Michigan Public Service Commission

Staff Report on Utility Interconnection Issues

Case No. U-15113

January 31, 2007

Introduction

On August 10, 2004, the Commission approved interconnection procedures for Indiana Michigan Power Company in Case No. U-14091, for Northern States Power – Wisconsin d/b/a Xcel Energy, in Case No. U-14085 and for other regulated utilities in Case No. U-14088. The procedures were designed to expedite interconnections to the utility system that are both safe and reliable. Recent events have raised questions as to whether the procedures are working as expected.

On October 24, 2006, the Commission issued an Order[1] in Case No. U-15113[2] to:

1. investigate the interconnection of independent power producers with a utility's system,
2. identify any problems or deficiencies in the existing interconnection procedures,
3. develop and implement remedies,
4. set January 9, 2007 as the date for a public meeting, and
5. direct the Staff to file a report by January 31, 2007.

As part of the interconnection investigation, the Order provided for several filings:

- November 14, 2006 – Detroit Edison Filing – A report on the interconnection process as it applied to the Laker School District project.
- November 28, 2006 – Regulated Utilities Filing – A report listing all interconnections completed pursuant to the procedures approved in Case No. U-14085, Case No. U-14088, or Case No. U-14091, as well as any pending interconnection applications.
- December 19, 2006 – Any Interested Person (Public) – Information detailing interconnection problems experienced and any suggestions for changes to the interconnection procedures.
- January 31, 2007 – MPSC Staff – A report summarizing the issues identified and making recommendations for future action.

As directed by the Order, Staff convened a public meeting on January 9, 2007 to discuss the issues raised in the filings and determine if any consensus could be reached.

During the public meeting, several areas were identified where further investigation was needed. Staff prepared a list of questions for the utilities. All utilities provided responses by the requested date of January 24, 2007.

An additional comment period was requested at the meeting. Staff welcomed the opportunity to hear more information on interconnection issues and provided for comments to be submitted through January 24, 2007.

[1] The U-15113 Order is available online at http://efile.mpsc.cis.state.mi.us/efile/docs/15113/0001.pdf.
[2] See U-15113 electronic docket at http://efile.mpsc.cis.state.mi.us/efile/viewcase.php?casenum=15113

All written filings, comments and responses to utility questions are available in the electronic docket for Case No. U-15113.

History of Interconnection[3]

Public Act 141 of 2000[4] directed the MPSC to establish interconnection standards for the interconnection of merchant plants with the transmission and distribution systems of electric utilities. Public Act 141 does not explicitly require utilities to interconnect with generating facilities with a capacity of less than 100 kW; however, the Commission encouraged development of interconnection standards which include smaller systems.

The Commission issued a June 19, 2000 Order[5] in Case No. U-12485 directing the Staff to consult with electric utilities operating in Michigan, owners and operators of merchant plants and proposed merchant plants in Michigan, and other relevant stakeholders to develop recommendations for the standards. Further Orders and Staff reports on this matter are available in the electronic docket for Case No. U-12485.[6] Electric Interconnection Standards were developed and on March 26, 2003 the Commission established Case No. U-13745[7] as a formal rulemaking proceeding.

The Commission formally adopted interconnection standards rules on September 11, 2003. Rule 2 of the interconnection standards directed each utility to file proposed interconnection procedures for approval. Michigan utilities made efforts to develop a uniform set of interconnection procedures. For administrative efficiency Northern States Power Company (d/b/a Xcel Energy) and Indiana Michigan Power Company (d/b/a American Electric Power) filed interconnection procedures that were consistent with procedures adopted in other states, where a majority of their customers reside. The remaining sixteen Michigan regulated utilities adopted a uniform set of interconnection procedures.

Interconnection procedures for all regulated utilities were approved on August 10, 2004 in the following cases:

Case No. U-14085[8]
Northern States Power Company – d/b/a Xcel Energy

Case No. U-14088[9]
Alpena Power Company, Consumers Energy Company, The Detroit Edison Company, Edison Sault Electric Company, Upper Peninsula Power Company, Wisconsin Electric Power Company, d/b/a We Energies, Wisconsin Public Service Corporation, Alger Delta Cooperative Electric Association, Cherryland Electric Cooperative, Cloverland Electric Cooperative, Great Lakes Energy Cooperative, Tri-County Electric Cooperative,

[3] Staff *History of Interconnection* document is available at http://www.dleg.state.mi.us/mpsc/electric/capacity/energyplan/alttech/mi_interconnection_stds01.pdf
[4] PA 141 of 2000, Section 10e(3) (MCL 460.10e(3); http://legislature.mi.gov/doc.aspx?mcl-460-10e.
[5] See Order at: http://efile.mpsc.cis.state.mi.us/efile/docs/12485/0001.pdf.
[6] http://efile.mpsc.cis.state.mi.us/efile/viewcase.php?casenum=12485.
[7] http://efile.mpsc.cis.state.mi.us/efile/viewcase.php?casenum=13745
[8] http://efile.mpsc.cis.state.mi.us/efile/viewcase.php?casenum=14085
[9] http://efile.mpsc.cis.state.mi.us/efile/viewcase.php?casenum=14088

Midwest Energy Cooperative, The Ontonagon County Rural Electrification Association, Presque Isle Electric & Gas Co-op, and Thumb Electric Cooperative of Michigan.

Case No. U-14091[10]
Indiana Michigan Power Company, d/b/a American Electric Power

[10] http://efile.mpsc.cis.state.mi.us/efile/viewcase.php?casenum=14091

Laker Schools Interconnection

Detroit Edison Report on Laker Schools Interconnection

The Commission directed Detroit Edison to file a report on the interconnection process as it applied to the Laker School District project.[11] The report was to provide the timing of events at each step in the interconnection process, changes Detroit Edison plans to implement to assure future interconnections are completed more smoothly, and indicate how excess power from the Laker School District project will be treated.

Table 1: Interconnection Timing
Detroit Edison Report on Laker Schools Interconnection

Date	**Interconnection Procedure Activity**
August 29, 2006	Detroit Edison received application.
August 30, 2006	Detroit Edison engineer contacted project developer to discuss application deficiencies (missing $100 application fee and $10,000 Interconnection Study Fee).
September 20, 2006	2-hour consultation between Detroit Edison engineers, project developer and a Laker Schools representative. Detroit Edison requested that the (3) 65 kW turbines be shut down for safety and reliability reasons.
September 20, 2006 – October 13, 2006	Detroit Edison performed an Interconnection Study.
October 20, 2006 – Present (filing was made on November 14, 2006)	Detroit Edison worked on modifying the interconnection design. Expected operational date is November 22, 2006.

At the time of the August 29, 2006 application, Detroit Edison reported that the turbines were previously installed and interconnected.

In regard to changes Detroit Edison plans to make to assure that future interconnections are completed more smoothly, the company plans to make more efforts in the area of public outreach and education including making more information available on the company website.

Detroit Edison said in the report that three meters will be required to properly bill Laker Schools. A demand/energy meter will measure the inflow from Detroit Edison to the

[11] This report is available online at http://efile.mpsc.cis.state.mi.us/efile/docs/15113/0006.pdf.

school and a second meter will measure the outflow from the school to Detroit Edison. The third meter will be used to meter the generation. Detroit Edison is in the process of working with Laker Schools on the excess power agreements. The company anticipates a D3 rate with Rider 3 service for standby power.

