reasonable.

I was not sure of the exact meaning of the table in section (d) General Technical Screening Criteria, under paragraph 4. The second block in the table reads "if a three-phase (effectively grounded) or single-phase generator, interconnection must be line to neutral". I wonder why this appears. Listed inverters can be bought with AC outputs of 120V, 208V, 277V, and larger units at 480V (three phase output, primarily with larger inverters). The meaning of this table is unclear to me. We have interconnected many units at 208V that do not have a neutral wire. An inverter of this sort would be connected to two of the three phases of a 120/208V panel. We try to use 3 inverters whenever possible to keep the output balanced but have successfully used only 2 in the past, on at least one occasion. I understand that the new generations of inverters may all have neutral wires, even for 208V, but I would hope this table does not mean that a 120V inverter, or a transformer between the inverter and the panel, would be required in a building that was 120/208VAC. A single 208V inverter should be able to go in a building that is 208V between two of the phases. I know of no reason why it should not be allowed. To change this would restrict the design of the systems where a 208V inverter is optimal, unnecessarily adding expense.

Also, the only nice thing about the old form was that it was uniform from one utility to the next. Please continue this policy with the new, simpler format. We appreciate this.

221 BUENA VISTA AVE • ANN ARBOR, MI • 48103
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I applaud the inclusion of section (g) number 4 that precludes the utilities for charging for additional equipment. It is my understanding that this requirement is being removed in the areas of the country where utilities have been allowed to add this equipment. My main concern is that meters have not been EXPLICITLY included in paragraph (g)5. Instead, they are mentioned in line 6, which says meters will be covered in the tariffs. The meters, and the ridiculous notion of having three, or even two, should be expressly eliminated at this time with this current action. Waiting for changes to the tariffs to take place, and to ensure that the elimination of multiple meters will be included explicitly in each tariff at whatever time in the future seems too risky. This is the time to make that hindrance go away.

Thank you again for your attention to these matters.

Sincerely,

John Wakeman

Owner, SUR Energy Systems, LC