**Industry Comments re:**

**PART XXX**
**INTERCONNECTION OF DISTRIBUTED GENERATION EQUIPMENT**
**TO ELECTRIC UTILITY DISTRIBUTION SYSTEMS**

**Background**
In March of 1999, the IEEE Standards Coordinating Committee (SCC21), chaired by Dick DeBlasio of the National Renewable Energy Laboratory, initiated work on IEEE P1547 to address the need for a national standard. Unfortunately, the IEEE process is a consensus effort that requires a 75% 'affirmative' vote before the Writing Committee can submit a final draft to the IEEE Standards Board. Since over 300 individuals from producer, user, government, and general interest groups are involved with this effort, it has been a monumental challenge for the Balloting Committee to garner consensus. Another reason the IEEE effort is taking so long is that the Standards Committee has elected to write a "one size fits all" standard for DG systems from 1 kW to 10 MW connected to any and all kinds of distribution systems.

IEEE P1547 is actually a 5-part project. The first part is *IEEE Standard P1547 – Standard for Interconnecting Distributed Resources with Electric Power Systems*. On June 12, 2003, the IEEE Standards Board finally approved Draft 11 and subsequently published IEEE 1547™-2003 on July 28, 2003. Work continues on P1547.1 – *Draft Standard for Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems*, P1547.2 – *Draft Application Guide to IEEE P1547*, P1547.3 – *Draft Guide for Monitoring, Information Exchange, and Control for DR Interconnection* and P1547.4 – *Guide for Design, Operation, and Integration of Distributed Resources Island Systems with Electric Power Systems*. Writing Groups met in New Orleans on November 12-14, 2003.

Knowing that it will take IEEE several more years to complete the overall effort, one by one the individual states are developing their own interconnection requirements. The danger is that with each new standard, the industry moves further from having a single set of common ground rules. Consequently, it is extremely important to build on the lessons of other states - leveraging lessons learned elsewhere. The Commission would be well served to insure that the requirements for Illinois are even better than those of their most recently developed counterparts – those of Massachusetts and New York.

It is expected that IEEE P1547 will eventually supersede the need for explicit technical standards in the individual states. However, until such time as all IEEE P1547 compliance standards (including testing protocols) are complete and approved, it is recognized that individual state standards will take precedence.

**Industry Comments re:**
**ICC Proposed Rule**

Industry has reviewed the standard process and has eight (8) major issues that we request that the ICC address. These include:

- Form a Review Panel and establish Dispute Resolution Procedures
- Expand and then adopt Com Ed's Blue Book
- Identify Technologies/Size Limitations/Networks
- Establish a Pre-Approved List of DG Equipment
- Define Utility Cost Breakdown (Cost + Mark-up)
- Establish consequences for not holding to Timelines
- Recognize the benefits that DG can provide for the grid
- Establish a mechanism to monitor the effectiveness of the new Process

Each major comment is discussed below:

**Form a Technical Review Panel and establish a Dispute Resolution Process**
We recommend that the ICC establish a "dispute resolution process". (This has been done by FERC, CA and MA.) The current Complaint Procedures referenced in Section XXX.190 (83 Illinois Admin. Code 200) do not appear to include independent technical review which is critical to the fair resolution of disputes. Therefore, it is suggested that the Commission consider establishing a Technical Review Panel (possibly a multi-person board of three professional engineers representing the utilities, the customer, and the CHP community) and a formal Dispute Resolution Process (see References for a sample dispute resolution process included in the "Tariff to Accompany Proposed Uniform Standards for Interconnecting Distributed Generation in Massachusetts").

An important role this panel can play has to do with Facilities Modifications that may be required to accommodate the interconnection of a small resource. In cases where the Interconnection Customer identifies a more cost effective solution for these modifications than what the utility initially required, some independent review panel may be required to determine which approach is acceptable (see examples in Appendix C). If left as is, the currently proposed process will continue to result in such situations where the Utility has final say, with the customer having no recourse.

**Expand and then adopt ComEd's Bluebook**
Within the service territory covered by Commonwealth Edison, there presently exists a document referred to as the "Blue Book" (Guidelines for Interconnection of Generation to the ComEd System) that outlines the process and provides the guidelines one must follow today if one were applying for interconnection to the ComEd electric distribution grid. Since the ComEd process exists, and is one that is understood by the engineering community within the State of Illinois, and since it deals with distributed generation resources, we evaluated the ICC proposed standard against the existing ComEd process and are proposing that this document be modified and adopted for Statewide use as a companion to the final Code Part.

