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From: Arizona Solar Energy Industry Association
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Intermountain Combined Heat and Power Center
Intermountain Combined Heat and Power Initiative
Southwest Energy Efficiency Project
Vote Solar Initiative
Western Resource Advocates

Date: July 29, 2005

Re: Distributed Generation Workshop: Interconnection Issues
Docket No. E-0000A-99-0431

We appreciate the opportunity to submit comments and a draft interconnection rule for further consideration by the Commission, staff, and working group.

We believe this draft rule represents a fair and workable starting point for the working group.

This draft interconnection rule is structured according to the topic outline provided by the staff, with minor revisions for clarity and readability. The content of this draft rule stems from the interconnection rule adopted in Texas, which is far more comprehensive than any standards currently in use in Arizona, and is nationally recognized as a good model. However, efforts were made to include elements from the 1999 Arizona draft guidelines, as well as elements compatible with the 1999 Arizona draft guidelines, in order to facilitate a smoother and less contentious process in the working group.

This draft rule contains elements regarding process, procedural issues, timing, fees, study requirements, equipment certification, non-circumvention, or other such issues that were grossly inadequate, incomplete, or entirely missing from the Arizona draft guidelines. These elements are absolutely essential avoiding the problems that previous distributed generation users (or would-be distributed generation users) have faced.

Additional issues to be considered include developing an associated manual of practice, as well as standard forms.

We encourage the Commission, staff, and working group to proceed using this 2005 draft rule. We look forward to working with the Commission, staff, and working group on ensuring the reliability, adequacy of supply, and reasonable cost of our electric power system, and encouraging the safe proliferation of DG.

Interconnection Requirements

For

Distributed Generation

Revised July, 2005

Distributed Generation Workshop: Interconnection Issues
Docket No. E-0000A-99-0431

New 2005 Arizona Draft Interconnection Rule Submitted By:

Arizona Solar Energy Industry Association
Distributed Energy Association of Arizona
Greater Tucson Coalition for Solar Energy
Intermountain Combined Heat and Power Center
Intermountain Combined Heat and Power Initiative
Southwest Energy Efficiency Project
Vote Solar Initiative
Western Resource Advocates

Date: July 29, 2005

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1. APPLICABILITY

1.1. Size and type of facilities which the policy applies to

This policy applies to all distributed generation with power ratings of 10 MW or less, operating (or applying to operate) in parallel with a utility grid in Arizona. It establishes the technical and procedural requirements, terms, and conditions that will promote the safe and reliable parallel operation of on-site distributed generation. This policy includes provisions for interconnecting to a non-network or network system. It includes the three distinct types of generators, as far as the grid is concerned: (a) solid-state or static inverters, (b) induction machines, and (c) synchronous machines.

1.2. Categories of generator size or classes

Level 1: Certified inverter-based facilities that have a power rating of 10 kW or less on radial or spot network systems, and that meet screens (a), (e), (f), (h), (i), and (j) in section 4.8 below, and screens in 4.7 as applicable. No pre-interconnection study required.

Level 2: Certified generating facilities that have a power rating of 2 MW or less, meet screens (a) through (j) in section 4.8 below, and if connecting to a network, additionally meet screens 4.7 below. Note that some additional protection requirements are required for systems with power ratings of over 500 kW to 2 MW. No pre-interconnection study required.

Level 3: Certified generating facilities that have a power rating of 10 MW or less, do not export power beyond the point of interconnection, meet screens (b) through (j) in section 4.8 below, and are not connecting to a network. No pre-interconnection study required.

Level 4: Generating facilities with a power rating of 10 MW or less, that do not meet the criteria or screens for other Levels. Pre-interconnection study may be required.

These interconnection requirements are limited to 10 MW under the assumption that larger interconnections may adversely affect transmission and will be processed under FERC interconnection rules. The total capacity of a facility's individual on-site distributed generation units may exceed 10 MW; however, no more than 10 MW of a facility's capacity will be interconnected at any point in time at the point of common coupling under this section.

1.3. Distributed generation types

1.4. Other issues

2. RIGHTS AND RESPONSIBILITIES

2.1. Applicant rights and responsibilities.

A DG applicant has the right to interconnect DG projects with the electric utility system, and electric utilities are obligated to interconnect the DG project, subject to the requirements set forth in this rule. A DG applicant has the right to expect expeditious processing of the Application by the utility, and to receive supporting data and justification from the utility for any studies or additional equipment required for interconnection.

A DG applicant has the responsibility to pay for the reasonable costs of system studies specified herein. A DG applicant has the responsibility of disclosing items specified herein on the DG project and its operation to the utility. A DG applicant also has the responsibility of ensuring that the DG project meets all applicable construction and safety codes; and that the necessary protection equipment is installed and operated to protect both its equipment and the utility system.

2.2. Utility rights and responsibilities.

A utility has the right and responsibility to safeguard its system, other customers, and the general public, subject to the ACC's rules. A utility has the right and responsibility to ensure that interconnected DG:

a. will not present any unreasonable hazards to utility personnel, other customers or the public;
b. minimizes the possibility of damage to the utility and other customers' equipment; and
c. minimally hampers efforts to restore a feeder to service (specifically when a clearance is required).

A utility has the responsibility to respond to Applications for interconnection promptly, within the time periods specified in this rule, and to complete the interconnection process in a safe and timely manner. A utility must show good cause why a DG Application that satisfies the ACC's requirements should not be interconnected to its system. A utility does not have the right to unilaterally refuse to connect a DG project. If utility studies are needed, a utility is required to assess and recognize the benefits of adding DG to the distribution system in addition to the costs of adding DG to the system.

2.3. Easements/rights of way

Utility Right to Access Utility-Owned Facilities and Equipment. If necessary for the purposes of the Interconnection Agreement and in the manner it describes, the customer shall allow the utility access to the utility's equipment and the utility's facilities located on the customer's premises. To the extent that the customer does not own all or any part of the property on which the utility is required to locate its equipment or facilities to serve the customer, the customer shall secure and provide in favor of the utility the necessary rights to obtain access to such equipment or facilities, including easements if the circumstances so require.

2.4. Insurance

The customer is not required to provide general liability insurance coverage as part of the Interconnection Agreement, or any other utility requirement. At no time shall the utility require that the customer negotiate any policy or renewal of any policy covering any liability through a particular insurance company, agent, solicitor, or broker.

2.5. Non-circumvention

A utility and its affiliates shall not use knowledge of proposed distributed generation projects submitted to it for interconnection or study to prepare competing proposals to the customer that offer either discounted rates in return for not installing the distributed generation, or offer competing distributed generation projects.

2.6. Other issues

No additional requirements. If a customer-generator's facility complies with all applicable standards in this rule, the utility may not require a customer-generator to install additional controls (including but not limited to a utility accessible disconnect switch), perform or pay for additional tests, or purchase additional liability insurance in order to obtain approval to interconnect except as agreed to by the customer. The utility may, however, install additional equipment at its own expense.

