

# Model Interconnection Procedures

R13



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Interstate Renewable Energy Council, Inc.

## **INTRODUCTION**

IREC first developed model interconnection procedures in 2005 in an effort to capture emerging best practices in this vital area. Since that time, IREC has been an active participant in dozens of state utility commission rulemakings that have focused on the development of interconnection procedures. As states have adopted such procedures, IREC has witnessed the effects, both good and bad, on renewable energy market development within those states. As a result of this experience, and the experience gained by developers and utilities since IREC's model procedures were last updated in 2009, IREC has identified several important evolutions in best practices that IREC has synthesized into these updated model interconnection procedures.

Among the important advances incorporated into these model procedures are: integrating a Pre-Application Report; updating the construction-related screen in Levels 1, 2 and 3; including more sophisticated sizing criteria for Level 2, which vary according to the voltage of the line at the proposed Point of Interconnection; improving the Supplemental Review Process by increasing its clarity and transparency; adding an Applicant Options Meeting prior to entering Level 4; eliminating the Feasibility Study; updating Application fees; and explicitly allowing for electronic signatures. For a discussion of the rationale for adopting these changes, please refer to *Updating Small Generator Interconnection Procedures for New Market Conditions*, issued by the National Renewable Energy Laboratory and available at <http://www.nrel.gov/docs/fy13osti/56790.pdf>. These updated procedures also include footnotes that explain key provisions and provide information on alternatives that are being practiced in some states.

For additional information on best practices in interconnection procedures and net metering rules, please refer to *Freeing the Grid*, <http://freeingthegrid.org>, which is updated annually by the Network for New Energy Choices in collaboration with The Vote Solar Initiative, the North Carolina Solar Center and IREC. *Freeing the Grid* grades interconnection procedures of all fifty states based on sixteen criteria, including: facility size limitations, timelines, screening procedures to rapidly approve standard facilities, use of standard form agreements and insurance provisions. With its clear explanation of the major interconnection issues and discussion of how states have addressed those issues, *Freeing the Grid* is an invaluable resource for utility commission staff facing the daunting task of creating or revising state procedures.

IREC welcomes the opportunity to work with state utility commissions and individual utilities to develop interconnection procedures; please contact IREC at [info@irecusa.org](mailto:info@irecusa.org) with inquiries. This model is available at <http://www.irecusa.org/wp-content/uploads/2013-IREC-Interconnection-Model-Procedures.pdf>.

TABLE OF CONTENTS

I. OVERVIEW ..... 1

    A. Scope ..... 1

    B. Order of Review ..... 1

    C. Applicable Standards ..... 2

II. PRE-APPLICATION REPORT ..... 3

    A. Pre-Application Report Request ..... 3

    B. Pre-Application Report ..... 4

III. INTERCONNECTION REVIEW ..... 5

    A. Level 1 Screening Criteria and Process for Inverter-Based Generating Facilities Not Greater than 25 kW ..... 5

    B. Level 2 Screening Criteria and Process for Generating Facilities Meeting Specified Size Criteria Up to 5 MW, Depending on Line Capacity and Distance from Substation ..... 9

    C. Level 3 Screening Criteria and Process for Non-Exporting Generating Facilities Not Greater than 10 MW ..... 15

    D. Supplemental Review ..... 15

    E. Applicant Options Meeting ..... 18

    F. Level 4 Process for All Other Generating Facilities ..... 19

IV. GENERAL PROVISIONS AND REQUIREMENTS ..... 22

    A. Online Applications and Electronic Signatures ..... 22

    B. Dispute Resolution ..... 23

    C. Utility Reporting Requirement ..... 23

    D. Miscellaneous Requirements ..... 24

ATTACHMENT 1: GLOSSARY OF TERMS ..... 27

ATTACHMENT 2: Level 1 Application and Interconnection Agreement for Inverter-Based Generating Facilities Not Greater than 25 kW ..... 31

ATTACHMENT 3: Level 2, Level 3 and Level 4 Interconnection Application ..... 36

ATTACHMENT 4: Level 2, 3 and 4 Interconnection Agreement ..... 42

ATTACHMENT 5: Certificate of Completion ..... 57

ATTACHMENT 6: Impact and Facilities Study Agreements ..... 58

## **I. OVERVIEW**

### **A. Scope**

These Interconnection Procedures are applicable for all state-jurisdictional interconnections of Generating Facilities.<sup>1</sup>

### **B. Order of Review**

1. **Optional Pre-Application Report**—Potential applicants may request this optional report in order to get information about system conditions at their proposed Point of Interconnection without submitting a full interconnection Application.
2. **Interconnection Review**—There are four interconnection review paths, Levels 1 through 4, with options to undertake Supplemental Review<sup>2</sup> and/or an Applicant Options Meeting prior to entering Level 4. The Utility will usually process the relevant Generating Facilities' Applications in the order they were received.<sup>3</sup> In some instances, typically where multiple Generating Facilities are electrically interrelated, studying them jointly in a group study process could increase cost and time efficiencies and may be considered by the Utility at its discretion. If an Applicant is denied approval for interconnection under one level and reapplies under another

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<sup>1</sup> Depending on state law, individual utility procedures may govern interconnections, particularly for municipal and cooperative utilities and public utility districts. These model procedures may be modified to apply to a particular utility. State or utility procedures do not apply when the U.S. Federal Energy Regulatory Commission (FERC) has jurisdiction over the interconnection, as is the case for many transmission line interconnections and on rare occasions, for distribution line interconnections.