Detroit Edison noted that the Interconnection Procedures allow 6 weeks for utilities to complete interconnections with aggregate generator capacity of 195 kW (three 65 kW turbines). Safe and reliable interconnection of the Laker Schools generation could take up to 6 months. Specifically, the lead times required for purchasing the equipment necessary for the interconnection could have used up all of the allowed interconnection time and more. In the case of the Laker Schools project, the Company had all of the major equipment available. This is not expected to be the case for all future interconnections. In order to meet the 6 week deadline, Detroit Edison says that the Commission may need to require the project developer to obtain and pay for all of the equipment necessary for interconnection.

Laker Schools Filing

The Laker Green Power Project Manager, Brion Dickens, submitted a filing on behalf of Laker Schools.[12] Laker Schools specified they tried to follow all rulings and guidelines set forth by the PSC. Laker Schools is a public school district and reports it had limited funding for this project and relied solely on volunteer labor.

Laker Schools felt that in the initial two-year pre-construction phase of the project, Detroit Edison was very supportive of the project.

Laker Schools reported that the application for the three-65 kW turbine project was filed before August 2006. Detroit Edison lists the date the application was received as August 29, 2006.[13]

During this time period, Mr. Dickens reports he was working with Detroit Edison on interconnecting a smaller wind turbine located at his private residence. This project is described in the Detroit Edison Report on the Laker Schools Interconnection as Request Number 1, with an application received by Detroit Edison on September 23, 2005. Mr. Dickens writes that Detroit Edison did not notify him within three days of receipt of the application. In the Detroit Edison Report on the Laker Schools Interconnection, Detroit Edison reported that this application was incomplete; however, Mr. Dickens says that he was never notified of any application deficiencies. Three weeks after the application was sent, Mr. Dickens reported that Detroit Edison called him and said that there was no issue with the operation of the turbine and that the

[12] See http://efile.mpsc.cis.state.mi.us/efile/docs/15113/0014.pdf.
[13] Footnote 10, of the Detroit Edison Report on the Laker Schools Interconnection (p. 8) indicates that Laker Schools claims to have sent the Application in June or July 2006 and that Detroit Edison could find no record of that application. The Detroit Edison Report on the Laker Schools Interconnection further states the Company has no record of contact between Detroit Edison personnel and Laker Schools, between November 16, 2004 and July, 2006.

project information was being forwarded to Detroit Edison's metering department, to undertake the next steps in the process.

Mr. Dickens says that during this time the Laker Schools project was discussed and a statement of support was given from Detroit Edison. Also during this phone call, Mr. Dickens wrote that he was told all fees for everything involved with the Laker Schools project would be waived and that 195 kW feeding the grid through the school would not likely require any studies and that any study fees would also be waived. At some point in the process, Mr. Dickens reported Detroit Edison gave him verbal approval to run the turbine at his home.

An application for a second project was prepared by Mr. Dickens and received by Detroit Edison on April 25, 2006. This project is a net metering interconnection of a 10 kW wind turbine located at the Laker Schools Superintendent's residence, similar to the project interconnected at Mr. Dickens's private residence. The Detroit Edison Report on the Laker Schools Interconnection refers to this application as Request Number 2. Detroit Edison reported that this application was also incomplete and non-conforming and reported that the project was properly interconnected and metered as of October 2006. Mr. Dickens reports that after filing the application, weeks went by and no contact was made from Detroit Edison. Because of his previous experience (Requests Number 1 and 2) with no application receipt notification from Detroit Edison, Laker Schools was not concerned when they heard nothing after filing the Laker Schools project application (which was identified as Request No. 3 in the Detroit Edison Report on the Laker Schools Interconnection).

The timing of the application is an area of dispute between Laker Schools and Detroit Edison. Laker Schools writes that Detroit Edison lost the first application. Laker Schools relates that a Detroit Edison representative told him over the phone, "We remember seeing the blueprints but we can't find the application, and would you please send another."

In the filing, Laker Schools reports they were not told in advance they would have to sign a Rider 3 agreement and pay a different rate because of the windmill project. The Detroit Edison Report on the Laker Schools Interconnection explains that it is anticipated that Laker Schools would be on a D3 Rate (General Service Rate) with Rider 3 (Standard Contract Rider No. 3 – Parallel Operation and Standby Service).

Laker Schools attributes the problems experienced with this interconnection to a lack of communication between Detroit Edison and Laker Schools.

Laker Schools and Mr. Dickens agree that the project timelines might need to be changed, but they also propose that utilities should follow the timelines or face penalties. Further, Laker Schools recommends that UL 1741 certified equipment under 200 kW should be interconnected without any grid upgrades, line studies or additional safety equipment required.

Mr. Dickens writes that net metering interconnection applications should be a one-page form. He recommends Detroit Edison's net-metering strategy, which presently requires three meters, should be simplified. He points out that the three-meter approach has created additional costs and led to seemingly insurmountable problems for both developers and Detroit Edison.

Staff Discussion on Laker Schools Interconnection

Based on the information provided in the Detroit Edison Report on the Laker Schools Interconnection and the Laker Schools filing, it is not possible to piece together the precise course of events with any degree of certainty. The interconnection timing information given in the filings is contradictory. Detroit Edison says the application was received on August 29, 2006 while Laker Schools says it was sent earlier and that Detroit Edison lost it. Dated documentation was not provided in either filing. Laker Schools reports that the District regrets that the promises made to them by Detroit Edison over the two years of the pre-project development and project construction were never proposed to them in writing but instead were taken at the word of Detroit Edison personnel.

The problems with this interconnection highlight the need to make changes in the Interconnection Procedures. Staff is making several recommendations for changes to the Interconnection Procedures that require written documentation of certain interconnection activities, improved internal utility processing of interconnection applications and increased public knowledge of the interconnection procedures. Staff believes these recommendations will prevent any reoccurrence of similar interconnection process communications and implementation problems in the future.

Utility Filings and Comments from Interested Persons

Utility Interconnection Filings

The Commission directed each regulated utility to provide a listing of completed and pending interconnections processed under the new Interconnection Procedures. Information on the timing of each step in the process and any problems encountered was also requested.

Table 2: Summary of Interconnection Projects by Utility

Regulated Utility	**Number of Completed or Pending Projects**	**10 kW and under**	**>10 kW to under 30 kW**	**30 kW to under 150 kW**	**150 kW to under 750 kW**	**750 kW to under 2 MW**	**2 MW and greater**
Alger Delta Co-op	1	1					
Alpena Power	2	1	1				
American Electric (Indiana Michigan) Power Co.	0						
Cherryland Electric Co-op	0						
Cloverland Electric Co-op	1	1					
Consumers Energy	22	6			2	9	5
Detroit Edison	21[1]	7[1]			1[1]		
Edison Sault	0						
Great Lakes Energy Co-op	1		1				
Midwest Energy Co-op	0						
Ontonagon County REA	2[2]	2[2]					
Presque Isle Electric & Gas Co-op	0						
Thumb Electric Co-op	0						
Tri-County Electric Co-op	0						
Upper Peninsula Power Co.	3	1			1		1
We Energies[6]	2	1				1	
Wisconsin Public Service Corp.	0						
Xcel Energy	0						
Total	**55**	**20**	**2**	**0**	**3**	**10**	**6**

[1] At least 7 interconnections are 10 kW and under and one is the Laker Schools three 65 kW wind turbines (195 kW total). The generator size for the remaining Detroit Edison interconnections is not known.
[2] Intalled pre-2004.