This group recommends that the Blue Book be expanded to include standard interconnect designs and equipment specifications for the eight to ten most common interconnect situations.

The ComEd “Blue Book” also includes a flow chart that depicts the steps between the Application for Interconnection and the Final Approval for Paralleling. The requirements of most other states also include a Screening Flow Chart that depicts the overall process. The Commission should consider developing a similar graphic to go along with its requirements (see samples in Attachment B).

**Technology Restrictions and Size Limitations on Networks**

One of our major concerns with the initial draft has to do with the technology limitations (i.e. Inverters only) and size restrictions that are suggested for small resources connected to the load side of spot network protectors. These restrictions will severely limit the opportunities for placing small resources where they are needed most – in high demand urban areas. Given the state-of-the-art of today’s solid-state relay protection, it seems that there should be methods that can accommodate larger systems that use a variety of technologies. Some consideration should be given to experience and the realities of “in-field” DG rather than theories. (Typically the utilities fear induction generators on network grids because they might export fault current for a few cycles longer than network protectors remain closed, but we can never obtain from the utilities what the typical delay settings are on network protectors, nor why elevator motors don't cause the same headaches.) There is 23 GW of DG already installed (and largely unnoticed), a significant portion of which is on secondary networks. In fact, the latest Draft New York requirements (Dec. 2003), that cover distributed generators up to 2 MW, do not specifically forbid synchronous generators on secondary networks, but instead require that these interconnects include ‘reverse power protection’. We are aware of over 100 safe interconnections to secondary networks and therefore request that Section XXX.070 b) and c) in the Primary Screen and Section XXX.080 b) and c) in the Secondary Screen be modified. This is an example of where it would be appropriate for this group of DG supporters to work with the utilities, and an independent review board, to assemble case studies of real world secondary network interconnect experiences in an effort to document what can and cannot be safely implemented in actual practice.

**Establish a Pre-Approved List of DG Equipment**

A nationally recognized testing protocol is one of the more pressing needs of the DG industry. Having a single set of test procedures would let manufacturers design systems that would satisfy the requirements of every utility in every state. It would also allow DG equipment and its associated relay protection to be type-tested and certified just one time, possibly eliminating the need for costly “field verification”.

So far, only the requirements of California and New York include testing protocols and only those states have a list of certified and pre-approved equipment (see References). It is expected that the Massachusetts requirements will recognize the certifications of other states. The Commission would do well to follow suit until IEEE P1547.1 is finally approved.

**Define Cost Breakdown**

While we realize the associated tariffs yet to be developed will include numerous components that are not included in this Code Part, we trust these tariffs will fairly address the costs associated with the overall process. Application fees should be relative to the size and complexity of the DG installation. (The Massachusetts Fee Schedule in the referenced Tariff might serve as a template.) Labor rates should be established for conducting Impact and Facility Studies, if required.

**Establish consequences for not holding to Timelines**
Section XXX.150 indicates that the Interconnection Provider shall make all "*reasonable efforts"* to meet all time frames, but suggests no consequences if the timelines are not adhered to by the Provider. The consequences for the Interconnection Customer include re-submittal of his Application (and the associated project delays). It is suggested that some consequences also be established for the Interconnection Provider. These could be along the lines of what we offer in our attached "redline" (Appendix A) in Section XXX.050 e), Section XXX.090 e), Section XXX.110 a) and f), Section XXX.120 a) and c) and Section XXX.170 a).

Another option might be to assess some penalty that is a function of the extra revenue the Interconnection Provider realizes (e.g. X¢/kWh) as a result of any delays caused by the Provider.

**Recognize the benefits that DG can provide for the grid**
It is important to recognize the benefits that DG can provide to the grid in the way of reduced system losses, avoided construction and reinforcement costs. The revised NARUC model (October 2003) suggests that if the generator contributes benefits for the grid, the value of those benefits should be used to offset the interconnection costs. New York has implemented a pilot program that is designed to demonstrate and quantify these benefits. Illinois might also consider such a pilot program.

