

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

At a session of the Public Service
Commission held in the City of
Albany on February 12, 2009

COMMISSIONERS PRESENT:

Garry A. Brown, Chairman
Patricia L. Acampora
Maureen F. Harris
Robert E. Curry, Jr.
James L. Larocca

CASE 08-E-1018 - In the Matter of the Rates, Charges, Rules, and
Regulations Related to the Interconnection and
Operation of Customer-Owned Generation.

ORDER MODIFYING STANDARD INTERCONNECTION REQUIREMENTS

(Issued and Effective February 13, 2009)

BY THE COMMISSION:

BACKGROUND

Standardized Interconnection Requirements (SIR) for distributed generation units of 300 kVA or less operating in parallel with the electric utility radial distribution systems were first adopted in 1999 and were first revised in 2000.¹ Ongoing reviews of the requirements were conducted regularly thereafter, and substantive revisions were made in 2002,² and

¹ Case 94-E-0952, Competitive Opportunities Regarding Electric Service, Opinion No. 99-13 (issued December 31, 1999) and Order Denying Petition for Rehearing, Providing Clarification, Modifying Standard Interconnection Requirements, and Directing Filing of Revised Tariffs (issued November 15, 2000).

² Case 02-E-1282, Standardized Interconnection Requirements, Order Modifying Standard Interconnection Requirements (issued November 6, 2002).

again in 2004 and 2005.³ This update to the SIR conforms it to amendments of Public Service Laws (PSL) §66-j and §66-l, effective on August 5, 2008 and January 1, 2009, respectively, that provide for an expansion of existing net metering provisions. In addition, other modifications were made in continuation of the series of periodic reviews, in an effort to simplify and expedite the SIR application and review process, along with some other modifications and editorial changes to improve the overall SIR process.

Department of Public Service Staff (Staff) distributed an informal draft of proposed SIR changes on September 16, 2008 to a list of distributed generation (DG) and renewable energy industry parties consisting of DG contractors, consultants, and many other state and private entities. Parties were given three weeks to provide informal comments back to Staff for consideration in a draft of proposed SIR changes. Technical conferences were held on September 22 and 24, 2008 in both Albany and New York City to allow interested parties an opportunity to discuss the changes with Staff prior to the submission of their comments.

A notice pursuant to the State Administrative Procedure Act (SAPA) regarding the proposals was published in the State Register on November 19, 2008. The SAPA comment period expired on January 5, 2009. The comments submitted are described and analyzed below.

In parallel with the SIR modifications, the amendments to the net metering laws also required utilities to file updated tariffs, by November 5, 2008 that conform to the changes adopted

³ Case 02-E-1282, supra, Order Modifying Standard Interconnection Requirements (issued November 17, 2004) and Order Modifying and Approving Tariffs and Providing for Further Proceedings (issued September 26, 2005).

in the amendments. The tariff changes are addressed in an Order Modifying and Authorizing Net Metering Tariffs (2009 Net Metering Order) issued today in Cases 08-E-1305, et al.

PROPOSED SIR CHANGES

Staff's proposed changes to the SIR that were offered for comment are summarized below. These changes were based on the amendments to the net metering laws and other efforts to improve the overall SIR application and installation process.

1. Incorporate newly passed net metering laws summarized in the table below.

Previous Law	New Law
Photovoltaic = 10 kW (residential only)	Photovoltaic = 25 kW (residential) & up to 2 MW (non-residential)
Wind = 25 kW (residential only)	Wind = 25 kW (residential) & up to 2 MW (non-residential)
Farm Service Wind = 125 kW	Farm Service Wind = 500 kW
Farm Waste = 400 kW	Farm Waste = 500 kW

- 1.1 Update the 'Maximum Expense for Dedicated Transformer for Net Metered Customers' table located in step #6 of the 25 kW to 2 MW section of the application process within the SIR to incorporate the new net metering requirements.
 - 1.2 The update includes standards for non-residential solar and wind customer generators where the statutory amendments left the standards to Staff's discretion.
2. The existing New York State Standard Interconnection Requirements (SIR) for distributed generation 2 MW and under has an 11 step review process split between three sizes of generation: 15 kW or less, 15 kW to 300 kW, and 300 kW to 2 MW. These size distinctions are not always as clear as they

could be in the SIR. Therefore, Staff proposed two separate and distinct review processes for systems 25 kW or less, and greater than 25 kW up to 2 MW. Systems 25 kW or less will have a simplified six step application process. Systems above 25 kW up to 2 MW will have a revised 11 step review process.

3. The Underwriters Laboratories (UL) 1741 (November 7, 2005 revision) replaced the previous version of UL 1741 with references to the Standard for Interconnecting Distributed Resources with Electric Power Systems, Institute of Electrical and Electronics Engineers (IEEE) 1547, and the Standard for Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems, IEEE 1547.1 to provide a testing standard to evaluate and certify distributed generation products. As a result, Staff proposed the following changes:
 - Change testing and certification requirements to list UL 1741, November 2005 revision and associated replacements.
 - Equipment tested and certified as meeting UL 1741, November 2005 revision by a Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration is no longer required to be submitted to the PSC. If entities want to continue to list their equipments on the Department's Website, Staff will do so.
 - If equipment is tested and certified to UL 1741 (November 2005 revision) by a non-NRTL, then Staff shall review the equipment and associated certification before final approval and posting on the Department's website.
4. The use of external disconnect switch has proven to be redundant and unnecessary in small interconnection systems using inverters that meet relevant UL and IEEE standards. Therefore, Staff proposes to eliminate the external disconnect switch requirements for inverter based systems 25 kW or less that meet UL 1741 (November 2005 revision).
5. Staff proposed that the utilities be required to implement a web-based system for providing generator customers and contractors up to date information regarding the status of their application process. Additionally, Staff proposed that each utility be required to allow customers with systems 25 kW and less the ability to submit their application for

interconnection via the web. Additionally, Staff proposed that the utilities be required to provide an SIR Inventory of projects to the Public Service Commission (PSC) by January 31 and July 31 of each year.

6. Miscellaneous Changes and Updates.

ANALYSIS OF COMMENTS

A total of nine parties filed comments pertaining to the draft SIR document. The commentators are: E-Cubed on behalf of the Joint Supporters (E-Cubed), Solar Alliance, Integrys Energy Services (Integrys), Hudson Valley Clean Energy (HVCE), Interstate Renewable Energy Council (IREC), Network for New Energy Choices - Environmental Advocates - Solar One - The Vote Solar Initiative (The Coalition), Alliance for Clean Energy New York (ACENY), and the Joint Utilities, consisting of the six major New York electric utilities.⁴ Con Edison also filed independent comments separately.

Net Metering

While all parties commended Staff on the timely update of the SIR to reflect the amendments to the PSL regarding net metering for residential solar and farm waste electric generating systems and residential and farm service wind electric generating systems, as well as the extension of net metering to non-residential solar and wind electric generating systems, six parties filed extensive comments in regards to specific interpretations of the amendments.

⁴ The utilities are: Central Hudson Gas & Electric Corporation (Central Hudson), Consolidated Edison Company of New York, Inc. (Con Edison), New York State Electric & Gas Corporation (NYSEG), Niagara Mohawk Power Corporation d/b/a National Grid (National Grid), Orange and Rockland Utilities, Inc. (O&R) and Rochester Gas and Electric Corporation (RG&E).

ACENY, HVCE, IREC, and The Coalition propose that the SIR appropriately reflect the cost allocation requirements of the PSL § 66-j and 66-l, and eliminate the distinction between residential and non-residential systems for maximum transformer cost responsibility as fees are based on system size and not ownership type. These parties recommend that the SIR explicitly state that:

1. Customer-generators with net metered wind systems over 25 kW are liable for half of all interconnection costs and the cost of any dedicated transformer(s) or other safety equipment up to specified caps.
2. Customer-generators with net metered solar and farm waste systems are liable only for the cost of dedicated transformer(s) and other safety equipment up to specified caps and are not subject to other interconnection costs.
3. There should be no distinction between net metered customers installing the same-sized system based on the classification of the customer as either residential or non-residential. For example, a residential customer and a non residential customer that both install 25 kW solar systems should be charged the same fees for dedicated transformers and other equipment deemed necessary.
4. Waive the initial \$350 interconnection application fee for customer-generators with proposed net metered systems above 25 kW up to 2 MW.

The Joint Utilities proposes that non-residential generators pay the full interconnection costs, as opposed to the exemption from interconnection costs for residential solar and wind generators, up to 25 kW, and one-half of the interconnection costs for non-residential generators greater than 25 kW to avoid subsidization by other customers. They also propose to include in the SIR the word "other equipment" found in PSL 66-j(3)(c) and 66-l(3)(c) to addresses cost responsibility for dedicated transformer(s) or other equipment such as modifications of local secondary service, upgrade or replacement of customer's service drop or additional (not

necessarily dedicated) transformers that may be needed for the protection of the safety and adequacy of electric service provided to other customers.

ACENY, Solar Alliance and The Coalition commented that the treatment of net excess generation in Staff's proposal is inaccurate or incomplete. These parties ask that the SIR clearly identify the requirements of the net metering statutes as amended. IREC proposes to use service capacity as a system size cap whenever peak demand data is unavailable. IREC believes that since a customer's peak load is less than the customer's electric service capacity, it is a reasonable approximation of peak load and will avoid the need for the Commission to analyze the anticipated demand of hundreds of small non-residential customers each year that do not have demand meters.

Expedited Application Process

While all parties agree that two distinct approval processes, one for small and one for large systems, are appropriate, the Joint Utilities (excluding Con Edison) propose an expedited process only for inverter-based systems of 25 kW or less. They argue that non-inverter-based systems, even smaller ones, can affect power quality for adjacent customers. They suggest that the expedited process be limited to those scenarios where the total generation-to-rated feeder capacity is no greater than 20%, given that it is possible that several installations, each 25 kW or less, located on a single distribution feeder could exceed the rating of the feeder and associated distribution equipment. The Joint Utilities also propose the ability to perform a project-specific Coordinated Electric System Interconnection Review (CESIR) for non-inverter based generators of 25 kW and smaller, and generators to be located on distribution circuits where the total generation-to-

rated feeder capacity is greater than 20%. Moreover, Con Edison proposed that the SIR should permit individual electric corporations to utilize an expedited application process for inverter-based systems larger than 25 kW in circumstances where the corporation deems an expedited process to be appropriate.

ACENY, HVCE, and The Coalition found the proposed timelines for application and approval process of systems 25 kW or less too long and propose additional reductions such as the issuance of an acceptance letter by the utility within five (5) business days of interconnection instead of 30 business days originally proposed. On the other hand, The Joint utilities requested for an increase in timeline from five (5) business days to fifteen (15) business days for each utility to complete metering changes.