Utilities identified the following problems while processing interconnection applications:

- Interconnection timeline can be unrealistic due to:
  - Incomplete or missing application data
  - Requests to evaluate multiple alternatives
  - Requests to modify contract language
  - Delays in payments for interconnection costs
  - Equipment purchasing lead time issues
  - Equipment not installed as indicated on one-line and/or site diagram
- Right-of-way acquisition to build 46 kV line was difficult
- Some developers lack the technical knowledge necessary for grid interconnection
- Utility must spend more than 2 hours in consultation to assist developer
- Interconnection costs seem to be an unanticipated cost for some developers
- Utility incurs expenses to provide the necessary protection, capability, reliability and safety requirements of interconnecting to the grid.
- One delay was due to the customer needing to install a required disconnect
- The MPSC waiver process slowed down one interconnection project
- A customer changed solar panels part way through the interconnection process, necessitating a technical change
- Project began operating without the utility's knowledge

Comments from Interested Persons

The Commission provided an opportunity for any other interested person to file, by December 19, 2006, information detailing interconnection problems they have experienced and suggestions for changes to the process. Including the Laker Schools filing, 20 separate filings[14] were received.

Customer/Developer/Other[15]	19
Regulated Utilities	1 combined filing

Staff was directed to review and analyze the comments. Based on the filed comments, Staff prepared a list of interconnection problems and recommendations for process improvements for presentation at the January 9, 2007 meeting. Comments from each comment phase in this investigation will be discussed in the List of Interconnection Problems and Recommendations section of this report.

[14] All filings made in MPSC Case No. U-15113 are available online at http://efile.mpsc.cis.state.mi.us/efile/viewcase.php?casenum=15113
[15] Other includes the Great Lakes Renewable Energy Association and the State Energy Office.

January 9, 2007 Public Meeting

As directed by the Commission Order, Staff convened a public meeting on January 9, 2007 in the Commission Offices. Forty-four people attended the meeting[16] in person and nine more participated via telephone.

Table 3: Attendees at Public Meeting

	Attended Public Meeting
Customer	5
Manufacturer	2
Dealer/Installer	6
Developer/Consultant	4
Interest Groups[1]	6
College/University	4
Utility	14
Transmission Utility	2
Commission Staff	7
Government	3
Total	**53**

[1] Great Lakes Renewable Energy Association, Michigan Independent Power Producers Association, Environmental Law & Policy Center, Farm Bureau

Staff presented its analysis of the filings. The meeting lasted about 3½ hours with much discussion of issues. The meeting agenda was organized so that under 30 kW generator interconnection issues and 30 kW and larger generator interconnection issues were grouped separately for discussion. A meeting summary[17] is available online.

During the meeting, an additional written comment period was established and the need for additional utility questions was identified. Staff committed to providing, within five business days, a meeting summary, questions for utilities to respond to, and a list of issues that appear to be areas of potential consensus. These items were posted on the U-15113 Utility Interconnection Investigation Information Page[18] on January 17, 2007.

[16] Copies of the meeting sign-in sheets are available online at http://www.michigan.gov/documents/mpsc/Jan_9_sign_in_sheets_183206_7.pdf
[17] A summary of the meeting prepared by Staff is available online at http://www.michigan.gov/documents/mpsc/jan_9_meeting_summary_183502_7.pdf
[18] The U-15113 Utility Interconnection Investigation Information Page is online at http://www.michigan.gov/mpsc/0,1607,7-159-16377_43420-159923--,00.html

Additional Written Comment Period and Utility Responses to Staff Questions

During the additional comment period established by Staff, eleven filings were received through January 24, 2007. In addition, Detroit Edison and Indiana Michigan Power filed separate responses to the utility questions and the remaining regulated utilities filed one combined response and one supplemental response.

List of Interconnection Problems and Recommendations

Based on the filed comments and public meeting discussion, it is clear that there is public dissatisfaction with the implementation of Interconnection Procedures. This section of the report contains a consolidated list of all problems and recommendations that were raised during the public meeting and in comments received.

While reviewing the issues, Staff noted that they could be logically organized into two categories. There is some overlap, but in an effort to present the issues in an efficient manner, the comments are divided into issues for interconnections of systems (1) less than 30 kW and (2) 30 kW and larger.

Under 30 kW Generator Interconnection Issues

Complexity of Application

This issue was raised by many commenters. One commenter wrote that his application to interconnect a 5.6 kW photovoltaic system at his home totaled 18 pages and took a week to prepare. Many commenters requested that a 1 or 2 page application be developed.

The current application, approved by the Commission as part of the Interconnection Procedures in U-14088, (for all regulated utilities with the exception of Indiana Michigan Power and Xcel) is included as part of the Interconnection Procedures output under 30 kW. The actual application is one page; however, the applicant is required to provide several attachments. The required attachments include a completed 2-page Appendix (B or C, depending on the type of generator). Attachments to the Appendix include a site plan (some utilities request photos), simple one-line diagram, detailed one-line diagram, national recognized testing laboratory certification, and a commissioning test procedure. The applicant is also encouraged to complete the 3-page Interconnection Study Agreement, for inclusion with the application. (According to the Interconnection Procedures, most projects under 30 kW will not require study fees.)

One commenter suggested that a single one-line diagram should be sufficient and that some of the nomenclature is needlessly complex for systems that are this small. The commenter suggested using the one-line diagram supplied to get the electrical permit. Also mentioned in comments was the question, “Why shouldn’t the utility be required to specify the ‘written commissioning test procedure?’”

Longer than 2 week application processing time

According to the Commission's Interconnection Standards Rules and Utilities' Interconnection Procedures, as approved in U-14088, utilities are to complete all of their obligations for projects with aggregate generator capacity of under 30 kW within two weeks of the time the application is complete.

Several commenters reported that applications for under 30 kW interconnections have taken much longer than two weeks.

A review of the utility interconnection filings indicates that where dates were provided, every under 30 kW interconnection that had been completed took longer than two weeks from the time the application was received. Several applications, though, took less than one month from receipt of the application to completion of the interconnection. Most of the reports do not include the date the application was deemed complete by the utility, so it is not possible to know whether the utility met its obligation.[19]

Several commenters suggested that the Commission should require utilities to develop their own small solar photovoltaic or wind turbine generator projects as a learning experience to help them understand processing issues. One commenter suggested that the Commission itself should implement a small project.

Several requests were made to set up a statewide entity to process all interconnection requests and take the responsibility away from utilities. This entity would be accountable to the Commission and interact with utility engineers to assure that systems are safely interconnected and will have no negative impacts upon the grid. It was also suggested that an independent entity could handle billing in a cost-effective manner.

Application Processing

Several commenters reported their utility did not provide notification when their application was received or provide a list of deficiencies if their application was incomplete. After filing the application, some commenters reported waiting long periods of time before any contact with the utility occurred.

The Interconnection Standards and the Interconnection Procedures (U-14088) require that the utility notify the applicant within 3 days of receiving the application. A good starting point for improving the process will be for each utility to assess how they are doing with following the interconnection process. The interconnection process will proceed more smoothly if both applicants and utilities are following the same procedures.