3. DEFINITIONS

Applicant: A person who has filed an application to interconnect a customer-generator facility to an electric delivery system.

Application: The standard form, approved by the Commission, for applying to interconnect and parallel operation with the utility system.

Annualized period: A period of 12 consecutive monthly billing periods. A customer-generator's first annualized period begins on the first day of the first full monthly billing period after which the customer-generator's facility is interconnected and is generating electricity.

Area network: A type of electric delivery system served by multiple transformers interconnected in an electrical network circuit generally used in large metropolitan areas that are densely populated in order to provide high reliability of service and having the same definition as the term "secondary grid network" as defined in IEEE standards

Certified Equipment: A specific generating and protective equipment system or systems that have been certified as meeting the applicable parts of this rule relating to safety and reliability by an entity approved by the ACC.

Cogeneration Facility: Any facility that sequentially produces electricity, steam or forms of useful energy (e.g., heat) from the same fuel source and which are used for industrial, commercial, heating, or cooling purposes.

Customer-generator: A customer that generates electricity, on the customer's side of the meter. Sometimes referred to as just "customer"

Customer-generator facility: The equipment used by a customer-generator to generate, manage, and monitor electricity. A customer-generator facility typically includes an electric generator and/or an equipment package, as defined herein.

Distributed generator or distributed generation (DG): Any type of electrical generator, static inverter or generating facility interconnected with the distribution system that (a) has the capability of being operated in electrical parallel with the utility's distribution system, or (b) can feed a customer load that can also be fed by the utility's electrical system. The distributed generator is sometimes referred to simply as "generator" in this rule.

Electric delivery system: The infrastructure constructed and maintained by an EDC, as defined herein, to deliver electric service to end-users.

Electric generation service: The provision of retail electric energy that is generated off site from the location at which the consumption of such electric energy and capacity is metered for retail billing purposes, including agreements and arrangements for the provision of electric generation service.

Equipment package: a group of components connecting an electric generator with an electric delivery system, and includes all interface equipment including switchgear, inverters, or other interface devices. An equipment package may include an integrated generator or electric source.

Fault current: electrical current that flows through a circuit and is produced by an electrical fault, such as to ground, double-phase to ground, three-phase to ground, phase-to-phase, and three-phase. A fault current is several times larger in magnitude than the current that normally flows through a circuit.

Good Utility Practice: a practice, method, policy, or action engaged in and/or accepted by a significant portion of the electric industry in a region, which a reasonable utility official would expect, in light of the facts reasonably discernable at the time, to accomplish the desired result reliably, safely and expeditiously and has the same definition as the term is used in the interconnection rules promulgated by the FERC.

Electric supply/purchase agreement: The Agreement, together with Appendices, signed between the utility and the customer covering the terms and conditions under which electrical power is supplied and/or purchased to/from the utility.

Generating Facility: All or part of the customer's electrical generator(s) or inverter(s) together with all protective, safety, and associated equipment necessary to produce electric power at the customer's facility. A generating facility also includes any Qualifying Facility (QF).

IEEE: the Institute of Electrical and Electronic Engineers.

IEEE standards: the standards published by the Institute of Electrical and Electronic Engineers, available at www.ieee.org.

Interconnect Agreement: The standard form of agreement titled Agreement for the Interconnection of Customer's Generation Facility to the [Utility Name] Distribution System between [Utility Name] and [Customer Name], together with the Appendices which have been approved by the ACC. The interconnection agreement sets forth the contractual conditions under which a utility and a customer agree that one or more facilities may be interconnected with the Utility's system. A sample copy is available from the utility.

Interconnection: The physical connection of distributed generation to the utility system in accordance with the requirements of this rule so that parallel operation can occur.

Inverter-based protective function: A function of an inverter system, carried out using hardware and software, that is designed to prevent unsafe operating conditions from occurring before, during, and after the interconnection of an inverter-based static power converter unit with a utility system. For purposes of this definition, unsafe operating conditions are conditions that, if left uncorrected, would result in harm to personnel, damage to equipment, unacceptable system instability or operation outside legally established parameters affecting the quality of service to other customers connected to the utility system.

Minimum Protective Devices, Relays, and Interconnection Requirements: The minimum required protective relaying and/or safety devices or requirements specified in this rule, are for the purpose of protecting only the utility and its other customer facilities from damage or disruptions caused by a fault, malfunction or improper operation of the customer's generating facility. Minimum Protective Relaying and Interconnection Requirements do not include relaying, protective or safety devices as may be required by industry and/or government codes and standards, equipment manufacturing and prudent engineering design and practice to fully protect the customer's generating facility or facilities; those are be the sole responsibility of the customer.

Net metering: that the customer-generator is billed according to the difference between the amount of electricity supplied by the electric power supplier or basic generation service provider in a given billing period and the electricity delivered from the customers' side of the meter using Class 1 renewable energy systems, with customer generation in excess of electricity supplied credited over an annualized period.

Network service: Network service consists of two or more utility primary distribution feeder sources electrically tied together on the secondary (or low voltage) side to form one power source for one or more customers. The service is designed to maintain service to the customers even after the loss of one of these primary distribution feeder sources.

Parallel operation: The operation of on-site distributed generation by a customer while the customer is connected to the company's utility system.

Point of common coupling: the point in the interconnection of a customer-generator facility with an electric delivery system at which the harmonic limits are applied and shall have the same meaning as in IEEE Standard 1547.

Points(s) of interconnection: The physical location(s) where the utility's service conductors are connected to the customer's service conductors to allow parallel operation of the customer's generating facility with the utility's electric system.

Pre-interconnection study: A study or studies that may be undertaken by a company in response to its receipt of a completed application for interconnection and parallel operation with the utility system. Pre-interconnection studies may include, but are not limited to, service studies, coordination studies and utility system impact studies.

Spot network: a type of electric delivery system that uses two or more inter-tied transformers to supply an electrical network circuit. A spot network is generally used to supply power to a single customer or a small group of customers and has the same meaning as the term is used in IEEE standards.
Supplier/provider: an electric power supplier of competitive electricity supply in a retail competition market.

Qualifying Facility (QF): Any cogeneration or small power production facility that meets the criteria for size, fuel use, efficiency, and ownership as promulgated in 18 CFR, Chapter I, Part 292, Subpart B of the Federal Energy Regulatory Commission's Regulations.

Utility: The electric utility entity that constructs and maintains the distribution system for the delivery of power to the end-user.