Three parties -- IREC, Solar Alliance and The Coalition -- suggest a well defined and streamlined interconnection process such as the Federal Energy Regulatory Commission's (FERC) Small Generator Interconnection Procedures (SGIP) for system 25kw up to 2 MW. Furthermore, IREC proposes that the SIR provide for interconnection of systems over 2 MW in size.

The Joint Utilities propose requesting a copy of a third party electrical inspection certificate issued by the agency having jurisdiction and any relay calibration and testing reports prior to the meter being changed and the customer interconnecting with the utility's distribution system. Additionally, the Joint Utilities suggest inclusion of a Standardized DG Installation Compliance Verification Checklist in Appendix D of the SIR and require applicants to sign and send the utility within five (5) business days of the verification test if the utility opts not to witness the test. HVCE also believes that a copy of an electrical inspection certificate

from an independent electrical inspector and a copy of the building permit for the system from local authorities are necessary to demonstrate that the system is safe and compliant with local codes and ordinances.

Additional proposals from ACENY, HVCE, The Coalition and Solar Alliance include substituting a three line diagram for the one line diagram currently required, updating compliance to the latest version of the National Electric Code and waiving the application fee for net metered customers.

UL 1741 Equipment Certification

The Joint Utilities support the inclusion of firmware versions (i.e., equipment software) in the equipment certification while HVCE and IREC believe that the important, relevant, and effective requirement is compliance to UL 1741 and not a particular version of firmware. In the same regards, ACENY and The Coalition propose that the SIR should state that all UL 1741 certified inverters are allowed for interconnection even if they do not appear on the list maintained by Staff.

External Disconnect Switch

The Joint Utilities are the only party that opposes the elimination of the external disconnect switch requirement for systems 25 kW or less that meet UL 1741 (November 2005 revision). They contend that requiring an external disconnect switch as a mandatory provision of the SIR is justified by significant safety concerns. The Joint Utilities claim that, without a disconnect switch, there is no immediate and safe means of disconnecting DG systems to ensure utility personnel safety. Without a disconnect switch, the Joint Utilities contend, they may be forced to deploy other means of disconnecting a DG system and preventing the back-feed of electricity that would result in temporary outages and additional costs.

Web-based System and Semi-Annual Data Submission

All parties, with the exception of the Joint Utilities, support the proposal to require utilities implement a Web-based interconnection process as well as send a semi-annual SIR inventory of projects to Staff. The Joint Utilities contend that these requirements are outside of the scope of the SIR document, which is primarily an interconnection technical requirements document; raise the issue of which customers would bear the costs of such systems; and, pose potential legal questions relating to electronic signatures on the Standardized Contract and the various Appendices. They propose that Staff have separate, parallel conversations with the Joint Utilities to discuss this proposal.

ACENY and Solar Alliance, on the other hand, proposed to expand the Web-enabled application process to all on site generation of 2 MW or less. Additionally, Solar Alliance believes that the web-enabled application process should incorporate additional functionalities such as submission of technical data, forms and on-line payments.

Third Party Applications

IntegrYS believes that third parties other than the customer should be able to apply for interconnection under the SIR. Economic and reliability benefits can be reaped, IntegrYS claims, if third parties are allowed to take responsibility for net metered systems.

DISCUSSION

Net Metering

As several parties contend, the draft SIR did not correctly reflect the cost allocation rules set forth by the PSL §66-j and §66-l. The draft SIR, at Step 6, stated that for wind, solar, and farm waste net metered systems over 25 kW, half

of all interconnection costs, the costs of dedicated transformers, and other safety equipment costs, up to specified caps, would be the responsibility of the customer-generator. That statement is not in accordance with the amendments to PSL §66-j and §66-l. Only wind systems over 25 kW are responsible for half of all interconnection costs in addition to dedicated transformer and other safety equipment costs up to specified caps. Interconnection costs, other than the costs of transformers or other safety equipment up to specified caps, may not be imposed on residential solar systems, farm waste systems, or wind systems of up to than 25 kW.

Therefore, the SIR document has been modified to accurately identify the applied cost allocation rules set forth by the PSL §66-j and §66-l. The Joint Utilities also commented on this subject, proposing to impose additional cost responsibilities on customer generators; however their proposed changes were not in accordance with the amendments to PSL and are therefore rejected.

The subject of fees or maximum costs that residential or non residential net metered customers must pay for dedicated transformers and other equipment deemed necessary were also reviewed. Several parties commented on this subject, mainly for the purpose of reducing confusion while conforming the SIR to the amendments to the PSL and their nomenclature.

These parties also propose one substantive modification, in the instance where a residential customer and a non-residential customer both install a solar system of 25 kW or less. Under the proposal, each would be subject to the same limits for dedicated transformers and other equipment deemed necessary.

We adopt this proposal, as an exercise of the discretion over non-residential customer costs provided for in

the statutory amendments, because it is appropriate to charge the small-sized non-residential customers the same as the small-sized residential customers. This approach will alleviate confusion in the rules applicable to customers within the small-sized category and promote net metering in conformance with the policies expressed in the PSL and the amendments. Therefore, the approach has been reflected in the SIR.

Additionally, some parties proposed a waiver of the fees provided for in the SIR Section I.C. The waiver would pertain to the initial \$350 interconnection application fee for customer-generators and would eliminate the need to refund the fee if the net metering customer-generator did not require additional equipment such as a dedicated transformer for interconnection.

The SIR, however, has required an initial fee for many years. The fee establishes that the customer applicant is committed to seriously pursuing the installation of a net metered generator. To conform to PSL net metering requirements, this fee is offset against interconnection costs or is refunded if the customer does not impose any interconnection costs. This approach conforms to the PSL and is not affected by the amendments, and furthers the public purpose of efficiently implementing net metering. The approach is retained.

Finally, parties raise issues relating to the treatment of net excess generation produced by net metering customers and the sizing of systems installed by non-residential customers. These matters are addressed in the 2009 Net Metering Order, supra.

Expedited SIR Application Process

One of the main goals in updating the SIR was to improve the overall application process for interconnections. The process should both reduce barriers to potential customers

while still providing for a complete review and submittal process that adequately protects the public's safety.

The Joint Utilities continue to request that guidelines be made more specific, affording them additional protections by identifying system limitations. The additional SIR guidelines and protections suggested by the Joint Utilities are unnecessary. The utilities already retain the authority to restrict the deployment of net metered and other small generators that might adversely affect their delivery systems without the need for additional SIR language that could confuse potential applicants.

Several parties commented on the SIR's Step 6, for systems 25 kW and less, stating that the overall time frame should be shortened to alleviate extended waiting periods before the formal letter of acceptances are received by customers and associated incentives for the systems can be obtained in a timely manner. They point out that New York State Energy Development Authority (NYSERDA) incentives can not be obtained until final utility acceptance for interconnection is secured.

The draft SIR provided for a 10 days time frame in which utilities were required to request joint inspections or witness operation of systems. The draft SIR also stated that within 30 days after interconnection of the system, the utility will issue the formal letter of acceptance, absent the discovery of any issues to the contrary during the testing and verification period.

We agree that the timing for these final acceptance steps could be reduced. Therefore, the 10 day time frame for utilities to request a joint inspection or witness operation of the system is reduced to 5 business days. We also adopt the following final acceptance process: The joint inspection must be completed within ten business days after it is requested, and,

within 5 business days of its completion, the utility shall issue to the applicant either a formal letter of acceptance for interconnection or a detailed explanation of the deficiencies in the system. This revised approach satisfactorily expedites the final approval process while still allowing for proper review.

With respect to the comments on incorporation of the SGIP, more time is needed to properly determine whether or not SGIP or similar procedures should be used. There is the potential for improvement in this area. Therefore, no specific recommendations for inclusion of SGIP or similar procedures will be adopted at this time, and additional comments will be solicited under SAPA while review of SGIP issues continues.

Separate from the Joint Utilities, Con Edison proposed that inverter-based systems, sized from 25 kW up to 200 kW, that meet the proper certification and testing requirements set forth at UL 1741 should also be included within the expedited or fast track SIR application process. This proposal has merit. It is technically practicable and enhances the efficient operation of the SIR process to the benefit of a larger pool of applicants. It is incorporated into the SIR as follows.

For inverter based systems above 25 kW up to 200 kW, applicants may follow the expedited application process outlined under Section I. B. of the SIR, as long as the inverter-based system has been certified and tested in accordance with UL 1741 (November 2005 revision) and the utility has approved the project accordingly. The utility has fifteen (15) business days from original application submittal to determine and notify the applicant in writing of its findings. If the utility determines

that the inverter-based system is not eligible for the fast track or expedited application process, the applicant can:

1. Proceed with the remaining steps of Section I.C of the SIR (Systems above 25 kW up to 2 MW); or
2. Request a review by Staff.

For non-inverter based systems and those inverter based systems not certified and tested in accordance with UL 1741 above 25 kW up to 200 kW, the potential applicants and utilities are encouraged to use expedited application process (Section I. B.), but only in circumstances where the utility deems it appropriate.

Within the application process, verification testing is required by each applicant in accordance with the SIR and equipment manufacturer guidelines. Utilities receive a copy of these verification tests and are also notified and allowed to either witness or attend such testing. In addition to these existing procedures, the Joint Utilities have proposed applicants provide a copy of a third party electrical inspection certificate issued by the agency having jurisdiction and any relay calibration and testing reports. HVCE also supported the requirement for submission of an additional electrical inspection certificate along with a building permit.

We believe that these additional requirements are not necessary within the SIR and might act as deterrent to applicants by requiring additional paperwork that has no real value. Each generation installation already must be installed and inspected in accordance with local and national electrical codes. The SIR is not intended to institute additional and redundant requirements for applicants to follow.

The Joint Utilities also propose that an Appendix D be added to the SIR, as a check list for verification of testing and acceptance. The elimination of the external disconnect

switch for systems 25 kW and less, however, renders the proposed check list unnecessary.

Lastly, multiple parties believe that the existing SIR single-line diagram requirement should be replaced with a three-line diagram requirement, which would facilitate more detailed reviews of the proposed generation installations and also conform to NYSERDA incentive approval requirements.

Three-line diagrams offer many advantages over the existing single-line diagrams in detailing the technical specifications of a generator's proposed operation and grounding. These benefits outweigh the additional effort and costs applicants will expend to provide them. Therefore, three-line diagram requirements are substituted for the existing single-line diagram requirements currently used.

UL 1741 Equipment Certification

The draft SIR proposal stated that all inverters, including the associated firmware or software version specified with each unit, shall be tested and certified by a National Recognized Testing Laboratory (NRTL) to comply with Underwriters Laboratory (UL) 1741 (November 7, 2005 revision) requirements. Applicants can either provide this compliance data to the utility with its respective application, or they can submit the information to Staff for review and inclusion to Staff's Certified Equipment List posted on our Website.