[19] Also, there is still some uncertainty about how many of Detroit Edison's reported interconnection applications represent systems less than 30 kW.

A simple thing that can be done quickly and easily is for each utility to make sure every application is acknowledged within 3 business days of receipt. Several commenters mentioned that they thought their utility lost the application they filed. One utility told the applicant they did not receive the application. But, since the applicant had the cancelled interconnection fee check from the utility, the utility was encouraged to search again and was able to locate the application. One developer explained he has resorted to sending applications by certified mail, with a return receipt requested, so that he can verify receipt of each application.

If utilities reliably acknowledge receipt of all applications, these problems can be resolved quickly. If the applicant is expecting acknowledgement and does not receive it, a phone call to the utility can quickly lead to the utility locating a lost application or letting the applicant know that resubmittal is necessary to get the interconnection process moving.

The interconnection process is relatively new and under these Interconnection Procedures, only about 2 dozen total applications have been processed. Some utilities have received no applications yet. Based on the comments received, though, Staff believes that, to varying degrees, utilities must improve interdepartmental coordination of their interconnection activities. Staff recommends that each utility develop a tracking system for its entire interconnection process, which will make it possible for utility personnel to identify, at any point in time: (1) the number of completed and pending applications; (2) the status of each pending application; and (3) what person is assigned to complete the current and next step in the procedure.

UL Certification

This is undoubtedly one of the primary concerns raised during the investigation. A basic question being raised by dealers and installers is whether UL Certification should be considered sufficient proof of the safety and reliability of equipment. They indicate that certification under UL 1741 is sufficient for utility interconnections in other states and countries, and propose this certification should be sufficient in Michigan, too.

The Interconnection Procedures (U-14088), Technical Requirements section on page 3 of the document states that the IEEE Std. 1547, Standard for Interconnecting Distributed Resources with Electric Power Systems, is adopted and being incorporated as reference.

Commenters believe that equipment that is tested and listed under UL 1741 should be considered safe, with no further requirements for additional equipment or testing required. There is a general consensus on the part of Michigan solar photovoltaic (PV) installers that a simple verification of the manufacturer's UL listing should be sufficient for a utility's interconnection procedure, at least for net metering installations.

Inherent in the logic regarding net metering installations is the system size limit, which is based on the customer's annual energy needs. Michigan PV installers argue that the

utility grid must be capable of absorbing the quantities of energy that might be exported from a grid-tied net metering system. If not, they explain, the grid could not serve the customer's peak energy demands in the absence of an installed PV system.

Commenters recommend a simplified process be used for small PV and wind systems, and suggest a single page application form with the customer's identification information and the inverter manufacturer's UL 1741 listing should be sufficient for completing the interconnection.

Staff believes there was some initial confusion regarding the relationship between the IEEE 1547 standard and the UL 1741 listing.[20] When IEEE adopted the 1547 standard, in 2003, a few tasks remained to be completed, including reaching agreement on the appropriate testing protocols that would be required to demonstrate that equipment meets the 1547 standard. Those test procedures became the subject of IEEE 1547.1, which remained under development until quite recently. It is Staff's understanding that new test procedures under IEEE 1547.1 are now slated to become effective in May 2007. During the time period between 2003, when the IEEE 1547 standard was approved, and May 2007, there was a general agreement on the part of IEEE to utilize UL 1741 testing protocols, and accept the UL 1741 listing as proof of compliance with IEEE 1547. Staff now understands that UL is prepared to implement new procedures by May 2007 which will insure compliance with IEEE 1547.1.

Michigan utilities were asked if they would accept UL 1741 certified inverters for interconnection, meaning that a detailed review of the inverter's engineering design, characteristics, and suitability would not be necessary to approve it for interconnection. Utilities were also asked to identify circumstances under which UL 1741 listed inverters will not be acceptable to the utility.

- All utilities oppose a concept that denies them the right to consider the safety and operational aspects of a specific interconnection, based solely on a UL 1741 listing. This is because, they advise, local site and systems considerations may require additional testing and could necessitate the installation of additional protective equipment.

- Indiana Michigan Power responds it will accept for interconnection UL 1741 listed inverters.

- Detroit Edison reports there is no test in IEEE 1547.1 or UL 1741 that can be used to insure distributed generation will clear (that is, cease energizing utility lines) under all fault circumstances that could occur on the electric power system. Edison contents that IEEE 1547 requires interconnected distributed generation must clear for all faults. Edison reports this can be a significant problem for distributed generation connected to certain distribution system configurations.

[20] See http://www.eere.energy.gov/de/interconnection_stan_dev.html.

- Consumers Energy will accept inverter interfaced generators certified to UL 1741 with a capacity rating of 0 to 750 kW. Consumers states, however, there may be situations in which the UL listing, by itself, will not insure acceptability for interconnection. Consumers indicates such situations could include, but are not limited to, the possibility of the UL 1741 listing failing to comply with the IEEE 1547 standard or the UL certified equipment not being appropriate for the interconnection, or failing to comply with the Interconnection Procedures.

Based on the utilities' interconnection procedure filings, the Commission adopted the IEEE 1547 standards. But, it appears that IEEE 1547 might be delegating testing to laboratories such as UL, which then would certify IEEE 1547 compliance under its UL 1741 test procedures. Staff will consult with appropriate personnel at IEEE, UL, and the U.S. Department of Energy, in order to understand the status of the UL listing. If Staff can ascertain that UL 1741 listing indicates full compliance with the IEEE 1547 standard, Staff will recommend that equipment with the UL listing be considered generally acceptable for interconnection to the distribution systems of any Michigan utility.

Pre-Certified Equipment List

Rule 8 of the Interconnection Standards requires that the Interconnection Procedures include provisions for creating and maintaining an up-to-date listing of pre-certified types, makes, and models of manufactured generating equipment. Equipment on this list is generally acceptable for interconnection with the distribution system and a detailed review of the item's engineering design, characteristics, or suitability is not necessary to approve its use or installation by a project developer.

The Commission discussed the requirement for the list in Rule 8 in its July 8, 2003 Order in Case No. U-13745:

> The benefits of the rule – apprising project developers of the types of equipment that require minimal, if any, labor-intensive, project-specific services on the part of either the developer or the utility – should outweigh the minimal costs of maintaining an up-to-date listing, particularly if the listing encourages the use of more standardized equipment. (Order, page 14)

As part of this investigation, Staff asked each utility to provide its list and indicate where and how it can be obtained.

Detroit Edison reported its Generator Supplement contains a list of approved relays and also refers to the California Energy Commission Rule 21 equipment list; however, each installation must meet both the UL or other certified testing laboratory compliance and IEEE 1547.

Consumers Energy has an approved equipment list, consisting of relays, as part of its Generator Supplement.

At this time, both utility's lists appear to include only relays. Based on comments from developers and installers, they anticipated that the list would encompass more than relays and include other equipment such as inverters, to assist them in choosing equipment the utility would readily accept for interconnection.

Xcel Energy plans to rely on the UL certification list.

The regulated utilities reported that the cooperatives and some of the other regulated utilities are not in a position to create and maintain a pre-certified generation equipment list and will likely defer to lists created and maintained by the larger utilities or other administrative bodies, such as the California Energy Commission.