**Establish a mechanism to monitor the effectiveness of the new Process**
A periodic review of interconnects that are processed under these new Rules should be conducted to identify opportunities for improvement. As experience dictates, timelines and fees may need adjusting, screening criteria might be made more appropriate, the need for System Impact Studies might be reduced, etc.

**Other Comments**
**ICC Proposed Rule**

- Page 18, Section XXX.150 does not provide any consequences for not responding in a timely manner. It appears that the schedules provided by the standard are undermined by this element. There are no penalties for the utility if they miss any of the required timeframes called out in the rule.
- On Page 5 of the rule, the customer is penalized if they do not provide the missing info on their application within 10 business days; i.e. their application is "Withdrawn". Penalty for the customer, but no penalties for the utilities.
- If your application passes the primary screen (page 9 Results Section XXX.090 sub paragraph (a) – you get approval to connect!!! All other results (b) thru (f), it makes no difference whether you pass or fail the screening – the utility has the option to say you do not get to connect unless ----- they decide the criteria!!!???. This is an example of where an expanded Bluebook could provide specific details on acceptable interconnect configuration for typical situations.
- Page 12 Section XXX.110 Feasibility / Impact Study subparagraph (a) -- "In performing the feasibility / impact study, the interconnection provider (utility) shall rely, to the extent reasonably practicable, on existing studies of recent vintage." This is intended to keep the cost of the study to a minimum. However, the utility decides what is " reasonably practicable and what is considered "existing studies of recent vintage". What if the customer does not agree with the view of the utility on this matter? There is no recourse for the customer???
- The difference between the Feasibility / Impact Study and the Facility Study is that one describes the potential negative effects the interconnection may have on the grid. The other study defines what specific changes have to be made to avoid the negative effects. Seems like the two could be done in one study. By having two studies, the cost to the customer will most probably increase. Also as written, it is the utility that decides if one or two studies are needed?
- Page 11, requires that the customer pays the binding maximum value for distribution system upgrades upfront without interest for returned dollars. This step should require that the utility pay interest, provide a detailed invoice, and specify that the utility must base the estimate on the lowest bid from qualified contractors. This will help control costs.

## References

### Technical Requirements/Standards

IEEE 1547 –
FERC - http://www.ferc.gov/industries/electric/indus-act/gi.asp
NARUC - http://www.naruc.org/displayindustrynews.cfm?industrytopicnbr=380
NRECA - http://www.nreca.org/nreca/Policy/Regulatory/dgtoolkit/index.html
NY - http://www.dps.state.ny.us/distgen.htm
CA - http://www.energy.ca.gov/distgen/interconnection/california_requirements.html
MA - http://dg.raabassociates.org/
CT - http://www.dpuc.state.ct.us/electric.nsf/47ffabfe40dd540385256b72006bdd1c?SearchView
WI - http://www.dsireusa.org/library/docs/additionaldocs/WIDGIntrGuidelinesv6.pdf
OH - http://www.dsireusa.org/library/docs/incentives/OH07R.pdf
DE Co-ops - http://www.delelect.com/deregulation.cfm

### Associated Tariffs

CA
- PG&E - http://www.dsireusa.org/library/docs/additionaldocs/CARule21PGEversion.pdf
- SCE - http://www.dsireusa.org/library/docs/additionaldocs/CARule21SCEversion.pdf
- SDG&E - http://www.dsireusa.org/library/docs/additionaldocs/CARule21SDGEversion.pdf

MA - http://dg.raabassociates.org/
CT - http://www.dpuc.state.ct.us/electric.nsf/47ffabfe40dd540385256b72006bdd1c?SearchView

### Guidebooks/Manuals

CA - http://www.energy.ca.gov/distgen/interconnection/california_requirements.html
TX - http://www.dsireusa.org/library/docs/incentives/TX10Ra.pdf
IL / ComEd - http://www.comedtransmission.com/ipp.services/
NRECA - http://www.nreca.org/nreca/Policy/Regulatory/dgtoolkit/index.html
IREC Draft Interconnection Guide (4th edition)
http://www.irecusa.org//articles/static/1/binaries/IREC_Draft_Interconnection_Guide_4th_ed_v4.pdf

### Pre-Certified/State Approved Equipment

NY - http://www.dps.state.ny.us/distgen.htm
CA - http://www.energy.ca.gov/distgen/interconnection/certification.html

## Appendices

### Appendix A – Redline

### Appendix B – Sample Flow Charts

### Appendix C – Ballard Letter