With respect to the equipment certification to UL 1741, The Coalition and ACENY stated that all equipment certified to UL 1741 should be accepted for interconnection. This is not disputed; however, if the unit is not on the Certified Equipment list, then the proper verification for compliance to UL 1741 still needs to be provided as described in the SIR. The equipment currently identified on the Certified

Equipment list has already been deemed in compliance and so further verification is not necessary.

With respect to the firmware requirement, the Joint Utilities are its only proponent, while HVCE and IREC oppose it. HVCE states that equipment firmware is updated very frequently, often within the timeframe when a customer or contractor fills out the original application for interconnection and when the equipment is delivered to the job site. The delivered firmware therefore can differ from that listed on the original application.

HVCE correctly depicts the circumstances surrounding firmware. The frequent updates make it difficult and time consuming for Staff or others to track succeeding versions of firmware for all certified equipment. For those reasons, we determine that the requirement to include firmware information with each equipment certification is not necessary and it is removed from the SIR.

External Disconnect Switch

The subject of whether or not an external disconnect switch should or should not be required for interconnection of small generation systems has been debated for years within the industry. The draft SIR proposed to eliminate the external disconnect switch for inverter based interconnection systems 25 kW and less that meet UL 1741 (November 2005 revision) requirements. All other systems would still require these devices. The Joint Utilities argue that the external disconnect switches is needed for all systems for safety reasons and because of their convenience when trouble shooting electrical issues in and around the area where the small generator installations are located.

IREC, HVCE, and Solar Alliance state that the disconnect switches are not needed because inverters certified

by UL 1741 (November 2005 revision) already are readily disconnected and the external disconnect switch currently required is redundant. They add that installing the switch is an unnecessary additional cost to the customer and dispute the contention that absence of a switch raises safety issues.

A 2008 report from the National Renewable Energy Laboratory (NREL) supports the elimination of the disconnect switch for the same reasons stated by several of the parties. We conclude that the external disconnect switch shall not be required for inverter based interconnection systems 25 kW and less and the SIR is revised accordingly.

Web-based System and Semi-Annual Data Submission

The draft SIR proposed that the utilities be required to implement a Web-based system for providing customer-generators and contractors with up to date information regarding the status of their application process. Additionally, it was proposed that each utility be required to allow customers with systems sized 25 kW and below to submit their application for interconnection via the Web. Finally, utilities were asked to submit data on interconnection project process semi-annually to ensure applications are addressed in a timely manner and to monitor overall interconnection activities within New York.

A Web-based system was one of the recommendations cited in The First Report of the Renewable Energy Task Force.⁵ In that Report, the following recommendation was stated: "The Public Service Commission and the Long Island Power Authority should explore more streamlined, transparent interconnection process for renewable distributed generation installations. The

⁵ Clean, Secure Energy and Economic Growth: A Commitment to Renewable Energy and Enhanced Energy Independence, The First Report of the Renewable Energy Task Force to Lieutenant Governor David A. Patterson (February 2008).

process should be Web-based and allow applicants to view the status of their applications. The state should help to identify solutions to overcome technical and other barriers to effective and timely interconnection."

The Web-based system reflected in the draft SIR was an effort to accomplish and comply with that recommendation. The Joint Utilities are the only party opposing this system, claiming it should be addressed outside of the SIR process. There is no reason, however, to provide for a separate process to address this new Web-based system, which is efficacious and will promote interconnections in accordance with New York's policies.

The specific design and implementation of this Web-based system by the utilities has not been fully determined at this time. Staff will conduct a follow-up meeting within approximately 30 days of this Order to further discuss the design and implementation of the Web based system with all utilities. Additionally, each utility shall, within 90 days of the issuance of this Order, submit a report identifying plans, schedules, and proposed actions for complying with this requirement.

Third Party Applications

As Integrys points out, the SIR applicant need not be restricted to the owner of the net metered system. Nonetheless, allowing any third party to become an applicant could result in customer confusion or foster disputes among utilities, customers and other parties involved in net metering. Therefore, the category of applicant eligible for a SIR contract will be broadened to include the authorized agent of a customer. Requiring the agency relationship will enable third parties to act for customers, realizing efficiency benefits, while constraining the potential for confusion and conflict.

Miscellaneous Comments and Revisions

Other minor and editorial comments were submitted by the parties on the content of the SIR. Although not all of these comments were discussed within this Order, we have reviewed each comment and made a determination based on our best judgment and experience. All SIR modifications, in a redlined and a clean version, are posted to our Website contemporaneous to issuance of this Order and are incorporated here by reference.

CONCLUSION

We have updated the SIR to reflect the amendments to the net metering provisions of the PSL, and have provided for an expedited application process, the UL 1741 update, and elimination of the external disconnect switch. These SIR improvements will foster more participation by interested customer-generators and additional investment in renewable energy technologies. Therefore, the New York State Standardized Interconnection Requirements Application Process for New Distributed Generators 2 MW or Less Connected in Parallel with Utility Distribution Systems is modified as provided for above.

The Commission orders:

1. All electric utilities listed in the body of this Order are directed to comply with the revised Standard Interconnection Requirements (SIR) provided for in the body of this Order.

2. All electric utilities listed in the body of this Order shall, within 90 days of the issuance of this Order, file a report with the Secretary to the Commission, identifying plans, schedules, and proposed actions for implementing a Web-based interconnection application process.

3. The deadlines provided for in this Order may be extended as the Secretary may require.

4. This proceeding is continued.

By the Commission,

(SIGNED)

JACLYN A. BRILLING
Secretary

Revised 02/12/09

**New York State
Standardized Interconnection Requirements and Application Process
for New Distributed Generators 2 MW or Less Connected in Parallel with Utility
Distribution Systems**

**New York State
Public Service Commission**

February 2009

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Section I. Application Process

New York State Standardized Interconnection Requirements and Application Process for New Distributed Generators 2 MW or Less Connected in Parallel with Utility Distribution Systems

A. Introduction

This section provides a framework for processing applications to:

- interconnect new distributed generation facilities with a nameplate rating of 2 MW or less [aggregated on the customer side of the point of common coupling (PCC)], and
- review any modifications affecting the interface at the PCC to existing distributed generation facilities with a nameplate rating of 2 MW or less (aggregated on the customer side of the PCC) that have been interconnected to the utility distribution system and where an existing contract between the applicant and the utility is in place.

Generation neither designed to operate, nor operating, in parallel with the utility's electrical system is not subject to these requirements. This section will ensure that applicants are aware of the technical interconnection requirements and utility interconnection policies and practices. This section will also provide applicants with an understanding of the process and information required to allow utilities to review and accept the applicants' equipment for interconnection in a reasonable and expeditious manner.

The time required to complete the process will reflect the complexity of the proposed project. Projects using previously submitted designs certified per the requirements of Section II.H will move through the process more quickly, and several steps may be satisfied with an initial application depending on the detail and completeness of the application and supporting documentation submitted by the applicant. Applicants submitting systems utilizing certified equipment however, are not exempt from providing utilities with complete design packages necessary for the utilities to verify the electrical characteristics of the generator systems, the interconnecting facilities, and the impacts of the applicants' equipment on the utilities' systems.

The application process and the attendant services must be offered on a non-discriminatory basis. The utilities must clearly identify their costs related to the applicants' interconnections, specifically those costs the utilities would not have incurred but for the applicants' interconnections. The utilities will keep a log of all applications, milestones met, and justifications for application-specific requirements. The applicants are to be responsible for payment of the utilities' costs, as provided for herein.

Staff of the Department of Public Service (Staff) will monitor the application process to ensure that applications are addressed in a timely manner. To perform this monitoring function, Staff will meet periodically with utility and applicant representatives.

B. Application Process Steps for Systems 25 kW or Less

STEP 1: Initial Communication from the Potential Applicant

Communication could range from a general inquiry to a completed application.

STEP 2: The Inquiry is Reviewed by the Utility to Determine the Nature of the Project

Technical staff from the utility discusses the scope of the interconnection with the potential applicant (either by phone or in person) to determine what specific information and documents (such as an application, contract, technical requirements, specifications, listing of qualified type-tested equipment/systems, applicable rate schedules, and metering requirements) will be provided to the potential applicant. The preliminary technical feasibility of the project at the proposed location may also be discussed at this time. All such information and a copy of the standardized interconnection requirements (SIR) must be sent to the applicant within three (3) business days following the initial communication from the potential applicant, unless the potential applicant indicates otherwise. A utility representative will be designated to serve as the single point of contact for the applicant (unless the utility informs the applicant otherwise) in coordinating the potential applicant's project with the utility.

STEP 3: Potential Applicant Files an Application

The potential applicant submits an application package to the utility. A complete application package will consist of (1) a letter of authorization by the customer (if the applicant is an agent for the customer), (2) the standard single page application form completed and signed by the applicant, (3) a signed copy of the standardized contract, (4) a three line diagram for the system identifying the manufacturer and model number of the equipment(s), (5) a copy of the manufacturer's data sheet for the equipment(s), (6) a copy of the manufacturer's verification test procedure(s) and (7) a copy of the equipment(s) certification to UL 1741 (November 2005 revision) if applicable. The equipment(s) will be considered acceptable by the utility if they meet the requirements of Section II.H. If the application is not complete, then within five (5) business days of receipt of the application package the utility will notify the applicant by email, fax, or other form of written communication, and explain the deficiencies. If the proposed system meets the SIR technical requirements the utility will return a signed and executed standardized contract to the applicant within ten (10) business days of receiving the application and the applicant may proceed with the installation. If the proposed system does not meet the SIR technical requirements, then the utility will so notify the applicant within ten (10) business days of receiving the application by email, fax, or other form of written communication and explain the technical issues or problems.

STEP 4: System Installation

The applicant will install the system according to the utility accepted design and the equipment manufacturer's requirements. All inverter based systems will be allowed to interconnect to the utility system for a period not to exceed two hours, for the sole purpose of assuring proper operation of the installed equipment.

For net metered systems as defined in Section II.A.6, any modifications related to existing metering configurations to allow for net metering shall be completed by the utility prior to Step 5. The utility shall complete the necessary metering changes within ten (10) business days of receiving request from the applicant.

STEP 5: The Applicant's Facility is Tested in Accordance with the Standardized Interconnection Requirements.