Education

Utility commenters stressed the importance of educating the public on the interconnection process. Utilities reported instances where customers began operating on-site generation without going through the interconnection process. Since utilities are responsible for distribution system safety and reliability, they must be given an opportunity to review each interconnection before operation begins. That is one of the major purposes of the interconnection process.

Non-utility commenters were concerned that utilities have not followed the interconnection procedures and have not implemented sufficient interdepartmental coordination of interconnection activities within the utility. Interconnection under these procedures is relatively new for utilities and in the last several years there have been fewer than 60 interconnections processed by Michigan's regulated utilities. As mentioned above under application processing issues, several commenters recommended that utilities themselves ought to install and operate some of these small systems, to gain a better understanding of how they work.

Penalties

The issue of penalties for utilities that do not process interconnections in the allotted time was raised by commenters. One commenter wrote that penalties should be established for utilities that do not meet deadlines, since Act 141 (Section 10c) allows the Commission to penalize utilities who violate orders issued by the Commission pursuant to the Act.

Net Metering

Many of the comments received relate to utility implementation of net metering, under the program approved by the Commission in Case No. U-13456.[21] Written comments explicitly about net metered systems, or generally about all systems smaller than 30 kW, were received from sixteen individuals, and much of the discussion at the January 9 public meeting was focused on net metering installations.[22] Of the sixteen written commenters, all but three are professionally engaged in the design and installation of generators that could qualify for net metering in Michigan.

At present, net metering is available for customers with generators less than 30 kW. As shown in Table 2, almost half of all interconnections completed to date are for systems eligible for net metering, and the largest number are for systems smaller than 10 kW. From communications MPSC Staff has had with net metering applicants and from reports received from Michigan utilities, Staff believes a majority of these applications are for small solar photovoltaic (PV) systems that utilize UL-approved inverters to interconnect with utilities. Several dealers and installers of small PV systems participated in the January 9 public meeting and provided written comments. Some of the major concerns raised in comments regarding net metering treatment are those already listed:

- Complexity of application and application processing (12/16 written comments), including longer than two-week processing time.
- Sufficiency of UL Listing and development of the Pre-Certified Equipment List (6/16 written comments).

The gist of these comments related to utility net metering programs is a desire for a very simplified application form and processing for net metering applications.

Most of the commenters believe that utilities should be able to provide a statement regarding present requirements for testing and certification for small inverters, and that should suffice for the Pre-Certified Equipment List. That is, rather than listing specific equipment by manufacturer and model number, commenters believe utilities should be able to specify that if inverters have received IEEE 1547 certification or UL 1741 listing, then no additional utility testing or requirements should be necessary. Many commenters believe that UL 1741 listing should be considered sufficient proof of the safety and reliability of an interconnected system, at least until such time as an IEEE

[21] See http://efile.mpsc.cis.state.mi.us/cgi-bin/efile/viewcase.pl?casenum=14346.
[22] This includes comments on behalf of the Great Lakes Renewable Energy Association, which were endorsed by twelve GLREA members. Among those endorsing the GLREA comments were four individuals who also provided their own written comments. Of the twelve endorsers, seven are professionals whose businesses are involved with the design and installation of net metered generators and one is a customer who is considering net metering for a small generator.

1547 testing protocol is formally adopted and the UL 1741 listing is then either amended or replaced.[23]

Commenters believe no interconnection studies should be needed for net metered installations. Since net metered systems will be sized at a maximum to meet the customer's annual energy needs, commenters do not expect any difficulties in the capability of the local distribution system to be able to safely absorb the quantities of electricity that could be exported to the grid.

Additional comments from those advocating interconnection procedural changes for net metering customers primarily advocate standardization of interconnection equipment and utility metering configurations and billing strategies, with the goal of simplifying procedures and reducing customer expenses (11/16 written comments).

Staff believes that it may be possible to reach some consensus among interested parties on at least some of the proposals made by the advocates for a simpler net metering program for Michigan.

Staff Recommendations for Under 30 kW Generator Interconnections

1. **Staff recommends that the Commission require utilities to file interconnection reports in the U-15113 electronic docket every 6 months using the table format shown in Appendix A**. These reports will be used to evaluate the effectiveness of the Interconnection Procedures.

2. **Staff recommends that utilities be required to provide within three business days written notification of the receipt of each interconnection application. Email, facsimile, or US mail can be used.**

3. **Staff recommends that the Commission require utilities to evaluate the application for completeness and notify the applicant in writing within 10 business days of receipt of each interconnection application, specifying: (1) whether the application is complete, and if not advising what material is missing; (2) any changes in rates the utility believes will be required or optional once the interconnection is complete; and (3) all remaining activities that the utility believes will be the responsibility of the applicant to complete, including the proposed timing for those actions. Email, facsimile, or US mail can be used.**

   The Interconnection Procedures require the utility to notify the applicant of receipt of the application within three days. The utility's time deadline to complete its obligations does not start until the application is complete; however, there is no time requirement for the utility to determine whether the application is complete

[23] See p. 14.

and notify the applicant. The Interconnection Standards were discussed by the Commission in an Order issued on February 5, 2001 in Case No. U-12485:

> The Commission finds that utilities should be required to respond to initial inquiries from developers within 48 – 72 hours. Additionally, a utility should be required to acknowledge receipt of a completed application within a reasonable time and the acknowledgement should either indicate that the application is acceptable or that the application is deficient and requires the submission of further information. In the event that further information is required, the utility should clearly identify all deficiencies and explain to the developer all steps that must be taken to remedy the deficiencies. (Order, p. 10-11)

A review of interconnection standards from other states shows that 10 days from receipt is the typical amount of time allotted for utilities to complete this activity. See Appendix B for a table showing which states have time allotments for determining if an application is complete. The Interstate Renewable Energy Council's Model Distributed Generation Interconnection Procedures and FERC's Small Generator Interconnection Guidelines also allow 10 days to complete this step.

Rule 4 (4) of the Interconnection Standards refers to this step in the interconnection process:

> The interconnection procedures shall set a reasonable deadline for the electric utility to make an initial response to the application. The initial response shall indicate whether the application complies with the interconnection procedures and the standards set forth in these rules and identify any information required to complete the application or bring it into compliance. If an electric utility rejects an application for interconnection or otherwise withholds interconnection, then it shall provide the project developer with a written explanation of the reasons, which shall be based on demonstrably valid technical, reliability, or safety criteria.

This issue was not explicitly raised by any of the commenters; however, it appears that many commenters do not agree that interconnection applications are being processed in a timely fashion. Staff believes that including a maximum time allotment on this interconnection activity is likely to improve applicants' overall satisfaction with the process.

4. **Staff recommends that the Commission require utilities to appoint a knowledgeable utility interconnection project manager for each interconnection application.**

This person may be different from the single point of contact mentioned in Rule 2 of the Interconnection Standards. The project manager would know of the status of the interconnection application within the utility at all times, coordinate interdepartmental utility interconnection activities, and communicate regularly with the project developer.

5. **Staff recommends that the Commission encourage utilities to educate the public about the interconnection process by speaking at conferences and workshops, and maintaining easy to understand website informational pages.**

   The regulated utilities commented they are willing to work together to develop one or more statewide conferences or workshops to provide educational outreach regarding the interconnection requirements and related issues.