4. INTERCONNECTION PROCESS/PROCEDURES

4.1. Designation of utility and customer contact persons

Designation of utility contact persons for matters relating to distributed generation interconnection.

a. Each electric utility shall designate a person or persons who will serve as the utility's contact for all matters related to distributed generation interconnection.
b. Each electric utility shall identify to the Commission its distributed generation contact person.
c. Each electric utility shall provide convenient access through its internet web site to the names, telephone numbers, mailing addresses and electronic mail addresses for its distributed generation contact person.

Designation of customer contact person

a. Each customer applying for interconnection shall designate a contact person, and provide to the utility the contact's name, telephone number, mailing address, and electronic mail addresses.

4.2. General process/procedures for all applicants

Prior to applying. The customer is encouraged to contact and work closely with the utility at the conceptual stages of the design to ensure that the project proceeds smoothly. Upon the customer's request, the utility shall meet with the customer prior to submission of an Application.

Non-discrimination. All Applications for interconnection and parallel operation of distributed generation shall be processed by the utility in a non-discriminatory manner. Applications will be processed in the order that they are received.

Minor modifications. It is recognized that certain Applications may require minor modifications while they are being reviewed by the utility. Such minor modifications to a pending Application shall not require that it be considered incomplete and treated as a new or separate Application.

4.3. Level 1 interconnection

An applicant shall submit the one-page Application for a Level 1 interconnection and shall indicate the anticipated start date for operation of the customer-generator facility. The customer may pre-execute the standard Interconnection Agreement for Level 1 and submit it with the Application.

Application is complete or incomplete: 3 days. Within three business days after receiving an Application for Level 1 interconnection, the utility shall provide written or e-mail notice to the applicant that it received the Application and whether the Application is complete. If the Application is incomplete, the written notice shall include a list of all of the information needed to complete the Application.

Application is approved or denied: 10 days. Within ten business days after the utility notifies the applicant that the Application is complete, the utility shall notify the applicant that:

a. The customer-generator facility meets all of the requirements that apply to the facility, and the interconnection will be finally approved upon completion of the process set forth below; or
b. The customer-generator facility has failed to meet one or more of the requirements, and the interconnection Application is denied. If an Application is denied, the utility shall provide an explanation of the reason(s) for the denial, including a list of additional information and/or modifications to the customer-generator's facility, which would be required in order to obtain an approval under the level of interconnection the customer-generator applied for.

Utility schedules a Level 1 Interconnection Agreement: 3 days. If a customer-generator facility meets all of the applicable requirements, the utility shall, within three business days after sending the notice of approval, execute and send to the applicant Level 1 Interconnection Agreement (unless the utility does not require an Interconnection Agreement for customer generator facilities that qualify for Level 1 Interconnection)

Customer executes Level 1 Interconnection Agreement: at least 5 days prior to start-up. After receiving an Interconnection Agreement, the customer-generator shall execute the agreement and return it to the utility at least five business days prior to starting operation of the customer-generator facility (unless the utility does not so require). The applicant shall indicate the anticipated start date for operation of the customer-generator facility.

Interconnection approval or denial: 20 days total. Upon receipt of the executed Interconnection Agreement from the customer generator, the utility shall approve the interconnection, conditioned on

approval by the electrical code officials with jurisdiction over the interconnection. If a utility does not notify a Level 1 applicant in writing or by e-mail whether the interconnection is approved or denied within 20 business days after the receipt of an Application, the interconnection shall be deemed approved. The 20 days shall begin on the date that the utility sends the written or e-mail notice of Application receipt required above.

If an Application for Level 1 Interconnection is denied because it does not meet one or more of the applicable requirements, an applicant may resubmit the Application under the Level 2 or Level 3 interconnection review procedure, as appropriate.

Maximum Level 1 Fee: $20.

4.4. Level 2 interconnection

An applicant shall submit an Application for a Level 2 interconnection and shall indicate the anticipated start date for operation of the customer-generator facility.

Application is complete or incomplete: 3 days. Within three business days after receiving an Application for Level 2 interconnection, the utility shall provide written or e-mail notice to the applicant that it received the Application and whether the Application is complete. If the Application is incomplete, the written notice shall include a list of all of the information needed to complete the Application.

Application is approved or denied: 15 days. Within fifteen business days after the utility notifies the applicant that the Application is complete, the utility shall perform an initial review of the proposed interconnection to determine whether the interconnection meets the applicable requirements. During this initial review, the utility may, at its own expense, conduct any studies or tests it deems necessary to evaluate the proposed interconnection. The initial review shall result in one of the following determinations:

a. The customer-generator facility meets the applicable requirements. In this case, the utility shall notify the applicant that the interconnection will be finally approved upon completion of the process set forth below. Within **three business days** after this notice, the utility shall provide the applicant with an executable Interconnection Agreement;

b. The customer-generator facility has failed to meet one or more of the applicable requirements, but the utility has nevertheless determined that the customer-generator facility can be interconnected consistent with safety, reliability, and power quality. In this case, the utility shall notify the applicant that the interconnection will be finally approved upon completion of the process set forth below. Within **five business days** after this notice, the utility shall provide the applicant with an executable Interconnection Agreement;

c. The customer-generator facility has failed to meet one or more of the applicable requirements, but the initial review indicates that additional review may enable the utility to determine that the customer generator facility can be interconnected consistent with safety, reliability, and power quality. In such a case, the utility shall offer to perform additional review to determine whether minor modifications to the electric distribution system (for example, changing meters, fuses, or relay settings) would enable the interconnection to be made consistent with safety, reliability and power quality. The utility shall provide to the applicant a non-binding, good faith estimate of the costs of such additional review, and/or such minor modifications. The hourly rate for engineering costs for additional review shall not exceed $100 per hour, adjusted for inflation. The utility shall undertake the additional review or modifications only after the applicant consents to pay for the review and/or modifications. This review shall take place with 20 business days after the applicant consents to paying for estimated costs; or

d. The customer-generator facility has failed to meet one or more of the applicable requirements, and the initial review indicates that additional review would not enable the utility to determine that the customer-generator facility could be interconnected consistent with safety, reliability, and power quality. In such a case, the utility shall notify the applicant that the interconnection Application has been denied, and shall provide an explanation of the reason(s) for the denial, including a list of additional information and/or modifications to the customer-generator's facility which would be required in order to obtain an approval under level 2 interconnection procedures.

Customer executes Interconnection Agreement: at least 10 days prior to start-up. A Level 2 applicant that receives an Interconnection Agreement shall:

a. Execute the agreement and return it to the utility at least ten business days prior to starting operation of the customer-generator facility (unless the utility does not so require); and
b. Indicate to the utility the anticipated start date for operation of the customer generator facility.

Utility schedules an inspection. The utility may require a utility inspection of a customer-generator facility for compliance with this rule prior to operation, and may require and arrange for witness of commissioning tests as set forth in IEEE 1547, as amended and supplemented, which is incorporated by reference herein. If an inspection and/or witnessing of the commissioning test is required, it shall be noted in the Interconnection Agreement. The utility shall schedule any inspections or tests under this section promptly, within the time frames of this section or on a mutually agreeable date, after submittal of the Application. The applicant shall not begin operating the customer-generator facility until after the inspection and testing is completed.