Verification testing will be performed by the applicant in accordance with the written verification test procedure provided by the equipment manufacturer. The verification testing will be conducted within ten (10) business days of system installation at a mutually agreeable time, and the utility shall be given the opportunity to witness the tests. If the utility opts not to witness the test, the applicant will send the utility within five (5) days of the test a written notification, certifying that the system has been installed and tested in compliance with the SIR, the utility-accepted design and the equipment manufacturer's instructions. The applicant's facility will be allowed to commence parallel operation upon satisfactory completion of the tests in Step 5. The applicant must have complied with and must continue to comply with all contractual and technical requirements.

STEP 6: Final Acceptance

Within five (5) business days of receiving the written test notification from Step 5, the utility will either issue to the applicant a formal letter of acceptance for interconnection, or will request that the applicant and utility set a date and time for an on-site verification and witness operation of the system. This joint on-site verification must be completed within ten (10) business days after being requested. Within five (5) business days of the completion of the on-site verification, the utility will issue to the applicant either a formal letter of acceptance for interconnection or a detailed explanation of the deficiencies in the system..

C. Application Process Steps for Systems above 25 KW up to 2 MW

Exception: For inverter based systems above 25 kW up to 200 kW, applicants may follow the expedited application process outlined under Section I. B. of the SIR, as long as the inverter-based system has been certified and tested in accordance with UL 1741 (November 2005 revision) and the utility has approved the project accordingly. The utility has fifteen (15) business days from original application submittal to determine and notify the applicant in writing of its findings. If the utility determines that the inverter-based system is not eligible for the fast track or expedited application process, the applicant can:

- 1) Proceed with the remaining steps of Section I.C of the SIR (Systems above 25 kW up to 2 MW); or
- 2) Request a review by the Department of Public Service.

For non-inverter based systems and those inverter based systems not certified and tested in accordance with UL 1741 above 25 kW up to 200 kW, the potential applicants and utilities are encouraged to use expedited application process (Section I. B.), but only in circumstances where the utility deems it to be appropriate.

STEP 1: Initial Communication from the Potential Applicant.

Communication could range from a general inquiry to a completed application.

STEP 2: The Inquiry is Reviewed by the Utility to Determine the Nature of the Project.

Technical staff from the utility discusses the scope of the interconnection with the potential applicant (either by phone or in person) to determine what specific information and documents (such as an application, contract, technical requirements, specifications, listing of qualified type-tested equipment/systems, application fee information, applicable rate schedules, and metering requirements) will be provided to the potential applicant. The preliminary technical feasibility of the project at the proposed location may also be discussed at this time. All such information and a copy of the standardized interconnection requirements must be sent to the applicant within three (3) business days following the initial communication from the potential applicant, unless the potential applicant indicates otherwise. A utility representative will be designated to serve as the single point of contact for the applicant (unless the utility informs the applicant otherwise) in coordinating the potential applicant's project with the utility.

STEP 3: Potential Applicant Files an Application.

The potential applicant submits an application to the utility. The submittal must include the completed standard application form, including a copy of equipment certification to UL 1741 (November 2005 revision) as applicable, a three line diagram specific to the proposed system, a letter of authorization (if applicant is agent for the customer), and payment of a non-refundable \$350 application fee, except that the fee shall be refunded to net metering customer-generators unless applied toward the cost of installing a dedicated transformer. If the applicant proceeds with the project to completion, the application fee will be applied as a payment to the utility's total cost for interconnection, including the cost of processing the application. Within five (5) business days of receiving the application, the utility will notify the applicant of receipt and whether the application has been completed adequately. It is in the best interest of the applicant to provide the utility with all pertinent technical information as early as possible in the process. If the required documentation is presented in this step, it will allow the utility to perform the

required reviews and allow the process to proceed as expeditiously as possible.

STEP 4: Utility Conducts a Preliminary Review and Develops a Cost Estimate for the Coordinated Electric System Interconnection Review (CESIR).

The utility conducts a preliminary review of the proposed system interconnection. Upon completion of the preliminary review, the utility will inform the applicant as to whether the proposed interconnection is viable or not, and provide the applicant with an estimate of costs associated with the completion of the CESIR. The preliminary review shall be completed and a written response detailing the outcome of the preliminary review shall be sent to the applicant within fifteen (15) business days of the completion of Step 3. The utility's response to applicants proposing to interconnect aggregate DG systems above 25 kW and up to 2 MW, or proposing to interconnect to network systems will include preliminary comments on requirements for protective relaying, metering and telemetry.

STEP 5: Applicant Commits to the Completion of the CESIR

Prior to commencement of the CESIR, the applicant shall provide the following information to the utility:

- a complete detailed interconnection design package
- the name and phone number of the individual(s) responsible for addressing technical and contractual questions regarding the proposed system, and
- if applicable, advanced payment of the costs associated with the completion of the CESIR

The complete detailed interconnection design package shall include:

- (1) Electrical schematic drawing(s) reflecting the complete proposed system design which are easily interpreted and of a quality necessary for a full interconnection. The drawings shall show all electrical components proposed for the installation, and their connections to the existing on-site electrical system from that point to the PCC.
- (2) A complete listing of all interconnection devices proposed for use at the PCC. A set of specifications for this equipment shall be provided by the applicant upon request from the utility.
- (3) The written verification test procedure provided by the equipment manufacturer, if such procedure is required by this document.

- (4) Three (3) copies of the following information:
- Proposed three line diagram of the generation system showing the interconnection of major electrical components within the system. Proposed equipment ratings clearly needs to indicate:
 - 1) Number, individual ratings, and type of units comprising the above rating;
 - 2) General high voltage bus configuration and relay functions;
 - 3) Proposed generator step-up transformer MVA ratings, impedances, tap settings and winding voltage ratings;
 - Electrical studies as requested by the utility to demonstrate that the design is within acceptable limits, inclusive and limited to the following: system fault, relay coordination, flicker, voltage drop, and harmonics.

STEP 6: Utility Completes the CESIR

The CESIR will consist of two parts:

- (1) a review of the impacts to the utility system associated with the interconnection of the proposed system, and
- (2) a review of the proposed system's compliance with the applicable criteria set forth below.

A CESIR will be performed by the utility to determine if the proposed generation on the circuit results in any relay coordination, fault current, and/or voltage regulation problems. A full CESIR may not be needed if the aggregate generation is less than: 50 kW on a single-phase branch of a radial distribution circuit; or 150 kW on a single distribution feeder.

The CESIR shall be completed within sixty (60) business days of receipt of the information set forth in Step 5. For systems utilizing type-tested equipment, the time required to complete the CESIR may be reduced.

Upon completion of the CESIR, the utility will provide the following, in writing, to the applicant:

- (1) utility system impacts, if any;
- (2) notification of whether the proposed system meets the applicable criteria considered in the CESIR process;

- (3) if applicable, a description of where the proposed system is not in compliance with these requirements;
- (4) Subject to subsections (a) through (d) below, a good faith, detailed estimate of the total cost of completion of the interconnection of the proposed system and/or a statement of cost responsibility for a dedicated transformer(s) or other required interconnection equipment:

(a) with respect to an applicant that is not to be net-metered, an estimate shall be provided and shall include the costs associated with any required modifications to the utility system, administration, metering, and on-site verification testing;

(b) with respect to an applicant that is to be net-metered and that is either a Farm Wind or Non-Residential Wind applicant intending to install wind electric generating equipment with a rated capacity of more than 25 kW, an estimate shall be provided and (i) shall include the costs associated with any required modifications to the utility system, administration, metering, and on-site verification testing, and such applicant shall be informed that it is responsible for one-half of such costs, and (ii) shall include the applicant's responsibility for the actual cost of installing any dedicated transformer(s) and other safety equipment up to the maximum set forth in subsection (d) below;

(c) with respect to an applicant that is to be net-metered (but not a Farm Wind or Non-Residential Wind applicant covered in subsection (b) above) such applicant shall have no responsibility for the interconnection costs described in subsection (b)(i) above, and a statement shall be provided showing the applicant's responsibility for the actual cost of installing any dedicated transformer(s) and other safety equipment up to the maximum set forth in subsection (d) below and;

(d) with respect to an applicant that is to be net-metered, if the utility determines that it is necessary to install a dedicated transformer(s) or other equipment to protect the safety and adequacy of electric service provided to other customers, the applicant shall be informed of its responsibility for the actual costs for installing the dedicated transformer(s) and other safety equipment. The following table reflects the maximum responsibility each designated applicant shall have with respect to the actual cost of the dedicated transformer(s) and other safety equipment.

Maximum Expense for Dedicated Transformer and Other Safety Equipment for
Net Metered Customers

Generator Type	Generator Size	Maximum Equipment Responsibility
Solar	Less than or equal to 25 kW	\$350
Solar	Over 25 kW up to 2 MW	\$5,000
Wind	Less than or equal to 25 kW	\$750
Wind	Over 25 kW up to 2 MW	\$5,000
Farm Wind	Over 25 kW up to 500 kW	\$5,000
Farm Waste	Up to 500 kW	\$5,000

STEP 7: Applicant Commits to Utility Construction of Utility’s System Modifications.

The applicant and utility will execute a standardized contract for interconnection and the applicant will provide the utility with an advance payment for the utility’s estimated costs as identified in Step 6 (estimated costs will be reconciled with actual costs in Step 11).

STEP 8: Project Construction.

The applicant will build the facility in accordance with the utility-accepted design. The utility will commence construction/installation of system modifications and metering requirements as identified in Step 6. Utility system modifications will vary in construction time depending on the extent of work and equipment required. The schedule for this work is to be discussed and agreed upon with the applicant in Step 6.

STEP 9: The Applicant’s Facility is Tested in Accordance With the Standardized Interconnection Requirements.

The verification testing will be performed in accordance with the written test procedure provided in Step 5 and any site-specific requirements identified by the utility in Step 6. The final testing will be conducted within ten (10) business days of complete installation at a mutually agreeable time, and the utility shall be given the opportunity to witness the tests. If the utility opts not to witness the test, the applicant will send the utility within five (5) days of the test a written notification, certifying that the system has been installed and tested in compliance with the SIR, the utility-accepted design, and the equipment manufacturer’s instructions.

STEP 10: Interconnection.

The applicant’s facility will be allowed to commence parallel operation upon satisfactory

completion of the tests in Step 9. In addition, the applicant must have complied with and must continue to comply with the contractual and technical requirements.

STEP 11: Final Acceptance and Utility Cost Reconciliation.