6. **Staff recommends the Commission establish a workgroup to develop faster and less complex interconnection procedures for 10 kW and under interconnection projects.**

   Commenters also requested a simpler application for under 30 kW interconnection projects. Based on the utility interconnection filings made as part of this investigation, the majority of the under 30 kW interconnection projects processed by utilities so far, are 10 kW and under. Starting with this group of smaller interconnections will be a good beginning. **Consensus was reached on this issue at the January 9, 2007 public meeting.**

7. **Staff recommends that the Commission direct the Michigan Renewable Energy Program Ratemaking and Net Metering Committee to form a task force comprised of representatives from MPSC Staff, utilities, and interested parties 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.**

30 kW and Larger Generator Interconnection Issues

Interconnection Costs

Several developers commented that timing and cost issues were intertwined. One developer wrote that the first cost estimate based on the Interconnection Study (high-level initial cost estimate) included $545,000 for certain construction work. However, two quotations from utility-approved contractors were much lower, with a price differential of as much as $320,000 for that construction work. After nine months and the involvement of Staff, the utility submitted a new study cost of $335,419 (the initial study cost was $725,000), according to the filed comments.

At the public meeting, comments included concern that because of this experience, it is hard to feel comfortable with a utility's initial cost estimate. Interconnection then can be delayed because the developer feels it is necessary to negotiate with the utility to reduce the costs.

One developer said that the current interconnection process requires a producer of distributed energy to negotiate with the utility in an unbalanced manner and without benefit of competition or a standard of reasonableness. The comment was made that in the current system, the utility determines and controls the cost, timing and scope of the interconnection equipment and services required. Developers generally agreed the interconnecting party can either accept these costs, or be faced with expensive delays for additional engineering to convince the utility that an alternative approach is warranted. One commented that the current Interconnection Procedures endorse to the utility a virtual "blank check" to draw on the developer's account, without constraint or oversight.

An electrical engineering consulting firm commented:

> Consumers Energy, in particular, has made great strides from days past in working with interconnections. This advancement is not without maintaining some flaws of the past. It is nearly impossible for a small project developer to have a full understanding of what a utility requires and often has to hire a consultant to gather the data requested, walk the producer through the steps required, and evaluate any requests from the utility to avoid unneeded costs. Requirements often identified in interconnect studies are seen as being somewhat excessive and not consistent with other projects recently performed. The requirements do not seem to be scaled back to something suiting a small generation site, but more like a requirement of a 50 MW or larger power plant.[24]

Commenters made several recommendations for addressing the fairness of interconnection costs:

- Base interconnection costs on prices available in the market place by obtaining fixed price contracts from utility approved suppliers using utility grade construction standards. The commenter explained that fixed price contracts are available from Michigan construction companies. Utilities hire these same companies themselves to complete the work, in most cases, and these companies know the standards that must be met.
- The Commission should establish the appropriate amount of utility overhead that is permissible to charge in addition to direct project costs.
- Interconnection costs should be limited by a $/kW ceiling calculated by the Commission.

[24] Document number 23, p. 2, in U-15113 electronic docket, at http://efile.mpsc.cis.state.mi.us/efile/viewcase.php?casenum=15113.

The Commission's February 5, 2001 Order[25] in Case No. U-12485, specifically addresses interconnection costs.

> The Commission's ability to address the issue of interconnection costs is shaped by two provisions of Section 10e. First, in the event that it were to be proven that a utility had imposed excessive costs to prevent or unduly delay the ability of a merchant plant to interconnect with the facilities of the utility, the Commission has authority pursuant to Section 10e(1) to "order remedies designed to make the merchant plant whole" and to impose fines of up to $50,000 per day on the utility... Further, utilities should be very cautious about inflating the cost of interconnection studies, particularly in view of the substantial penalties for violations of this provision. (Order, p. 12)

Rule 7 (4) of the Interconnection Standards includes some language about interconnection costs:

> An agreement may impose charges for the electric utility's cost of making physical modifications to its distribution system, which shall not exceed reasonable, actual costs.

Interconnection Deadlines

According to the Interconnection Standards, application processing deadlines range from 4 weeks to 18 weeks for 30 kW and larger generators, depending on the size of the generator.[26] These timelines apply to the time between when the utility determines the application is complete and the date the utility completes all of its interconnection obligations. Included in this span of time is a 2-hour consultation with the developer, execution of the study agreement, utility performance of the interconnection study, execution of the interconnection and operating agreement, equipment procurement, final project design, and construction.

All parties participating in U-15113, including utilities, express concern about the timelines. In the combined regulated utility filing, utilities comment that experience is demonstrating that there are legitimate reasons why these time periods should be modified or additional exceptions added. Utilities reported that they are spending more than 2 hours in consultation with developers on these larger interconnections.

[25] The Commission's February 5, 2001 Order is available online at http://efile.mpsc.cis.state.mi.us/efile/docs/12485/0006.pdf

[26] Interconnection application processing deadlines by aggregate generator size classification: 30 kW to less than 150 kW – 4 weeks, 150 kW to less than 750 kW – 6 weeks, 750 kW to less than 2 MW – 12 weeks, and 2 MW or greater – 18 weeks.

During the study phase, one utility reported being asked to evaluate multiple alternatives. Requests to modify contract language and waiting for payment also slows down the process. At times, the utility has arrived at a site to do final construction and found that the developer's equipment is not installed as indicated on the one-line or site diagram.

One developer reported that his interconnection for a 1.6 MW facility took 20 months. Another developer reported that the interconnection process took 13 months, instead of the 2-month timeframe established in the Interconnection Procedures. Delays resulted in loss of electrical generation income during the peak summer usage period and also higher operating costs due to the nature of the renewable energy (biogas production process) source.

For planning purposes, both developers and utilities will benefit from achievable time deadlines.

Commenters recommended that utilities purchase basic interconnection equipment and keep it in stock for future interconnections. Utilities are concerned, though, that ratepayers will end up paying for equipment while it is sitting in stock waiting to be used.

Commenters also suggested using a third party to administer all interconnection activities.

Communication

Difficulties making contact with utility interconnection personnel were mentioned as a developer concern. The interconnection process sometimes required utility staff from separate departments to coordinate efforts. Developers felt this coordination could be streamlined to improve the process. Developers liked the idea of having a project manager at the utility who would be responsible for coordinating each utility group's portion of the work. The project manager would keep the project moving within the utility and also be able to update the developer on progress toward completing the interconnection.

The meeting participants generally agreed that pre-application meetings would be helpful to both utilities and developers. The utility project manager would attend these meetings. A utility representative suggested that the developer should consider meeting with the utility prior to purchasing generation equipment. Staff believes it would be helpful to amend the interconnection procedures to include this step. **At the Public Meeting, consensus was reached that pre-application meetings should be encouraged.**

Waiver Process (Rule 8)

The utilities commented that the formal waiver process provided for in the Interconnection Standards could become cumbersome and create delays for

interconnections. The Commission recently approved a waiver in Case No. U-15142. The waiver process took 3 weeks at the Commission. The current waiver process requires an application to be filed, reviewed by appropriate Staff, and then approved at a regularly scheduled Commission meeting. This could reasonably take substantially longer than 3 weeks, however.