Interconnection is approved or denied. For a Level 2 applicant that receives an Interconnection Agreement, approval of interconnected operation of the customer-generator facility shall be conditioned on all of the following occurring:

a. The interconnection has been approved by the electrical code official with jurisdiction over the interconnection;
b. Any utility inspection and/or witnessing of commissioning tests are successfully completed; and
c. The planned start date provided by the applicant has passed.

If an Application for Level 2 interconnection is denied because it does not meet one or more of the requirements, the applicant may resubmit the Application under the level 3 interconnection review procedure.

Maximum Level 2 fee: $50 plus $1/kW of generator capacity.

4.5. Level 3 interconnection

An applicant shall submit an Application for a Level 3 interconnection and shall indicate the anticipated start date for operation of the customer-generator facility.

Application is complete or incomplete: 3 days. Within three business days after receiving an Application for Level 3 interconnection, the utility shall provide written or e-mail notice to the applicant that it received the Application and whether the Application is complete. If the Application is incomplete, the written notice shall include a list of all of the information needed to complete the Application.

Application is approved or denied: 20 days. Within fifteen business days after the utility notifies the applicant that the Application is complete, the utility shall perform an initial review of the proposed interconnection to determine whether the interconnection meets the applicable requirements. During this initial review, the utility may, at its own expense, conduct any studies or tests it deems necessary to evaluate the proposed interconnection. The initial review shall result in one of the following determinations:

a. The customer-generator facility meets the applicable requirements. In this case, the utility shall notify the applicant that the interconnection will be finally approved upon completion of the process set forth below. Within **three business days** after this notice, the utility shall provide the applicant with an executable Interconnection Agreement;

b. The customer-generator facility has failed to meet one or more of the applicable requirements, but the utility has nevertheless determined that the customer-generator facility can be interconnected consistent with safety, reliability, and power quality. In this case, the utility shall notify the applicant that the interconnection will be finally approved upon completion of the process set forth below. Within **five business days** after this notice, the utility shall provide the applicant with an executable Interconnection Agreement;

c. The customer-generator facility has failed to meet one or more of the applicable requirements, but the initial review indicates that additional review may enable the utility to determine that the customer generator facility can be interconnected consistent with safety, reliability, and power quality. In such a case, the utility shall offer to perform additional review to determine whether minor modifications to the electric distribution system (for example, changing meters, fuses, or relay settings) would enable the interconnection to be made consistent with safety, reliability and power quality. The utility shall provide to the applicant a non-binding, good faith estimate of the costs of such additional review, and/or such minor modifications. The hourly rate for engineering costs for additional review shall not exceed $100 per hour, adjusted for inflation. The utility shall undertake the additional review or modifications only after the applicant consents to pay for the review and/or modifications. This review shall take place with 20 business days after the applicant consents to paying for estimated costs; or

d. The customer-generator facility has failed to meet one or more of the applicable requirements, and the initial review indicates that additional review would not enable the utility to determine that the customer-generator facility could be interconnected consistent with safety, reliability, and power quality. In such a case, the utility shall notify the applicant that the interconnection Application has been denied, and shall provide an explanation of the reason(s) for the denial, including a list of additional information and/or modifications to the customer-generator's facility which would be required in order to obtain an approval under level 2 interconnection procedures.

Customer executes Interconnection Agreement: at least 20 days prior to start-up. A Level 2 applicant that receives an Interconnection Agreement shall:

a. Execute the agreement and return it to the utility at least ten business days prior to starting operation of the customer-generator facility (unless the utility does not so require); and
b. Indicate to the utility the anticipated start date for operation of the customer generator facility.

Utility schedules an inspection. The utility may require a utility inspection of a customer-generator facility for compliance with this rule prior to operation, and may require and arrange for witness of commissioning tests as set forth in IEEE 1547, as amended and supplemented, which is incorporated by reference herein. If an inspection and/or witnessing of the commissioning test is required, it shall be noted in the Interconnection Agreement. The utility shall schedule any inspections or tests under this section promptly, within the time frames of this section or on a mutually agreeable date, after submittal of the Application. The applicant shall not begin operating the customer-generator facility until after the inspection and testing is completed.

Interconnection is approved or denied. For a Level 3 applicant that receives an Interconnection Agreement, approval of interconnected operation of the customer-generator facility shall be conditioned on all of the following occurring:

a. The interconnection has been approved by the electrical code official with jurisdiction over the interconnection;
b. Any utility inspection and/or witnessing of commissioning tests are successfully completed; and
c. The planned start date provided by the applicant has passed.

If an Application for Level 3 Interconnection is denied because it does not meet one or more of the requirements, the applicant may resubmit the Application under the Level 4 interconnection procedure.

Maximum Level 3 fee: $50 plus $2/kW of generator capacity.

4.6. Level 4 interconnection

Level 4 is the interconnection procedure to be used for all generators that fail the prior screening requirements or are not certified. It is an in-depth engineering review of the interconnection addressing all aspects of generator performance and grid interaction.

An applicant shall submit an Application for a Level 4 interconnection, or a customer's interconnection application is transferred from the Level 1, Level 2, or Level 3 for failure to meet all of the requirements of those levels.

Application was received: 3 days. Within three business days after receiving an Application for Level 4 interconnection, or a transfer from a different Level, the utility shall provide written or e-mail notice to the applicant that it received the Application

Application is complete or incomplete: 10 days. The utility evaluates the application for completeness and notifies the customer within 10 days of receipt that the application is or is not complete and, if not, advises what is missing. If the Application is incomplete, the written notice shall include a list of all of the information needed to complete the Application.

Remaining Level 4 process steps: No set schedule.

a. The utility shall conduct an initial review that includes a scoping meeting/discussion with the customer (if necessary) to review the Application. At the scoping meeting the utility shall provide pertinent information such as: the available fault current at the proposed location; the existing peak loading on the lines in the general vicinity of the proposed generator; and, the configuration of the distribution lines at the proposed point of interconnection.

b. If deemed necessary by either party, the utility shall undertake a Feasibility Study that provides a preliminary review of the potential impacts on the distribution system that will result from the proposed interconnection. The Feasibility Study will preliminarily review short circuit currents including contribution from the proposed generator as well as coordination of and potential overloading of distribution circuit protection devices. Provided there are no violations found in the Feasibility Study, the Impact Study (below) may be waived.

c. The utility provides an Impact Study Agreement, including a cost estimate for the Impact Study. Where the proposed interconnection may affect electric transmission or distribution systems other than that of the utility where the interconnection is proposed, the utility shall transfer the interconnection application for processing under FERC interconnection rules.