If the utility witnessed the verification testing, then, within ten (10) business days of the test, the utility will issue to the applicant either a formal letter of acceptance for interconnection or a detailed explanation of the deficiencies in the system. If the utility did not witness the verification testing, then, within ten (10) business days of receiving the written test notification from Step 9, the utility will either issue to the applicant a formal letter of acceptance for interconnection, or will request that the applicant and utility set a date and time for an on-site verification and witness operation of the system. This joint on-site verification must be completed within twenty (20) business days after being requested. Within ten (10) business days of the completion of the on-site verification, the utility will issue to the applicant either a formal letter of acceptance for interconnection or a detailed explanation of the deficiencies in the system. At this time, the utility will also reconcile its actual costs related to the applicant's project against the application fee and advance payments made by the applicant. The applicant will receive either a bill for any balance due or a reimbursement for overpayment as determined by the utility's reconciliation, except that a net metering applicant may not be charged in excess of the cost of installing the dedicated transformer(s) or other safety equipment described above in Step 6. The applicant may contest the reconciliation with the utility. If the applicant is not satisfied, a formal complaint may be filed with the Commission.

D. Web-Based Standard Interconnection Requirements

Each utility shall implement and maintain a web-based system to provide customers and contractors current information regarding the status of their SIR application process. The system shall be customer specific and post the current status of the SIR process. At a minimum the following content shall be provided:

1. The applicant's name and project/application identification number.
2. Description of the project, including at a minimum, the project's type (energy source), size, metering, and location.
3. SIR project application status, including all the steps completed and to be completed, along with corresponding completion/deadline dates associated with each step.
 - If the next action is to be taken by the utility, the expected date that action will be completed,
 - If the next action is to be taken by the applicant, what exactly is required and a contact for more information,
4. Information regarding any outstanding information request made by the utility of the applicant, and
5. The status of all amounts paid and/or due to the utility by the applicant.

Access shall be available for the customer and their contractor, such that both can access the information. The web site must be, however, secure and private from unauthorized access.

The utility web site shall also provide the ability for applicants with systems 25 kW and less to submit their application for interconnection via the web. The web based application process must be consistent with Appendix B of the SIR and include the ability to attach associated documentation or drawings associated with each project.

Section II. Interconnection Requirements

A. Design Requirements

1. Common

The generator-owner shall provide appropriate protection and control equipment, including a protective device that utilizes an automatic disconnect device that will disconnect the generation in the event that the portion of the utility system that serves the generator is de-energized for any reason or for a fault in the generator-owner's system. The generator-owner's protection and control equipment shall be capable of automatically disconnecting the generation upon detection of an islanding condition and upon detection of a utility system fault.

The generator-owner's protection and control scheme shall be designed to ensure that the generation remains in operation when the frequency and voltage of the utility system is within the limits specified by the required operating ranges. Upon request from the utility, the generator-owner shall provide documentation detailing compliance with the requirements set forth in this document.

The specific design of the protection, control and grounding schemes will depend on the size and characteristics of the generator-owner's generation, as well the generator-owner's load level, in addition to the characteristics of the particular portion of the utility's system where the generator-owner is interconnecting.

The generator-owner shall have, as a minimum, an automatic disconnect device(s) sized to meet all applicable local, state, and federal codes and operated by over and under voltage and over and under frequency protection. For three-phase installations, the over and under voltage function should be included for each phase and the over and under frequency protection on at least one phase. All phases of a generator or inverter interface shall disconnect for voltage or frequency trip conditions sensed by the protective devices. Voltage protection shall be wired phase to ground for single phase installations and for applications using wye grounded-wye grounded service transformers.

The settings below are listed for single-phase and three-phase applications using wye grounded-wye grounded service transformers or wye grounded-wye grounded isolation transformers. For applications using other transformer connections, a site-specific review will be conducted by the utility and the revised settings identified in Step 6 of the Application Process.

The requirements set forth in this document are intended to be consistent with those contained in IEEE Std 1547, Standard for Interconnecting Distributed Resources with Electric Power Systems. The requirements in IEEE Std 1547 above and beyond those contained in this document shall be followed¹.

Voltage Response

The required operating range for the generators shall be from 88% to 110% of nominal voltage magnitude. For excursions outside these limits the protective device shall automatically initiate a disconnect sequence from the utility system as detailed in the most current version of IEEE Std 1547. Clearing time is defined as the time the range is initially exceeded until the generator-owner's equipment ceases to energize the PCC and includes detection and intentional time delay.

Frequency Response

The required operating range for the generators shall be from 59.3 Hz to 60.5 Hz. For generators greater than 30 kW the utility may request that the generator operate at frequency ranges below 59.3 Hz as defined in IEEE Std 1547. For excursions outside these limits the protective device shall automatically initiate a disconnect sequence from the utility system as detailed in the most current version of IEEE Std 1547. Clearing time is defined as the time the range is initially exceeded until the generator-owner's equipment ceases to energize the PCC and includes detection and intentional time delay.

If the generation facility is disconnected as a result of the operation of a protective device, the generator-owner's equipment shall remain disconnected until the utility's service voltage and frequency have recovered to acceptable voltage and frequency limits for a minimum of five (5) minutes. Systems greater than 25 kW that do not utilize inverter based interface equipment shall not have automatic recloser capability unless otherwise approved by the utility. If the utility determines that a facility must receive permission to reconnect, then any automatic reclosing functions must be disabled and verified to be disabled during verification testing.

2. Synchronous Generators

Synchronous generation shall require synchronizing facilities. These shall include automatic synchronizing equipment or manual synchronizing with relay supervision, voltage regulator, and power factor control.

For all synchronous generators sufficient reactive power capability shall be provided by the generator-owner to withstand normal voltage changes on the utility's system. The generator voltage VAR schedule, voltage regulator, and transformer ratio settings shall be jointly

¹ It is expected that IEEE Std 1547 will eventually supersede the need for explicit technical standards in New York State. However, until such time as all IEEE 1547 series of standards are complete and approved, this standard will take precedence.

determined by the utility and the generator-owner to ensure proper coordination of voltages and regulator action. Generator-owners shall have synchronous generator reactive power capability to withstand voltage changes up to 5% of the base voltage levels.

A voltage regulator must be provided and be capable of maintaining the generator voltage under steady state conditions within plus or minus 1.5% of any set point and within an operating range of plus or minus 5% of the rated voltage of the generator.

Generator-owners shall adopt one of the following grounding methods for synchronous generators:

- a) Solid grounding
- b) High- or low-resistance grounding
- c) High- or low-reactance grounding
- d) Ground fault neutralizer grounding

Synchronous generators shall not be permitted to connect to utility secondary network systems without the approval of the utility.

3. Induction Generators

Induction generation may be connected and brought up to synchronous speed (as an induction motor) if it can be demonstrated that the initial voltage drop measured at the PCC is acceptable based on current inrush limits. The same requirements also apply to induction generation connected at or near synchronous speed because a voltage dip is present due to an inrush of magnetizing current. The generator-owner shall submit the expected number of starts per specific time period and maximum starting kVA draw data to the utility to verify that the voltage dip due to starting is within the visible flicker limits as defined by IEEE Std 519, Recommended Practices and Requirements for Harmonic Control in Electric Power Systems.

Starting or rapid load fluctuations on induction generators can adversely impact the utility's system voltage. Corrective step-switched capacitors or other techniques may be necessary. These measures can, in turn, cause ferroresonance. If these measures (additional capacitors) are installed on the customer's side of the PCC, the utility will review these measures and may require the customer to install additional equipment.

4. Inverters

Direct current generation can only be installed in parallel with the utility's system using a synchronous inverter. The design shall be such as to disconnect this synchronous inverter upon a utility system interruption.

It is recommended that equipment be selected from the "Certified Equipment" list maintained by

the PSC. Interconnected Distributed Generating systems utilizing equipment not listed in the “Certified Equipment” list must meet all functional requirements of IEEE Std 1547 and be protected by utility grade relays (as defined in these requirements) using settings approved by the utility and verified in the field. The field verification test must demonstrate that the equipment meets the voltage and frequency requirements detailed in this section.

Synchronization or re-synchronization of an inverter to the utility system shall not result in a voltage deviation that exceeds the requirements contained in Section II.E, Power Quality. Only inverters designed to operate in parallel with the utility system shall be utilized for that purpose.

A line inverter can be used to isolate the customer from the utility system provided it can be demonstrated that the inverter isolates the customer from the utility system safely and reliably.

5. Minimum Protective Function Requirements

Protective system requirements for distributed generation facilities result from an assessment of many factors, including but not limited to:

- Type and size of the distributed generation facility
- Voltage level of the interconnection
- Location of the distributed generation facility on the circuit
- Distribution transformer
- Distribution system configuration
- Available fault current
- Load that can remain connected to the distributed generation facility under isolated conditions
- Amount of existing distributed generation on the local distribution system.

As a result, protection requirements can not be standardized according to any single criteria. Minimum protective function requirements shall be as detailed in the table below. ANSI C37.2, Electric Power System Device Function Numbers, are listed with each function.

Synchronous Generators	Induction Generators	Inverters
Over/Under Voltage (Function 27/59)	Over/Under Voltage (Function 27/59)	Over/Under Voltage (Function 27/59)
Over/Under Frequency (Function 81O/81U)	Over/Under Frequency (Function 81O/81U)	Over/Under Frequency (Function 81O/81U)
		Anti-Islanding Protection

The need for additional protective functions shall be determined by the utility on a case-by-case basis. If the utility determines a need for additional functions, it shall notify the generator-owner

in writing of the requirements. The notice shall include a description of the specific aspects of the utility system that necessitate the addition, and an explicit justification for the necessity of the enhanced capability. The utility shall specify and provide settings for those functions that the utility designates as being required to satisfy protection practices. Any protective equipment or setting specified by the utility shall not be changed or modified at any time by the generator-owner without written consent from the utility.

The generator-owner shall be responsible for ongoing compliance with all applicable local, state, and federal codes and standardized interconnection requirements as they pertain to the interconnection of the generating equipment. Protective devices shall utilize their own current transformers and potential transformers and not share electrical equipment associated with utility revenue metering.

A failure of the generator-owner's protective devices, including loss of control power, shall open the automatic disconnect device, thus disconnecting the generation from the utility system. A generator-owner's protection equipment shall utilize a non-volatile memory design such that a loss of internal or external control power, including batteries, will not cause a loss of interconnection protection functions or loss of protection set points.

All interface protection and control equipment shall operate as specified independent of the calendar date.

6. Metering

The need for additional revenue metering or modifications to existing metering will be reviewed on a case-by-case basis and shall be consistent with metering requirements adopted by the Commission.

Any incremental metering costs are included in interconnection costs that may be required of an applicant. (As described in Section C, Step 6, net metered Solar, Farm Waste, Farm Wind (25 kW or Less) and Residential-Wind customer-generators are only required to contribute to the cost of dedicated transformer(s) and other safety equipment, and Farm Wind and Non-Residential Wind customer-generators with systems of 25 kW and larger are only responsible for payment of one-half of interconnection costs other than dedicated transformer(s) and other safety equipment).