The utilities proposed an informal waiver process where the utility and developer would agree to the modifications and file a proposed waiver with the Staff. The waiver would be automatically approved in a certain number of days, unless the Staff requests further information or a formal proceeding. **Consensus was reached on this matter during the public meeting.**

Certified Contractor List (Rule 7)

> Rule 7 (5) of the Interconnection Standards is listed below:
>
> An agreement required by this rule shall set deadlines for the electric utility to perform its obligations. The deadlines shall be consistent with the requirements in R460.486(1). If the electric utility is unable to perform its obligations within the deadlines, then the project developer may choose to retain a contractor from a list of certified contractors maintained by the electric utility, and the contractor shall perform the remaining services and construction activities that are necessary to comply with the electric utility's specifications. The interconnection procedures shall include the list of certified contractors that are capable of performing services and construction under this subrule. The electric utility may not withhold or deny certification from any contractor that requests certification and demonstrates the requisite capabilities.

During the development of the Interconnection Standards the utilities objected to the "self-help" provision in the rule. On page 13 of the Commission's July 8, 2003 order in Case No. U-13745, the Commission says that utilities are legally responsible for their electric distribution facilities. The Commission further stated that the purpose of proposed Rule 7(5) is to prevent utilities from using their control over distribution facilities to delay projects unjustifiably, but the rule must do so without interfering with the utilities' statutorily recognized prerogatives. The Commission amended the rule to include language requiring the developer to use a utility-approved contractor to perform the work.

Staff is not aware of any developer using this "self-help" provision. As part of this investigation, Staff requested that each utility provide a copy of their list of certified contractors. In response, Detroit Edison, Consumers Energy, Alpena Power, Cloverland, and Indiana & Michigan Power provided contractor lists. Other utilities reported they have not been approached by contractors seeking to be certified for this purpose.

Transmission Utility Notification

Both of Michigan's transmission providers have filed comments requesting that the Interconnection Procedures be modified to require that distribution utilities notify them when certain interconnection applications are filed. ATC has requested that the distribution utility consult them for interconnections of 150 kW or more. ITC has requested consultation from distribution companies for all interconnections.

During the development of the Interconnection Standards, the Commission addressed this issue in its July 8, 2003 order in Case No. U-13745:

> The electric utilities propose an additional provision that would require them to notify the transmission service provider of a request for an interconnection if the project might affect the interconnected transmission system. It further provides that the transmission provider would be responsible for any studies or modifications and that any delay occasioned by the process would not be attributable to the utility.
>
> Because the projects addressed in these proposed rules are relatively small and would interconnect with distribution facilities only at voltages that are not subject to FERC standards, it is not clear why the interconnections would affect the grids of facilities operated by independent transmission providers. The electric utilities have offered no explanation of the effect of those projects on transmission providers or provided a justification for the provisions. (Order, pp. 13-14)

In comments filed as part of this investigation ITC wrote that the interconnection of even relatively small generators on the distribution system, in certain cases, could cause stability, short circuit, fault duty and even thermal concerns for the transmission system.

Power Quality

The utilities are specifically concerned with the system impacts of synchronous projects. Current guidelines require induction and inverter projects (operating in a flow back mode) to either provide a switchable VAR source or provide funds to the utility to install an equivalent VAR source. However, according to the regulated utility filed comments, for synchronous projects, the utility may be required to provide a source of VARs for the customer generation, reducing the utility's ability to provide megawatts to other customers.

The regulated utilities raised power quality concerns as part of this investigation. They suggest that the Interconnection Standards may need to be amended to require all generators to maintain unity power factor.

Informal Staff Involvement

One commenter requested an informal Staff review process to help resolve interconnection issues. Staff believes there already is an informal review process in place. Customers or developers can initiate an MPSC Staff review of an interconnection process, either by telephone to the Commission's Customer Support Section at 1-800-292-9555, or by email to http://www.dleg.state.mi.us/mpsc/electric/eleccomplaint.htm.

Codes for net metering (E2.04) and interconnection (E2.06) issues have been added to the Commission's complaint and inquiry tracking software, to improve MPSC Staff handling of these types of complaints and inquiries.

Utility Identification of Preferred Distributed Generation Sites

One commenter requested a utility-provided list of areas of opportunity, where distributed generation would be most beneficial for the utility distribution system and least costly for the developer. An example of this type of list is available online from Commonwealth Edison Company, in Illinois.[27] Staff notes it has already been directed by the Commission, in its December 22, 2005 Order in Case No. U-14347 (p. 88), to establish a collaborative for the purpose of proposing a pilot program to address similar issues.

Other Issues

A list of issues raised in the comments that Staff determined to be outside the scope of this investigation are included in Appendix C.

Staff Recommendations to the Commission
30 kW and Larger Generator Interconnection Process

1. **Staff recommends that the Commission require utilities to file interconnection reports in the U-15113 electronic docket every 6 months using the table format shown in Appendix A**. These reports will be used to evaluate the effectiveness of the Interconnection Procedures.

2. **Staff recommends that utilities be required to provide within three business days written notification of the receipt of each interconnection application. Email, facsimile, or US mail can be used.**

3. **Staff recommends that the Commission require utilities to evaluate the application for completeness and notify the applicant in writing within 10 business days of receipt of each interconnection application, specifying:**

[27] ComEd's list of preferred IPP interconnection sites is available online at http://www.comedtransmission.com/ipp.services/ipp-sites-preferred.html.

(1) whether the application is complete, and if not advising what material is missing; (2) any changes in rates the utility believes will be required or optional once the interconnection is complete; and (3) all remaining activities that the utility believes will be the responsibility of the applicant to complete, including the proposed timing for those actions. Email, facsimile, or US mail can be used.

The Interconnection Procedures require the utility to notify the applicant of receipt of the application within three days. The utility's time deadline to complete its obligations does not start until the application is complete; however, there is no time requirement for the utility to determine whether the application is complete and notify the applicant. The Interconnection Standards were discussed by the Commission in an Order issued on February 5, 2001 in Case No. U-12485:

> The Commission finds that utilities should be required to respond to initial inquiries from developers within 48 – 72 hours. Additionally, a utility should be required to acknowledge receipt of a completed application within a reasonable time and the acknowledgement should either indicate that the application is acceptable or that the application is deficient and requires the submission of further information. In the event that further information is required, the utility should clearly identify all deficiencies and explain to the developer all steps that must be taken to remedy the deficiencies. (Order, p. 10-11)

A review of interconnection standards from other states shows that 10 days from receipt is the typical amount of time allotted for utilities to complete this activity. See Appendix B for a table showing which states have time allotments for determining if an application is complete. The Interstate Renewable Energy Council's Model Distributed Generation Interconnection Procedures and FERC's Small Generator Interconnection Guidelines also allow 10 days to complete this step.

Rule 4 (4) of the Interconnection Standards refers to this step in the interconnection process:

> The interconnection procedures shall set a reasonable deadline for the electric utility to make an initial response to the application. The initial response shall indicate whether the application complies with the interconnection procedures and the standards set forth in these rules and identify any information required to complete the application or bring it into compliance. If an electric utility rejects an application for interconnection or otherwise withholds interconnection, then it shall provide the project developer with a written explanation of the reasons, which shall be based on demonstrably valid technical, reliability, or safety criteria.

This issue was not explicitly raised by any of the commenters; however, it appears that many commenters do not agree that interconnection applications are being processed in a timely fashion. Staff believes that including a maximum time allotment on this interconnection activity is likely to improve applicants' overall satisfaction with the process.