d. For generators that are certified (see section 4.10), no review of the generator's protection equipment is required. While a utility may review a certified generator's protection scheme, it cannot charge for such review. Otherwise a utility shall conduct a review of generator protective devices for adherence to IEEE 1547 standards.

e. Each utility shall include in its compliance tariff a description of the various elements of an Impact Study it would typically undertake pursuant to this Section including:
   -- Load Flow Study
   -- Short-Circuit Study
   -- Circuit Protection and Coordination Study
   -- Impact on System Operation
   -- Stability Study (and the conditions that would justify including this element in the Impact Study)
   -- Voltage Collapse Study (and the conditions that would justify including this element in the Impact Study).

f. Once the interconnecting customer executes the Impact Study Agreement and pays pursuant to the good faith estimate contained therewith, the utility will conduct the interconnection Impact Study.

g. If the utility determines, in accordance with Good Utility Practice, that the utility electric system modifications required to accommodate the proposed interconnection are not substantial, the Impact Study shall identify the scope and cost of the modifications as defined in the study results.

h. If the utility determines, in accordance with Good Utility Practice, that the system modifications to the utility electric system are substantial, the results of the Impact Study shall produce an estimate for the modification costs (within ±25%). The detailed costs of, and the utility system modifications necessary to interconnect the customer's proposed generator will be identified in a Facilities Study to be completed by the utility.

i. A Facilities Study Agreement, with a good faith estimate of the cost of completing the Facilities Study shall be submitted to the customer for customer's approval. Once the interconnecting customer executes the Facilities Study Agreement and pays pursuant to the terms thereof, the utility will conduct the Facilities Study.

j. Upon completion of the Impact and/or Facilities Study, the utility shall send the customer an executable Interconnection Agreement including a quote for any required utility system modifications.

k. The customer returns a signed Interconnection Agreement. The customer then completes installation of its generator and the utility completes any utility system modifications.

l. The utility inspects completed generator installation for compliance with requirements and attends any required commissioning tests pursuant to IEEE Standard 1547. Provided any required commissioning tests are satisfactory, the utility shall notify the customer in writing that interconnection is approved.

m. Customer notifies utility if there is any anticipated change in the proposed date of initial interconnected operations of the generator

If interconnection of a particular facility will require substantial capital upgrades to the utility system, the utility shall provide the customer an estimate of the schedule and customer's cost for the upgrade. If the customer desires to proceed with the upgrade, the customer and the utility will enter into a contract for the completion of the upgrade. The interconnection shall take place no later than two weeks following the completion of such upgrades. The utility shall employ best reasonable efforts to complete such system upgrades in the shortest time reasonably practical.

Fees for Level 4 interconnection: Application fee not to exceed $100 plus $2 per kW capacity, as well as charges for actual time spent on the interconnection study. Costs for engineering review shall not

exceed $100 per hour, adjusted for inflation. Costs for utility facilities necessary to accommodate the customer's generator interconnection will be the responsibility of the customer.

Substantial capital upgrades. If interconnection of a particular facility will require substantial capital upgrades to the utility system, the utility shall provide the customer an estimate of the schedule and customer's cost for the upgrade. If the customer desires to proceed with the upgrade, the customer and the utility will enter into a contract for the completion of the upgrade. The interconnection shall take place no later than two weeks following the completion of such upgrades. The utility shall employ best reasonable efforts to complete such system upgrades in the shortest time reasonably practical.

4.7. Network interconnection

Certain aspects of secondary network systems create technical difficulties that may make interconnection more costly to implement. In instances where customers request interconnection to a secondary network system, the utility and the customer shall use best reasonable efforts to complete the interconnection and the utility shall utilize the following guidelines:

a. A utility shall approve Applications for distributed generation facilities that use inverter-based protective functions unless total distributed generation (including the new facility) on affected feeders represents more than 25% of the total load of the secondary network under consideration.

b. A utility shall approve Applications for other on-site generation facilities whose total generation is less than the local customer's load unless total distributed generation (including the new facility) on affected feeders represents more than 25% of the total load of the secondary network under consideration.

c. A utility shall approve Applications for interconnection of generators to secondary networks that do not utilize inverter-based protective functions or inverter-based generators that do not meet the requirements of the item above, provided the generator is utilizing high speed reverse power relays or other protection devices or methodologies that ensure no export of power from the customer's site including any inadvertent export (under fault conditions) that could adversely affect protective devices on the network circuit.

d. A utility may postpone processing an Application for an individual distributed generation facility under this section if the total existing distributed generation on the targeted feeder represents more than 25% of the total load of the secondary network under consideration. If that is the case, the utility should conduct interconnection and network studies to determine whether, and in what amount, additional distributed generation facilities can be safely added to the feeder or accommodated in some other fashion. These studies should be completed within six weeks, and Application processing should then resume.

e. A utility may reject Applications for a distributed generation facility under this section if the utility can demonstrate specific reliability or safety reasons why the distributed generation should not be interconnected at the requested site. However, in such cases the utility shall work with the customer to attempt to resolve such problems to their mutual satisfaction. Continued disagreements shall proceed to the dispute resolution process.

f. A utility shall make all reasonable efforts to seek methods to safely and reliably interconnect distributed generation facilities that will export power. This may include switching service to a radial feed if practical and if acceptable to the customer.

4.8. Screens

Screening criteria for determining grid impacts. Below is the list of screening criteria to determine which level the applicant may apply for.

a. For interconnection of a proposed generator to a radial distribution circuit, the aggregated generation, including the proposed generator, on the circuit will not exceed 15% of the total circuit annual peak load as most recently measured at the substation or on a line section. A line section is that portion of a distribution system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line.

b. The proposed generator, in aggregation with other generation on the distribution circuit, will not contribute more than 25% to the distribution circuit's maximum fault current at the point on the high voltage (primary) level nearest the proposed point of common coupling.

c. The proposed generator, in aggregate with other generation on the distribution circuit, will not cause any distribution protective devices and equipment (including but not limited to substation breakers, fuse cutouts, and line reclosers), or customer equipment on the system, to exceed 90 percent of the short circuit interrupting capability; nor is the interconnection proposed for a circuit that already exceeds 90 percent of the short circuit interrupting capability.

d. The proposed generator is interconnected to the utility as shown in the table below:

Primary Distribution Line Configuration	Interconnection to Primary Distribution Line
Three-phase, three wire	If a 3-phase or single phase generator, interconnection must be phase-to-phase
Three-phase, four wire	If a 3 phase (effectively grounded) or single-phase generator, interconnection must be line-to-neutral

e. If the proposed generator is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed generator, will not exceed 20 kiloVolt-Amps (kVA).

f. If the proposed generator is single-phase and is to be interconnected on a transformer center tap neutral of a 240 volt service, its addition will not create an imbalance between the two sides of the 240 volt service of more than 25% of nameplate rating of the service transformer.

g. The proposed generator, in aggregate with other generation interconnected to the distribution low voltage side of the substation transformer feeding the distribution circuit where the generator proposes to interconnect, will not exceed 10 MW in an area where there are known or posted transient stability limitations to generating units located in the general electrical vicinity (e.g., 3 or 4 transmission voltage level busses from the point of common coupling).

h. The proposed generator's Point of Common Coupling will not be on a transmission line.

i. The generator cannot exceed the capacity of the customer's existing electrical service.

j. No construction of facilities by the utility on its own system of greater than $25,000 shall be required to accommodate the generator.