The following Table summarizes the New York Net Metering Rules

New York - Net Metering²

Incentive Type:	Net Metering Rules					
Eligible Renewable/Other Technologies:	Solar		Wind			Biogas
Applicable Sectors:	Residential	Non-Residential	Residential	Non-Residential	Farm-Service Wind	Farm-Waste
Limit on System Size:	25 kW	Up to 2MW ³	25 kW	Up to 2MW ³	500 kW	500 kW
Limit on Overall Enrollment:	1% of the total Solar and Farm Waste 2005 Demand per IOU		.3% of 2005 Demand per IOU		.3% of 2005 Demand per IOU	1% of the total Solar and Farm Waste 2005 Demand per IOU

B. Operating Requirements

The generator-owner shall provide a 24-hour telephone contact. This contact will be used by the utility to arrange access for repairs, inspection or emergencies. The utility will make such arrangements (except for emergencies) during normal business hours.

Voltage and frequency trip set point adjustments shall be accessible to service personnel only. Any changes to these settings must be reviewed and approved by the utility.

The generator-owner shall not supply power to the utility during any outages of the utility system that serves the PCC. The generator-owner's generation may be operated during such outages only with an open tie to the utility. Islanding will not be permitted. The generator-owner shall not energize a de-energized utility circuit for any reason.

The disconnect switch specified for system size larger than 25kW and non-inverter based systems of 25 kW or less in Section II.D, Disconnect Switch, may be opened by the utility at any time for any of the following reasons:

- a. to eliminate conditions that constitute a potential hazard to utility personnel or the general public;

² Refer to specific utility tariff leaves for more detailed rules and regulations applicable to net metering.

³ The lesser of 2MW or such customer's peak load as measured over the prior twelve month period, pursuant to New York State Public Service Law §66-j and §66-l.

- b. pre-emergency or emergency conditions on the utility system;
- c. a hazardous condition is revealed by a utility inspection;
- d. protective device tampering;
- e. parallel operation prior to utility approval to interconnect.

The disconnect switch may be opened by the utility for the following reasons, after notice to the responsible party has been delivered and a reasonable time to correct (consistent with the conditions) has elapsed:

- a. A generator-owner has failed to make available records of verification tests and maintenance of its protective devices;
- b. A generator-owner's system adversely impacts the operation of utility equipment or equipment belonging to other utility customers;
- c. A generator-owner's system is found to adversely affect the quality of service to adjoining customers.

The utility will provide a name and telephone number so that the generator-owner can obtain information about the utility lock-out.

The generator-owner shall be allowed to disconnect from the utility without prior notice in order to self generate.

Under certain conditions a utility may require direct transfer trip (DTT). The utility shall provide detailed evidence as to the need for DTT.

If a generator-owner proposes any modification to the system that has an impact on the interface at the PCC after it has been installed and a contract between the utility and the generator-owner has already been executed, then any such modifications must be reviewed and approved by the utility before the modifications are made.

C. Dedicated Transformer

The utility reserves the right to require a power-producing facility to connect to the utility system through a dedicated transformer. The transformer shall either be provided by the connecting utility at the generator-owner's expense, purchased from the utility, or conform to the connecting utility's specifications. The transformer may be necessary to ensure conformance with utility safe work practices, to enhance service restoration operations or to prevent detrimental effects to other utility customers. The transformer that is part of the normal electrical service connection of a generator-owner's facility may meet this requirement if there are no other customers

supplied from it. A dedicated transformer is not required if the installation is designed and coordinated with the utility to protect the utility system and its customers adequately from potential detrimental net effects caused by the operation of the generator.

If the utility determines a need for a dedicated transformer, it shall notify the generator-owner in writing of the requirements. The notice shall include a description of the specific aspects of the utility system that necessitate the addition, the conditions under which the dedicated transformer is expected to enhance safety or prevent detrimental effects, and the expected response of a normal, shared transformer installation to such conditions.

D. Disconnect Switch

Generating equipment with system size larger than 25 kW and non-inverter based systems of 25 kW or less shall be capable of being isolated from the utility system by means of an external, manual, visible, gang-operated, load break disconnecting switch. The disconnect switch shall be installed, owned, and maintained by the customer-generator, and located between the generating equipment and its interconnection point with the utility system.

The disconnect switch must be rated for the voltage and current requirements of the installation.

The basic insulation level (BIL) of the disconnect switch shall be such that it will coordinate with that of the utility's equipment. Disconnect devices shall meet applicable UL, ANSI, and IEEE standards, and shall be installed to meet all applicable local, state, and federal codes. (New York City Building Code may require additional certification.)

The disconnect switch shall be clearly marked, "Generator Disconnect Switch," with permanent 3/8 inch or larger letters or larger.

The disconnect switch shall be located within 10 feet of the utility's external electric service meter. If such location is not possible, the customer-generator will propose, and the utility will approve, an alternate location. The location and nature of the disconnect switch shall be indicated in the immediate proximity of the electric service entrance. The disconnect switch shall be readily accessible for operation and locking by utility personnel in accordance with Section II.B, Operating Requirements. The disconnect switch must be lockable in the open position with a 3/8" shank utility padlock.

For installations above 600V or with a full load output of greater than 960A, a draw-out type circuit breaker with the provision for padlocking at the draw-out position can be considered a disconnect switch for the purposes of this requirement.

E. Power Quality

The maximum harmonic limits for electrical equipment shall be in accordance with IEEE 519 to limit the maximum individual frequency voltage harmonic to 3% of the fundamental frequency and the voltage Total Harmonic Distortion (THD) to 5% on the utility side of the PCC. In

addition, any voltage fluctuation resulting from the connection of the customer's energy producing equipment to the utility system must not exceed the limits defined by the maximum permissible voltage fluctuations border line of visibility curve identified in IEEE Std 519. This requirement is necessary to minimize the adverse voltage effect upon other customers on the utility system.

F. Power Factor

If the average power factor, as measured at the PCC, is less than 0.9 (leading or lagging), the method of power factor correction necessitated by the installation of the generator will be negotiated with the utility as a commercial item.

Induction power generators may be provided VAR capacity from the utility system at the generator-owner's expense. The installation of VAR correction equipment by the generator-owner on the generator-owner's side of the PCC must be reviewed and approved by the utility prior to installation.

G. Islanding

Generation interconnection systems must be designed and operated so that islanding is not sustained on utility distribution circuits. The requirements listed in this document are designed and intended to prevent islanding.

H. Equipment Certification

In order for the equipment to be acceptable for interconnection to the utility system without additional protective devices, the interface equipment must be equipped with the minimum protective function requirements listed in the table in Section II.A.5 and be tested by a Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration (OSHA) in compliance with Underwriter's Laboratories (UL) 1741, Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources (November 7, 2005 revision).

For each interconnection application, documentation including the proposed equipment certification, stating compliance with UL 1741 by an NRTL, shall be provided by the applicant to the utility. Supporting information from an NRTL website or UL's website stating compliance is acceptable for documentation.

If an equipment manufacturer, vendor, or any other party desires, documentation indicating compliance as stated above may be submitted to the Department of Public Service Commission for listing under the "Certified Equipment" list on the Department's website (<http://www.dps.state.ny.us/distgen.htm>).

Certification information for equipment tested and certified to UL 1741 (November 2005 revision) by a non-NRTL shall be provided by the manufacturer, or vendor to the contacts listed

on the Public Service Commission's website (<http://www.dps.state.ny.us/distgen.htm>) for review before final approval and posting under the Public Service Commission's "Certified Equipment" list. Utilities are not responsible for reviewing and approving equipment tested and certified by a non-NRTL.

If an equipment is UL 1741 (November 2005 revision) certified by an NRTL and compliance documentation is submitted to the utility, the utility shall accept such equipment for interconnection in New York state. All equipment certified to UL 1741 (November 2005 revision) by an NRTL shall be deemed 'certified equipment' even if it does not appear on the Department of Public Service Commission's website.

Utility grade relays need not be certified per the requirements of this section.

I. Verification Testing

All interface equipment must include a verification test procedure as part of the documentation presented to the utility. Except for the case of small single-phase inverters as discussed later, the verification test must establish that the protection settings meet the SIR requirements. The verification testing may be site-specific and is conducted periodically to assure continued acceptable performance.

Upon initial parallel operation of a generating system, or any time interface hardware or software is changed, the verification test must be performed. A qualified individual must perform verification testing in accordance with the manufacturer's published test procedure. Qualified individuals include professional engineers, factory-trained and certified technicians, and licensed electricians with experience in testing protective equipment. The utility reserves the right to witness verification testing or require written certification that the testing was successfully performed.

Verification testing shall be performed at least once every four years. All verification tests prescribed by the manufacturer shall be performed. If wires must be removed to perform certain tests, each wire and each terminal must be clearly and permanently marked. The generator-owner shall maintain verification test reports for inspection by the utility.

Single-phase inverters and inverter systems rated 25 kW and below shall be verified upon initial parallel operation and once every four years as follows: the generator-owner shall interrupt the utility source and verify that the equipment automatically disconnects and does not reconnect for at least five minutes after the utility source is reconnected. The owner shall maintain a log of these operations for inspection by the connecting utility. Any system that depends upon a battery for trip power shall be checked and logged at least annually for proper voltage. Once every four (4) years the battery must be either replaced or a discharge test performed.

J. Interconnection Inventory

To ensure applications are addressed in a timely manner and monitor the overall interconnection

activities, utilities shall submit an SIR inventory of projects to the Public Service Commission by January 31 and July 31 of each year. At a minimum the following information shall be provided in the inventory:

1. Company
2. Applicant Name
3. System Type
4. System Capacity
5. Net Metered (Yes/No)
6. Protective Equipment
7. Application Review Start and End date
8. Preliminary Review Start and End date
9. CESIR Start and End date
10. Verification Testing date
11. Final Letter of Acceptance date

Section III. Glossary of Terms

Automatic Disconnect Device: An electronic or mechanical switch used to isolate a circuit or piece of equipment from a source of power without the need for human intervention.

Cease to Energize: Cessation of energy flow capability

Coordinated Electric System Interconnection Review: Any studies performed by utilities to ensure that the safety and reliability of the electric grid with respect to the interconnection of distributed generation as discussed in this document.

Customer-Generator: A utility customer who owns or operates electric generating equipment located and used at the customer's premises, and/or the customer's agent.

Dedicated Transformer: A transformer with a secondary winding that serves only one customer.

Direct Transfer Trip: Remote operation of a circuit breaker by means of a communication channel.

Disconnect (verb): To isolate a circuit or equipment from a source of power. If isolation is accomplished with a solid-state device, "Disconnect" shall mean to cease the transfer of power.

Disconnect Switch: A mechanical device used for isolating a circuit or equipment from a source of power.

Draw-out Type Circuit Breaker: Circuit breakers that are disconnected by physically separating, or racking, the breaker assembly away from the switchgear bus.