4. **Staff recommends that the Commission require utilities to appoint a knowledgeable utility interconnection project manager for each interconnection application.**

This person may be different from the single point of contact mentioned in Rule 2 of the Interconnection Standards. The project manager would know of the status of the interconnection application within the utility at all times, coordinate interdepartmental utility interconnection activities, and communicate regularly with the project developer.

5. **Staff recommends that the Commission encourage utilities to educate the public about the interconnection process by speaking at conferences and workshops, and maintaining easy to understand website informational pages.**

The regulated utilities commented they are willing to work together to develop one or more statewide conferences or workshops to provide educational outreach regarding the interconnection requirements and related issues.

6. **Staff recommends that the Commission develop an informal Interconnection Standards waiver process.**

It is likely that the waiver would be non-controversial and extremely technical in nature. An informal process without a Commission Order would allow the interconnection to proceed more quickly. The utilities propose that the informal procedure would give Staff an opportunity to request further information or set the matter for a hearing. **Consensus was reached on this issue at the public meeting.**

7. **Staff recommends that the Commission establish a workgroup with the following objectives:**

   - **identify reasonable and achievable interconnection time deadlines;**
   - **propose a system for determining whether interconnection costs are reasonable, actual costs;**

- **study the impacts and benefits of requiring utilities to consult with transmission providers when certain interconnection applications are filed (for distribution-level interconnections);**

- **investigate the impacts and benefits of requiring all generators to maintain an acceptable power factor; and**

- **develop criteria for identification of areas of opportunity for distributed generation on each utility's distribution system.**

8. **Staff recommends that the Commission modify the Interconnection Procedures to include a pre-application meeting between utility interconnection staff and the developer. Consensus was reached on this issue at the public meeting.**

Summary of Staff Recommendations to the Commission

1. Staff recommends that the Commission require utilities to file interconnection reports in the U-15113 electronic docket every 6 months using the table format shown in Appendix A.

2. Staff recommends that utilities be required to provide within three business days written notification of the receipt of each interconnection application.

3. Staff recommends that the Commission require utilities to evaluate the application for completeness and notify the applicant in writing within 10 business days of receipt of each interconnection application, specifying: (1) whether the application is complete, and if not advising what material is missing; (2) any changes in rates the utility believes will be required or optional once the interconnection is complete; and (3) all remaining activities that the utility believes will be the responsibility of the applicant to complete, including the proposed timing for those actions.

4. Staff recommends that the Commission require utilities to appoint a knowledgeable utility interconnection project manager for each interconnection application.

5. Staff recommends that the Commission encourage utilities to educate the public about the interconnection process by speaking at conferences and workshops, and maintaining easy to understand website informational pages.

6. Staff recommends that the Commission develop an informal Interconnection Standards waiver process.

7. Staff recommends that the Commission establish a workgroup to develop faster and less complex interconnection procedures for 10 kW and under interconnection projects.

8. Staff recommends that the Commission direct the Michigan Renewable Energy Program Ratemaking and Net Metering Committee to form a task force comprised of representatives from MPSC Staff, utilities, and interested parties 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.

9. Staff recommends that the Commission establish a workgroup with the following objectives:

   - identify reasonable and achievable interconnection time deadlines;

- propose a system for determining whether interconnection costs are reasonable, actual costs;

- study the impacts and benefits of requiring utilities to consult with transmission providers when certain interconnection applications are filed (for distribution-level interconnections);

- investigate the impacts and benefits of requiring all generators to maintain an acceptable power factor; and

- develop criteria for identification of areas of opportunity for distributed generation on each utility's distribution system.

10. Staff recommends that each utility offer to conduct a pre-application meeting between utility interconnection staff and each applicant or developer, to explain all expectations of the applicant and discuss any obligatory or optional rate changes that could occur once the interconnection is completed.

Appendix A

MPSC Staff Proposed Format For 6-Month Utility Interconnection Filings

Staff recommends that the Commission establish a routine interconnection summary filing for all regulated utilities. All interconnection applications that were completed or are pending should be listed in the table. It is hoped that this table will be kept up to date throughout the year. Staff recommends that this table be filed not later than 5 business days after the end of the time period covered.

Utility Name						Time Period Covered: Year 20__ January 1 through June 30 or July 1 through December 31				
Utility Record Number	Inter-connection Zip Code	Aggregate Generator Size, kW	Generator Technology Type and Power Source or Fuel Type	Application Receipt Date	Application Receipt Notification Date	Application Complete or Incomplete Determination Date	Date of Notification Whether Application is Complete or Incomplete	Date Utility Completed Obligations Or Pending	If pending, provide current interconnection status	Problems/Delays Experienced (provide attachment if necessary)

Appendix B

Application Completeness Timing

	Number of Days Allotted to Determine if Interconnection Application is Complete	
FERC SGIP	10	http://www.ferc.gov/industries/electric/indus-act/gi/small-gen/procedures.doc
IREC	8 – 10	8 days for expedited process, 10 days for others
Arizona		In 2005, the Arizona Corporation Commission (ACC) initiated a proceeding to establish statewide interconnection standards for distributed generation (DG). This proceeding is still in progress.
Arkansas		For Net Metering up to 100 kW. Utils have 30 days to review application.
California	10	Pg 51 of http://www.energy.ca.gov/reports/2003-11-13_500-03-083F.PDF
Colorado	10	http://www.dsireusa.org/documents/Incentives/CO28Rc.pdf
Florida		Small Photovoltaic Systems (10 days total review time)
Idaho	10	Idaho Power
Louisiana		Entire review completed in 45 days
Massachusetts	10	
Minnesota	10	http://www.puc.state.mn.us/docs/orders/04-0131.pdf
New Hampshire		30 -75 review period for entire process
New Jersey	3	Level 1 & 2
	Not specified	Level 3
New Mexico	Not specified	10 kW or smaller
	15	Larger interconnections http://www.dsireusa.org/documents/Incentives/NM07Rb.doc page 5
New York	5	http://www.dsireusa.org/documents/Incentives/NY02Rc.pdf
Pennsylvania	10	http://www.dsireusa.org/documents/Incentives/PA07Rb.doc
Wisconsin	10	http://www.wisconsindr.org/library/PSC/WI_InterconnectionGuidelines.pdf

Appendix C

Other Issues

- Michigan needs renewable energy and should support interconnection of distributed generation
- Do not support windmills

30 kW and Larger Generator Interconnection Issues

- Standby rates for non-net metering renewable energy generators
- Regulatory issues with wheeling to retail customers w/o becoming an AES
- Microgrids
- One utility required an executed interconnection agreement prior to power purchase contract negotiation
- FERC hydroelectric facility licensing is too complex

30 kW and Larger Generator Interconnection Process Recommendations

- Develop standardized easement forms
- Electric power purchase contracts should be standardized so project economics can be known up-front
- Wheeling tariffs and regulatory options allowing microgrids should be developed
- Interconnection equipment should be portable and move with the customer if the plant moves
- Allow net metering up to 1 MW with aggregation of meters

Beth A. Schafer

Digitally signed by Beth A. Schafer
DN: cn=Beth A. Schafer, c=US, o=Michigan Publice Service Commission, ou=Operations & Wholesale Markets, email=schaferb1@michigan.gov
Reason: I am approving this document
Date: 2007.01.31 17:31:07 -05'00'