4.9. Pre-interconnection studies

A utility may conduct a service study, coordination study, or utility system impact study prior to interconnection of a distributed generation facility. In instances where such studies are deemed

necessary, the scope of such studies shall be based on the characteristics of the particular distributed generation facility to be interconnected and the utility's system at the specific proposed location. By agreement between the utility and its customer, studies related to interconnection of DG on the customer's premise may be conducted by a qualified third party.

A utility may charge a customer a fee to offset its costs incurred in the conduct of a pre-interconnection study. In those instances where a utility conducts an interconnection study the following shall apply:

a. The conduct of such pre-interconnection studies shall take no more than four weeks for certified equipment and six weeks for non-certified equipment;
b. A utility shall prepare written reports of the study findings and make them available to the customer;
c. The study shall consider both the costs incurred and the benefits realized as a result of the interconnection of distributed generation to the utility system; and
d. The customer shall receive an estimate of the study cost before the utility initiates the study.

The hourly rate for engineering for pre-interconnection studies shall not be above $100 per hour, adjusted for inflation.

The utility shall provide to the customer, prior to the start of the pre-interconnection study, a good faith estimate of the number of hours that will be needed to complete the pre-interconnection study, and an estimate of the total pre-interconnection study fee.

4.10. Equipment Certification

Compliance with codes and standards. In order to qualify as certified" for any interconnection procedures, relevant equipment shall comply with the following codes and standards as applicable:

a. IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems, or IEEE 929 for inverters less than 10 kW in size
b. UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems
c. Any subsequent revisions to these codes and standards as approved by the standards-making organization.

Certification of equipment packages. In order to qualify as "certified," an equipment package must have been tested and listed by a nationally recognized testing and certification laboratory (NRTL) for continuous interactive operation with a utility grid in compliance with the applicable codes and standards listed above. *Definition and guidelines for equipment packages are as follows.*

a. An "equipment package" may include all interface components including switchgear, inverters, or other interface devices and may include an integrated generator or electric source. If the equipment package has been tested and listed as an integrated package, which includes a generator or other electric source, it shall not require further design review, testing or additional equipment to meet the certification requirements of this interconnection procedure.

b. If the equipment package includes only the interface components (switchgear, inverters, or other interface devices), then an interconnection applicant must reasonably show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for the package. Provided the generator or electric source combined with the equipment package is consistent with the testing and listing performed by the NRTL, no further design review, testing or additional equipment shall be required to meet the certification requirements of this interconnection procedure.

c. A certified equipment package does not include equipment provided by the utility.

d. Additional protection equipment not included with a certified equipment package may be added at the utility discretion as long as the performance of the system is not negatively impacted in any way and the customer is not charged for any equipment in addition to that which is included in the certified equipment package.

Effect of Certification. Equipment packages which are certified to be in compliance by an approved testing organization or certification laboratory as described in this subsection shall be installed on a utility system in accordance with an approved interconnection control and protection scheme without further review of the design by the utility.

4.11. Utility documentation and reporting requirements

Documentation of projects. Each electric utility shall maintain records concerning Applications received for interconnection and parallel operation of distributed generation. Such records will include the date each Application is received, documents generated in the course of processing each Application, correspondence regarding each Application, and the final disposition of each Application.

Annual interconnection report to the ACC. By March 30 of each year, every electric utility shall file with the Commission a distributed generation interconnection report for the preceding calendar year that identifies each distributed generation facility interconnected with the utility's distribution system. The report shall list the new distributed generation facilities interconnected with the system since the previous year' report, any distributed generation facilities no longer interconnected with the utility's system since the previous report, the capacity of each facility, and the feeder or other point on the utility system where the facility is connected. The annual report shall also identify all Applications for interconnection received during the previous one-year period, and the disposition of such Applications. In addition, the annual report shall provide a summary of the number of applications received, the number of applications approved, and the number of applications denied by level for the reporting period.

4.12. Disconnect from or reconnect with the grid procedure

Disconnection and reconnection. A utility may disconnect a distributed generation unit from the utility system under the following conditions:

a. **Expiration or termination of Interconnection Agreement.** The Interconnection Agreement specifies the effective term and termination rights of utility and customer. Upon expiration or termination of the Interconnection Agreement with a customer, in accordance with the terms of the agreement, the utility may disconnect customer's facilities.

b. **Non-compliance with the technical requirements specified in this rule.** A utility may disconnect a distributed generation facility if the facility is not in compliance with the technical requirements specified in this rule. Within two business days from the time the customer notifies the utility that the facility has been restored to compliance with the technical requirements of this rule, the utility shall have an inspector verify such compliance. Upon such verification, the customer in coordination with the utility may reconnect the facility.

c. **System emergency.** A utility may temporarily disconnect a customer's facility without prior written notice in cases where continued interconnection or the distributed generator will endanger persons or property. During the forced outage of a utility system, the utility shall have the right to temporarily disconnect a customer's facility to make immediate repairs on the utility's system. When possible, the utility shall provide the customer with reasonable notice and reconnect the customer as quickly as reasonably practical.

d. **Routine maintenance, repairs, and modifications.** A utility may disconnect a customer or a customer's distributed generator with seven business days prior written notice of a service interruption for routine maintenance, repairs, and utility system modifications. The utility shall reconnect the customer as quickly as reasonably possible following any such service interruption.

e. **Lack of approved Application and/or Interconnection Agreement.** In order to interconnect distributed generation to a utility system, a customer must first submit to the utility an Application for interconnection and parallel operation with the utility system and execute an Interconnection Agreement on the forms prescribed by the Commission. The utility may refuse to connect or may disconnect the customer's facility if such Application has not been received and approved.

Temporary disconnection by customer. The customer retains the option to temporarily disconnect from the utility's system at any time. Such temporary disconnection shall not be a termination of the Interconnection Agreement unless specified as such.

Incremental demand charges. During the term of an Interconnection Agreement a utility may require that a customer disconnect its distributed generator and/or take it off-line as a result of utility system conditions described in subsection (c) and (d) above. Incremental demand charges arising from disconnecting the distributed generator as directed by the utility during such periods shall not be assessed by utility to the customer.

Agreement survival rights. The Interconnection Agreement between the utility and the customer shall continue in effect after disconnection to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement.