Farm Waste, Net Meter, Farm Applicant: A farm applicant who is proposing to install a farm waste anaerobic digester generating system, not to exceed 500 kW, at a farm, per the requirements of New York State Public Service Law §66-j.

Generator-Owner: An applicant to operate on-site power generation equipment in parallel with the utility grid per the requirements of this document.

Islanding: A condition in which a portion of the utility system that contains both load and distributed generation is isolated from the remainder of the utility system. (Adopted from IEEE 929.)

Point of Common Coupling : The point at which the interconnection between the electric utility and the customer interface occurs. Typically, this is the customer side of the utility revenue meter.

Preliminary Review: A review of the generator-owner's proposed system capacity, location on the utility system, system characteristics, and general system regulation to determine if the interconnection is viable.

Protective Device: A device that continuously monitors a designated parameter related to the operation of the generation system that operates if preset limits are exceeded

Required Operating Range: The range of magnitudes of the utility system voltage or frequency where the generator-owner's equipment, if operating, is required to remain in operation for the purposes of compliance with UL 1741. Excursions outside these ranges must result in the automatic disconnection of the generation within the prescribed time limits

Solar, Net Meter, Residential Applicant: A residential applicant who is proposing to install a photovoltaic generating system, not to exceed 25 kW, in an owner occupied residence per the requirements of New York State Public Service Law §66-j.

Solar, Net Meter, Non-Residential Applicant: A non-residential applicant who is proposing to install a solar generating system located and used at the applicant's premises, not to exceed the customer's peak load as measured over the prior 12 month period or 2 MW, whichever is less, pursuant to New York State Public Service Law §66-j.

Utility Grade Relay: A relay that is constructed to comply with, as a minimum, the most current version of the following standards for non-nuclear facilities:

<u>Standard</u>	<u>Conditions Covered</u>
<u>ANSI/IEEE C37.90</u>	Usual Service Condition Ratings - Current and Voltage Maximum design for all relay

AC and DC auxiliary relays
Make and carry ratings for tripping contacts
Tripping contacts duty cycle
Dielectric tests by manufacturer
Dielectric tests by user

ANSI/IEEE C37.90.1 Surge Withstand Capability (SWC)
Fast Transient Test

IEEE C37.90.2 Radio Frequency Interference

IEEE C37.98 Seismic Testing (fragility) of Protective and Auxiliary Relays

ANSI C37.2 Electric Power System Device Function Numbers

IEC 255-21-1 Vibration

IEC 255-22-2 Electrostatic Discharge

IEC 255-5 Insulation (Impulse Voltage Withstand)

Verification Test: A test performed upon initial installation and repeated periodically to determine that there is continued acceptable performance.

Wind, Net Meter, Residential Applicant: A residential applicant who is proposing to install a wind electric generating system, not to exceed a combined rated capacity of 25 kW, located and used at the applicant's primary residence, per the requirements of New York State Public Service Law §66-1.

Wind, Net Meter, Non-Residential Applicant: A non-residential applicant who is proposing to install a wind electric generating system located and used at the applicant's premises, not to exceed the customer's peak load as measured over the prior 12-month period or 2 MW, whichever is less, pursuant to New York State Public Service Law §66-1.

Wind, Net Meter, Farm Applicant: A farm applicant who is proposing to install a wind electric generating system, not to exceed a combined rated capacity of 500 kW, located and used at the applicant's primary residence, per the requirements of New York State Public Service Law §66-1.

APPENDIX A

**NEW YORK STATE
STANDARDIZED CONTRACT
FOR INTERCONNECTION OF NEW DISTRIBUTED GENERATION UNITS
WITH CAPACITY OF 2 MW OR LESS CONNECTED IN PARALLEL WITH UTILITY
DISTRIBUTION SYSTEMS**

Customer Information:

Company Information:

Name: _____

Name: _____

Address: _____

Address: _____

Telephone: _____

Telephone: _____

Fax: _____

Fax: _____

Email: _____

Email: _____

Unit Application/File No. _____

DEFINITIONS

Dedicated Facilities means the equipment and facilities on the Company's system necessary to permit operation of the Unit in parallel with the Company's system.

Delivery Service means the services the Company may provide to deliver capacity or energy generated by Customer to a buyer to a delivery point(s), including related ancillary services.

"Net energy metering" means the use of a net energy meter to measure, during the billing period applicable to a customer-generator, the net amount of electricity supplied by an electric corporation and provided to the corporation by a customer-generator.

"SIR" means the New York State Standardized Interconnection Requirements for new distributed generation units with a nameplate capacity of 2 MW or less connected in parallel with the Company's distribution system

"Unit" means the distributed generation Unit with a nameplate capacity of 2 MW or less located on the Customer's premises at the time the company approves such Unit for operation in parallel with the Company's system. This Agreement relates only to such Unit, but a new agreement shall not be required if the customer makes physical alterations to the Unit that do not result in an increase in its nameplate generating capacity. The nameplate generating capacity of the Unit shall not exceed 2 MW.

I. TERM AND TERMINATION

1.1 Term: This Agreement shall become effective when executed by both Parties and shall continue in effect until terminated.

1.2 Termination: This Agreement may be terminated as follows:

- a. The Customer may terminate this Agreement at any time, by giving the Company sixty (60) days' written notice.
- b. Failure by the Customer to seek final acceptance by the Company within twelve (12) months after completion of the utility construction process described in the SIR shall automatically terminate this Agreement.
- c. Either Party may, by giving the other Party at least sixty (60) days' prior written notice, terminate this Agreement in the event that the other Party is in default of any of the material terms and conditions of this Agreement. The terminating Party shall specify in the notice the basis for the termination and shall provide a reasonable opportunity to cure the default.
- d. The Company may, by giving the customer at least sixty (60) days' prior written notice, terminate this Agreement for cause. The Customer's non-compliance with an upgrade to the SIR, unless the Customer's installation is "grandfathered," shall constitute good cause.

1.3 Disconnection and Survival of Obligations: Upon termination of this Agreement the Unit will be disconnected from the Company's electric system. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of the termination.

1.4 Suspension: This Agreement will be suspended during any period in which the Customer is not eligible for delivery service from the Company.

II. SCOPE OF AGREEMENT

2.1 Scope of Agreement: This Agreement relates solely to the conditions under which the Company and the Customer agree that the Unit may be interconnected to and operated in parallel with the Company's system.

2.2 Electricity Not Covered: The Company shall have no duty under this Agreement to account for, pay for, deliver, or return in kind any electricity produced by the Facility and delivered into the Company's System unless the system is net metered as described in Public Service Law Sections 66-j or 66-l.

III. INSTALLATION, OPERATION AND MAINTENANCE OF UNIT

3.1 Compliance with SIR: Subject to the provisions of this Agreement, the Company shall be required to interconnect the Unit to the Company's system, for purposes of parallel operation, if the Company accepts the Unit as in compliance with the SIR. The Customer shall have a continuing obligation to maintain and operate the Unit in compliance with the SIR.

3.2 Observation of the Unit - Construction Phase: The Company may, in its discretion and upon reasonable notice, conduct reasonable on-site verifications during the construction of the Unit. Whenever the Company chooses to exercise its right to conduct observations herein it shall specify to the Customer its reasons for its decision to conduct the observation. For purposes of this paragraph and paragraphs 3.3 through 3.5, the term "on-site verification" shall not include testing of the Unit, and verification tests shall not be required except as provided in paragraphs 3.3 and 3.4.

3.3 Observation of the Unit - Ten-day Period: The Company may conduct on-site verifications of the Unit and observe the execution of verification testing within a reasonable period of time, not exceeding ten (10) business days after system installation. The applicant's facility will be allowed to commence parallel operation upon satisfactory completion of the verification test. The applicant must have complied with and must continue to comply with all contractual and technical requirements.

3.4 Observation of the Unit - Post-Ten-day Period: If the Company does not perform an on-site verification of the Unit and observe the execution of verification testing within the ten-day period, the Customer will send the utility within five (5) days of the verification testing a written notification certifying that the Unit has been installed and tested in compliance with the SIR, the utility-accepted design and the equipment manufacturer's instructions. The Customer may begin to produce energy upon satisfactory completion of the verification test. After receiving the verification test notification, the Company will either issue to the applicant a formal letter of acceptance for interconnection, or may request that the applicant and utility set a date and time to conduct an on-site verification of the Unit and make reasonable inquiries of the Customer, but only for purposes of determining whether the verification tests were properly performed. The Customer shall not be required to perform the verification tests a second time, unless irregularities appear in the verification test report or there are other objective indications that the tests were not properly performed in the first instance.

3.5 Observation of the Unit - Operations: The Company may conduct on-site verification of the operations of the Unit after it commences operations if the Company has a reasonable basis for doing so based on its responsibility to provide continuous and reliable utility service or as authorized by the provisions of the Company's Retail Tariff relating to the verification of customer installations generally.

3.6 Costs of Dedicated Facilities: During the term of this Agreement, the Company shall design, construct and install the Dedicated Facilities. The Customer shall be responsible for paying the incremental capital cost of such Dedicated Facilities attributable to the Customer's Unit. All

costs associated with the operation and maintenance of the Dedicated Facilities after the Unit first produces energy shall be the responsibility of the Company.

IV. DISCONNECTION OF THE UNIT

4.1 Emergency Disconnection: The Company may disconnect the Unit, without prior notice to the Customer (a) to eliminate conditions that constitute a potential hazard to Company personnel or the general public; (b) if pre-emergency or emergency conditions exist on the Company system; (c) if a hazardous condition relating to the Unit is observed by a utility inspection; or (d) if the Customer has tampered with any protective device. The Company shall notify the Customer of the emergency if circumstances permit.

4.2 Non-Emergency Disconnection: The Company may disconnect the Unit, after notice to the responsible party has been provided and a reasonable time to correct, consistent with the conditions, has elapsed, if (a) the Customer has failed to make available records of verification tests and maintenance of his protective devices; (b) the Unit system interferes with Company equipment or equipment belonging to other customers of the Company; (c) the Unit adversely affects the quality of service of adjoining customers.

4.3 Disconnection by Customer: The Customer may disconnect the Unit at any time.

4.4 Utility Obligation to Cure Adverse Effect: If, after the Customer meets all interconnection requirements, the operations of the Company are adversely affecting the performance of the Unit or the Customer's premises, the Company shall immediately take appropriate action to eliminate the adverse effect. If the Company determines that it needs to upgrade or reconfigure its system the Customer will not be responsible for the cost of new or additional equipment beyond the point of common coupling between the Customer and the Company.

V. ACCESS

5.1 Access to Premises: The Company shall have access to the disconnect switch of the Unit at all times. At reasonable hours and upon reasonable notice consistent with Section III of this Agreement, or at any time without notice in the event of an emergency (as defined in paragraph 4.1), the Company shall have access to the Premises.

5.2 Company and Customer Representatives: The Company shall designate, and shall provide to the Customer, the name and telephone number of a representative or representatives who can be reached at all times to allow the Customer to report an emergency and obtain the assistance of the Company. For the purpose of allowing access to the premises, the Customer shall provide the Company with the name and telephone number of a person who is responsible for providing access to the Premises.

5.3 Company Right to Access Company-Owned Facilities and Equipment: If necessary for the purposes of this Agreement, the Customer shall allow the Company access to the Company's

equipment and facilities located on the Premises. To the extent that the Customer does not own all or any part of the property on which the Company is required to locate its equipment or facilities to serve the Customer under this Agreement, the Customer shall secure and provide in favor of the Company the necessary rights to obtain access to such equipment or facilities, including easements if the circumstances so require.

VI. DISPUTE RESOLUTION

6.1 Good Faith Resolution of Disputes: Each Party agrees to attempt to resolve all disputes arising hereunder promptly, equitably and in a good faith manner.

6.2 Mediation: If a dispute arises under this Agreement, and if it cannot be resolved by the Parties within ten (10) business days after written notice of the dispute, the parties agree to submit the dispute to mediation by a mutually acceptable mediator, in a mutually convenient location in New York State, in accordance with the then current CPR Institute for Dispute Resolution Mediation Procedure, or to mediation by a mediator provided by the New York Public Service Commission. The Parties agree to participate in good faith in the mediation for a period of up to 90 days. If the Parties are not successful in resolving their disputes through mediation, then the parties may refer the dispute for resolution to the New York Public Service Commission, which shall maintain continuing jurisdiction over this agreement.

6.3 Escrow: If there are amounts in dispute of more than two thousand dollars (\$2,000), the Customer shall either place such disputed amounts into an independent escrow account pending final resolution of the dispute in question, or provide to the Company an appropriate irrevocable standby letter of credit in lieu thereof.

VII. INSURANCE

7.1 The Customer is not required to provide general liability insurance coverage as part of this Agreement, the SIR, or any other Company requirement. Due to the risk of incurring damages however, the Public Service Commission recommends that every distributed generation customer protect itself with insurance.

7.2 Effect: The inability of the Company to require the Customer to provide general liability insurance coverage for operation of the Unit is not a waiver of any rights the Company may have to pursue remedies at law against the Customer to recover damages.

VIII. MISCELLANEOUS PROVISIONS

8.1 Beneficiaries: This Agreement is intended solely for the benefit of the parties hereto, and if a party is an agent, its principal. Nothing in this Agreement shall be construed to create any duty to, or standard of care with reference to, or any liability to, any other person.

8.2 Severability: If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction, such

portion or provision shall be deemed separate and independent, and the remainder of this Agreement shall remain in full force and effect.

8.3 Entire Agreement: This Agreement constitutes the entire Agreement between the parties and supersedes all prior agreements or understandings, whether verbal or written.

8.4 Waiver: No delay or omission in the exercise of any right under this Agreement shall impair any such right or shall be taken, construed or considered as a waiver or relinquishment thereof, but any such right may be exercised from time to time and as often as may be deemed expedient. In the event that any agreement or covenant herein shall be breached and thereafter waived, such waiver shall be limited to the particular breach so waived and shall not be deemed to waive any other breach hereunder.

8.5 Applicable Law: This Agreement shall be governed by and construed in accordance with the law of the State of New York.

8.6 Amendments: This Agreement shall not be amended unless the amendment is in writing and signed by the Company and the Customer.

8.7 Force Majeure: For purposes of this Agreement, "Force Majeure Event" means any event: (a) that is beyond the reasonable control of the affected Party; and (b) that the affected Party is unable to prevent or provide against by exercising reasonable diligence, including the following events or circumstances, but only to the extent they satisfy the preceding requirements: acts of war, public disorder, insurrection, or rebellion; floods, hurricanes, earthquakes, lightning, storms, and other natural calamities; explosions or fires; strikes, work stoppages, or labor disputes; embargoes; and sabotage. If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, such Party will promptly notify the other Party in writing, and will keep the other Party informed on a continuing basis of the scope and duration of the Force Majeure Event. The affected Party will specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the affected Party is taking to mitigate the effects of the event on its performance. The affected Party will be entitled to suspend or modify its performance of obligations under this Agreement, other than the obligation to make payments then due or becoming due under this Agreement, but only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of reasonable efforts. The affected Party will use reasonable efforts to resume its performance as soon as possible.

8.8 Assignment to Corporate Party: At any time during the term, the Customer may assign this Agreement to a corporation or other entity with limited liability, provided that the Customer obtains the consent of the Company. Such consent will not be withheld unless the Company can demonstrate that the corporate entity is not reasonably capable of performing the obligations of the assigning Customer under this Agreement.

8.9 Assignment to Individuals: At any time during the term, a Customer may assign this Agreement to another person, other than a corporation or other entity with limited liability, provided that the assignee is the owner, lessee, or is otherwise responsible for the Unit.

8.10 Permits and Approvals: Customer shall obtain all environmental and other permits lawfully required by governmental authorities prior to the construction and for the operation of the Unit during the term of this Agreement.

8.11 Limitation of Liability: Neither by inspection, if any, or non-rejection, nor in any other way, does the Company give any warranty, express or implied, as to the adequacy, safety, or other characteristics of any structures, equipment, wires, appliances or devices owned, installed or maintained by the Customer or leased by the Customer from third parties, including without limitation the Unit and any structures, equipment, wires, appliances or devices appurtenant thereto.

ACCEPTED AND AGREED:

Customer: _____

Date: _____

Company: _____

Date: _____

APPENDIX B

**NEW YORK STATE STANDARDIZED APPLICATION
FOR SINGLE PHASE ATTACHMENT OF PARALLEL
GENERATION EQUIPMENT 25 KW OR LESS
TO THE ELECTRIC SYSTEM OF**

Utility: _____

Customer:

Name: _____ Phone: (____) _____

Fax: (____) _____

Email: _____

Address: _____ Municipality: _____

Utility Account Number: _____

Agent (if any):

Name: _____ Phone: (____) _____

Fax: (____) _____

Email: _____

Address: _____ Municipality: _____

Consulting Engineer or Contractor:

Name: _____ Phone: (____) _____

Address: _____

Estimated In-Service Date: _____

Existing Electric Service:

Capacity: _____ Amperes Voltage: _____ Volts

Service Character: ()Single Phase ()Three Phase

Location of Protective Interface Equipment on Property:

(include address if different from customer address)

Energy Producing Equipment/Inverter Information:

Manufacturer: _____

Model No. _____ Version No. _____

()Synchronous ()Induction ()Inverter ()Other _____

Rating: _____ kW Rating: _____ kVA

Generator Connection: ()Delta ()Wye ()Wye Grounded

Interconnection Voltage: _____ Volts

System Type Tested (Total System): ()Yes ()No; attach product literature

Equipment Type Tested (i.e. Inverter, Protection System):

()Yes ()No; attach product literature
Three line Diagram attached: ()Yes
Installation Test Plan attached: ()Yes
If applicable, Certification to UL 1741 attached: ()Yes

Signature:

_____	_____	_____
CUSTOMER/AGENT SIGNATURE	TITLE	DATE

APPENDIX C

**NEW YORK STATE STANDARDIZED APPLICATION
FOR ATTACHMENT OF PARALLEL GENERATION
EQUIPMENT ABOVE 25 KW UP TO 2 MW
TO THE ELECTRIC SYSTEM OF**

Utility: _____

Customer:

Name: _____ Phone: (____) _____

Fax: (____) _____

Email: _____

Address: _____ Municipality: _____

Utility Account Number: _____

Agent (if any):

Name: _____ Phone: (____) _____

Fax: (____) _____

Email: _____

Address: _____ Municipality: _____

Consulting Engineer or Contractor:

Name: _____ Phone: (____) _____

Address: _____

Estimated In-Service Date: _____

Existing Electric Service:

Capacity: _____ Amperes Voltage: _____ Volts

Service Character: ()Single Phase ()Three Phase

Secondary 3 Phase Transformer Connection ()Wye ()Delta

Location of Protective Interface Equipment on Property:

(include address if different from customer address)

Energy Producing Equipment/Inverter Information:

Manufacturer: _____

Model No. _____ Version No. _____

()Synchronous ()Induction ()Inverter ()Other _____

Rating: _____ kW Rating: _____ kVA

Rated Output: _____ VA Rated Voltage: _____ Volts

Rate Frequency: _____ Hertz Rated Speed: _____ RPM
 Efficiency: _____% Power Factor: _____%
 Rated Current: _____ Amps Locked Rotor Current: _____ Amps
 Synchronous Speed: _____ RPM Winding Connection:
 Min. Operating Freq./Time:
 Generator Connection: ()Delta ()Wye ()Wye Grounded
 System Type Tested (Total System): ()Yes ()No; attach product literature
 Equipment Type Tested (i.e. Inverter, Protection System):
 ()Yes ()No; attach product literature
 Three line Diagram attached: ()Yes
 Verification Test Plan attached: ()Yes
 If applicable, Certification to UL 1741 attached: ()Yes

For Synchronous Machines:

Submit copies of the Saturation Curve and the Vee Curve
 ()Salient ()Non-Salient
 Torque: _____ lb-ft Rated RPM: _____
 Field Amperes: _____ at rated generator voltage and current
 and _____% PF over-excited
 Type of Exciter: _____
 Output Power of Exciter: _____
 Type of Voltage Regulator: _____
 Direct-axis Synchronous Reactance (X_d) _____ ohms
 Direct-axis Transient Reactance (X'_d) _____ ohms
 Direct-axis Sub-transient Reactance (X''_d) _____ ohms

For Induction Machines:

Rotor Resistance (R_r) _____ ohms Exciting Current _____ Amps
 Rotor Reactance (X_r) _____ ohms Reactive Power Required:
 Magnetizing Reactance (X_m) _____ ohms _____ VARs (No Load)
 Stator Resistance (R_s) _____ ohms _____ VARs (Full Load)
 Stator Reactance (X_s) _____ ohms
 Short Circuit Reactance (X''_d) _____ ohms Phases:
 Frame Size: _____ Design Letter: _____ ()Single
 Temp. Rise: _____ °C. ()Three-Phase

For Inverters:

Manufacturer: _____ Model:
 Type: _____ ()Forced Commutated ()Line Commutated
 Rated Output: _____ Amps _____ Volts
 Efficiency: _____%

Signature:

 CUSTOMER/AGENT SIGNATURE

 TITLE

 DATE