Minimum duration of the Interconnection Agreement. The Interconnection Agreement shall not expire before 20 years, unless a shorter time period is required by the customer.

4.13. Interconnection dispute resolution process

Expeditious Handling. Complaints relating to interconnection disputes shall be handled in an expeditious manner. The ACC staff shall attempt to informally resolve complaints within 20 business days of the date of receipt of the complaint. Unresolved complaints shall be presented to the ACC at the next available open meeting.

Technical disputes. For disputes related to the technical application of these rules, the ACC may from time to time designate a technical master for the resolution of such disputes. If the ACC has so designated, the parties shall use the technical master to resolve disputes related to interconnection and such resolution shall be binding on the parties. Costs for dispute resolution by the technical master, if any, shall be as directed by the technical master subject to review by the ACC.

The ACC may designate a Department of Energy national laboratory; college or university; or an approved FERC RTO with distribution system engineering expertise as the technical master. Should the FERC identify a national technical dispute resolution team, the ACC may designate said team as its technical master.

4.14. Other issues

Distribution or transmission line charge. No distribution or transmission line charge shall be assessed to a customer for exporting energy to the utility system. For purposes of this paragraph distribution and transmission charges means access and line charges, transformation charges, and line loss charges.

Interconnection operations and maintenance costs. No charge for operation and maintenance of the utility system's facilities shall be assessed against a customer for exporting energy to the utility system.

TECHNICAL AND OPERATIONAL REQUIREMENTS

Sections 5 through 10 below review the variety of interconnection-related safety requirements that the DG designer/installer and the utility must take into consideration. These requirements are intended to ensure that DG is designed and installed in a way that

a. is not a safety hazard to utility personnel or equipment or to other customers,
b. does not disturb other customers or degrade the quality of the distribution system, and
c. provides reliable service to the DG owner and the utility.

The minimum protective and safety devices (relays, circuit breakers, disconnect switches, etc.) specified in this rule must be installed and placed into service before allowing parallel operation of customer's generation facilities. The purpose of these devices is to isolate the customer's generating equipment from the utility system whenever faults or disturbances occur and for maintenance purposes.

5. DESIGN CONSIDERATIONS / PROTECTIVE EQUIPMENT REQUIREMENTS

5.1. General interconnection and protection requirements

A customer may operate 60 Hertz (Hz), three-phase or single-phase generating equipment, whether qualifying facility (QF) or non-QF, in parallel with the utility system pursuant to an Interconnection Agreement, provided that the equipment meets or exceeds the requirements of this section, and meet all applicable federal, state and local codes including IEEE 1547.

The customer's generator shall be equipped with protective hardware and software designed to prevent the generator from being connected to a de-energized circuit owned by the utility.

For facilities greater than 2 MW, the utility may require that a communication channel be provided by the customer to provide communication between the utility and the customer's facility. The channel may be a leased telephone circuit, power line carrier, pilot wire circuit, microwave, or other mutually agreed upon medium.

Circuit breakers or other interrupting devices at the point of common coupling must be capable of interrupting maximum available fault current. Facilities larger than two MW and exporting to the utility system shall have a redundant circuit breaker unless a listed device suitable for the rated application is used.

If required by the utility and for systems greater than 480V, the customer shall furnish and install a manual disconnect device that is appropriate to the voltage level (a disconnect switch, a draw-out breaker, or fuse block), and is accessible to the utility personnel, and capable of being locked in the open position. The customer shall follow the utility's switching, clearance, tagging, and locking procedures, which the utility shall provide for the customer. Where 24 hour access to a building is provided, which may be provided through key access in a utility accessible lock box, manual and lockable disconnect switches internal to a building installed distributed generation system shall suffice to meet these requirements.

Control, protection and safety equipment requirements specific to three-phase synchronous generators, induction generators, and inverter systems. This subsection specifies the control, protection, and safety equipment requirements specific to three phase synchronous generators, induction generators, and inverter systems. Exporting to the utility system may require additional operational or protection devices and will require coordination of operations with the utility.

a. **Three-phase synchronous generators.** The customer's generator circuit breakers shall be three-phase devices with electronic or electromechanical control.

b. **Three-phase induction generators and inverter systems.** 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 on the utility system side at the point of common coupling is within the visible flicker stated in this rule. Otherwise, the customer may be required to install hardware or employ other techniques to bring voltage fluctuations to acceptable levels. Line-commutated inverters do not require synchronizing equipment. Self-commutated inverters whether of the utility-interactive type or stand-alone type shall be used in parallel with the utility system only with synchronizing equipment. Direct-current generation shall not be operated in parallel with the utility system.

c. **Requirements specific to a facility paralleling for sixty cycles or less (closed transition switching).** The protective devices required for facilities ten MW or less which parallel with the utility system for 60 cycles or less are an interconnect disconnect device, a generator disconnect device, an automatic synchronizing check for generators with stand alone capability, an over-voltage trip, an under-voltage trip, an over/under frequency trip, and either a ground over-voltage trip or a ground over-current trip depending on the grounding system, if required by the utility.

d. **Facilities not identified.** In the event that standards for a specific unit or facility are not set out in this section, the company and customer may interconnect a facility using mutually agreed upon technical standards.

6. OPERATIONAL REQUIREMENTS

6.1. Voltage requirements

The utility and customer shall operate their equipment in such a manner that the voltage levels on the utility system are in the ranges specified in IEEE 1547.

6.2. Network and non-network items

Certain aspects of secondary network systems create technical difficulties that may make interconnection more costly to implement. In instances where customers request interconnection to a secondary network system, the utility and the customer shall use best reasonable efforts to complete the interconnection. See the network interconnection requirements listed in section 4.7 above.

7. INSPECTION, START-UP TESTING, AND COMMISSIONING

Upon completing construction, the customer shall have the generating facility inspected or otherwise approved by the appropriate local electrical wiring inspector with jurisdiction.

The customer shall provide the utility reasonable notice before the initial energizing and start-up testing of the customer's generating equipment, and the utility may witness the testing of any equipment and protective systems associated with the interconnection. The utility shall do one of the following:

a. Witness the satisfactory commissioning. All witnessing and inspections must be conducted by the utility, at its own expense.
b. Waive the right to witnessing and inspection.
c. If the utility does not schedule an inspection of the generating facility, the witness test is deemed waived (unless the Parties agree otherwise).

The commissioning test shall be pursuant to IEEE 1547 and manufacturer requirements.

A utility shall have the right to inspect a customer-generator's facility both before and after interconnection approval is granted. This shall be during reasonable working hours and with reasonable prior notice to the customer-generator, or at any time without notice in the event of an emergency or hazardous condition. If the utility discovers the customer-generator's facility is not in compliance with the requirements of this rule and the non-compliance adversely affects the safety or reliability of the electric system, the utility may require disconnection of the customer-generator's facility until it complies.

8. METER INSTALLATIONS

To the extent permitted by Commission rules, the utility may supply, own, and maintain all necessary meters and associated equipment to record energy purchases by the customer and energy exports to the utility system. The customer shall supply at no cost to the utility a suitable location on its premises for the installation of the utility's meters and related equipment. If metering at the generator is required in such applications, metering that is part of the generator control package shall be considered sufficient if it meets all the measurements criteria that would be required by a separate stand alone meter.

Access to metering equipment. The utility shall have access to the metering equipment of the generating facility at all times. The utility shall provide reasonable notice to the customer when possible prior to using its right of access.

9. MAINTENANCE REQUIREMENTS

Safe Operations and Maintenance. Unless otherwise agreed, the customer shall operate, maintain, and repair the generating facility as required to ensure that it complies at all times with the interconnection standards to which it has been certified.

Each party is responsible for its own maintenance. Each party shall operate, maintain, repair, and inspect, and shall be fully responsible for, the facility or facilities that it now or hereafter may own unless otherwise specified in the Interconnection Agreement. Each party shall be responsible for the maintenance, repair and condition of its respective lines and appurtenances on their respective side of the point of common coupling. The utility and the customer shall each provide equipment on its respective side of the point of common coupling that adequately protects the utility's system, personnel, and other persons from damage and injury.

No charges for operation & maintenance of utility system. No charge for operation and maintenance of a utility system's facilities shall be assessed against a customer for interconnection to the utility system or exporting energy to the utility system.

10. OTHER TECHNICAL AND OPERATIONAL ISSUES

10.1. Warranty is neither expressed nor implied

Utility approvals given pursuant to the review and approval process and the Interconnection Agreement shall not be construed as any warranty of representation to customer or any third party regarding the safety, durability, reliability, performance or fitness of customer's generation and service facilities, its control or protective device or the design, construction, installation or operation thereof.

10.2. No additional requirements

If a customer-generator's facility complies with all applicable standards in this rule, the utility may not require a customer-generator to install additional controls (including but not limited to a utility accessible disconnect switch), perform or pay for additional tests, or purchase additional liability insurance in order to obtain approval to interconnect except as agreed to by the customer. The utility may, however, install additional equipment at its own expense.

OTHER CONSIDERATIONS

11. NET METERING

All utilities shall offer net metering at non-discriminatory rates to their customers that generate electricity, on the customer's side of the meter, using renewable energy sources, provided that the generating capacity of the customer-generator's facility does not exceed two megawatts, and does not exceed the customer's peak electric needs.

"Net Metering" means a system of metering electricity by which the utility credits a customer at the full retail rate for each kilowatt hour produced by a renewable energy system installed on the customer-generator's side of the electric revenue meter, up to the total amount of electricity used by that customer during an annualized period and compensates the customer-generator at the end of the annualized period for any credits, at a rate equal to the higher of the applicable retail rate or the utility's decremented cost of generation.

The provisions of the net metering are as follows:

a. **Tariff.** All utilities (or the Commission) shall develop a tariff providing for net metering. Each utility shall make the tariff available to eligible customer-generators on a first-come, first-served basis.

b. **Credit for excess power.** If, in a given monthly billing period, a customer-generator supplies more electricity to the electric distribution system than the utility delivers to the customer/generator, the utility shall credit the customer-generator for the excess. To do this, the utility shall reduce the customer/generator's bill for the next monthly billing period to compensate (at a 1:1, kWh to kWh ratio) for the excess electricity from the customer-generator in the previous billing period. The utility shall carry over credit earned from monthly billing period to monthly billing period, and the credit shall accumulate until the end of the annualized period. At the end of each annualized period, the utility shall compensate the customer-generator for any excess kilowatt hours generated at a rate equal to the higher of the applicable retail rate or the utility's decremented cost of generation.

c. **Reporting requirements.** Each utility shall submit an annual net metering report to the ACC. The report shall include the total number of systems and the total estimated rated generating capacity of its net metering customer-generators, and the total estimated net kilowatt-hours received from its net metering customer-generators.

d. **Ownership of renewable energy and environmental attributes.** Unless explicitly transferred by the customer-generator, a customer-generator owns any renewable energy and environmental attributes of the electricity it generates, and may sell any Renewable Energy Certificates or environmental certificates created as a result of that generation, individually or through an aggregator. Credits received by the customer-generator under net metering do not imply transfer of renewable energy or environmental certificates to the utility.

e. **Metering.** The metering used to effectuate net metering shall be capable of measuring the flow of electricity in both directions, typically through the use of a single bi-directional meter. A customer shall be entitled to use its existing electric revenue meter if it is capable of measuring the bi-directional flow of electricity and is within plus or minus 5 percent tolerance when measuring electricity flowing from the customer to the utility. If the existing customer's electricity revenue meter is not capable of measuring the bi-directional flow of electricity within the tolerances specified in this subsection, the utility shall install a new meter for the customer-generator, at the utility's expense. A utility shall not require more than one meter per customer-generator. However, an additional meter may be installed under either of the following circumstances:
   -- A utility may install an additional meter at its own expense if the customer-generator consents; or
   -- The customer-generator may request that a utility install an additional meter at the customer-generator's expense. The cost for such a meter shall be limited to the actual cost of the meter and its installation.

f. A utility shall not charge a net metered customer any fee or charges or require additional equipment, insurance or any other requirement unless the same would be required of the customer if the customer were not a net metered customer, except that a utility may use a special load profile for the customer that incorporates the customer's real time generation provided the special load profile is approved by the ACC.

12. OTHER ISSUES

12.1. Issues after interconnection

Testing. Once an interconnection has been approved, the utility shall not require a customer-generator to test its facility except for the following:

a. For Levels 2, 3, and 4, an annual test in which the customer-generator's facility is disconnected from the utility's equipment to ensure that the generator stops delivering power to the grid; and
b. Any manufacturer-recommended testing.

Assignment/transfer of ownership of the DG. The Interconnection Agreement between the utility and the customer shall survive the transfer of ownership of the generating facility to a new owner, when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.

12.2. Implementation of this rule

Contract reformation. All existing interconnection contracts shall be conformed to meet the requirements of this rule within 60 days of adoption.

Website posting. Each utility shall post a copy of this rule, along with the Applications and Interconnection Agreements, on its website, along with the designated utility contact person name, telephone number, mailing address, and electronic mail addresses within 30 days of adoption.

Manual of practice. Following adoption of this rule, the Commission shall make available a user-friendly Manual to better guide utilities and customers alike through the interconnection process and technical requirements. This manual may include an introduction and intent of the interconnection rule, safety requirements, technical summary, process, application information, certification process, interconnection dispute resolution. Appendices may include definitions, a copy of DG rules, additional safety and performance references, Arizona utility contacts, internet links to contacts.