<sup>2</sup> The Supplemental Review process described in these Interconnection Procedures is distinct from the FERC's Small Generator Interconnection Procedures (SGIP) Supplemental Review process, which has a similar analog in several states, but it builds upon the FERC process, adding detail and timelines. In the FERC SGIP, as in these Interconnection Procedures (§ 2.3.2), when an Applicant fails the initial Fast Track screens (similar to Levels 1 through 3), the Applicant is given an option to proceed to Supplemental Review if the utility believes further analysis might identify options for interconnection that do not require full study. The specific detail on what will be evaluated during the Supplemental Review process is not identified, however, nor is the time within which the process should be completed. For more detail on the Supplemental Review process included in these Interconnection Procedures, see [Section III.D.](#)

<sup>3</sup> In most cases, approval of one proposed Generating Facility will not determine whether other proposed Generating Facilities will pass the technical screens. It would be very unusual for an effect to be felt beyond an individual circuit or network. In these cases, it may be appropriate to study these applications as a group.

level within ten (10) Business Days of receipt of that denial, the date of Utility receipt of the initial Application shall be used for purposes of the order of review. No automatic extension of Utility review periods are allowed as delays can impact later proposed Generating Facilities. However, the Utility and an Applicant may mutually agree to a delay and the Utility may request that the Commission provide an extension for review of one or more Applications.

The four interconnection review paths are:

- a. Level 1—For inverter-based Generating Facilities that have a Generating Capacity of 25 kilowatts (kW)<sup>4</sup> or less.
- b. Level 2—For Generating Facilities that have a Generating Capacity of up to 5 megawatts (MW), depending on line capacity and distance from substation, as detailed in the table in [Section III.B.2.A.](#)
- c. Level 3—For Generating Facilities that do not export power to the Utility, and have a Generating Capacity of 10 MW or less.
- f. Level 4—For all Generating Facilities that do not qualify for Level 1, 2 or 3 interconnection review processes.

### **C. Applicable Standards**

Unless waived by the Utility, a Generating Facility must comply with the following standards, as applicable:

1. IEEE Standard 1547-2008 for Interconnecting Distributed Resources with Electric Power Systems for Generating Facilities up to 10 MW in size;
2. IEEE Standard 1547.1 for Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems;
3. UL 6142 Standard for Small Wind Turbine Systems; and
4. UL 1741 Standard for Inverters, Converters and Controllers for Use in Independent Power Systems. UL 1741 compliance must be recognized or Certified by a Nationally Recognized Testing Laboratory as designated by the U.S. Occupational Safety and Health Administration.<sup>5</sup> Certification of

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<sup>4</sup> Throughout these Interconnection Procedures, all rated capacity figures are measured in alternating current (AC).

<sup>5</sup> Inverter certification to UL 1741 is routinely required. Some states have established lists of certified inverters with UL 1741 certification as the primary criterion.

a particular model or a specific piece of equipment is sufficient. It is also sufficient for an inverter built into a Generating Facility to be recognized as being UL 1741 compliant by a Nationally Recognized Testing Laboratory.

## **II. PRE-APPLICATION REPORT<sup>6</sup>**

### **A. Pre-Application Report Request**

1. A Pre-Application Report Request shall include:
  - a. Contact information (name, address, phone and email).
  - b. A proposed Point of Interconnection. The proposed Point of Interconnection shall be defined by latitude and longitude, site map, street address, utility equipment number (e.g., pole number), meter number, account number or some combination of the above sufficient to clearly identify the location of the Point of Interconnection.
  - c. Generation technology and fuel source.
  - d. \$300 non-refundable processing fee.
2. In requesting a Pre-Application Report, a potential Applicant understands that:
  - a. The existence of “Available Capacity” in no way implies that an interconnection up to this level may be completed without impacts since there are many variables studied as part of the interconnection review process.

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<sup>6</sup> A structured Pre-Application Report can reduce unnecessary interconnection Applications by providing information about system conditions at a proposed Point of Interconnection. Without this information, developers may submit multiple Applications to find out which of many potential project locations have the lowest costs, resulting in a high volume of Applications. Utilities may find it increasingly difficult to keep up with the number of Applications they have to review and it is inefficient for Utilities to have to process Applications that are unlikely to result in projects. It also raises the overall costs of development when developers are forced to try a scatter-shot approach to identify the lowest-cost opportunities. IREC’s Pre-Application Report is based on the approach taken in California’s Rule 21, which was revised in 2012. In addition to Pre-Application Reports, California’s investor-owned utilities also are required to have a publicly available map of their systems, which provide basic information regarding voltage and capacity at specific points on the systems. Adoption of mapping tools may further reduce the number of requests for Pre-Application Reports that are filed.

- b. The distribution system is dynamic and subject to change.
- c. Data provided in the Pre-Application Report may become outdated and not useful at the time of submission of the complete Interconnection Request.

**B. Pre-Application Report**

Within ten (10) Business Days of receipt of a completed Pre-Application Report Request, the Utility shall provide a Pre-Application Report. The Pre-Application Report shall include the following information, if available:

1. Total Capacity (MW) of substation/area bus or bank and circuit likely to serve proposed site.
2. Allocated Capacity (MW) of substation/area bus or bank and circuit likely to serve proposed site.
3. Queued Capacity (MW) of substation/area bus or bank and circuit likely to serve proposed site.
4. Available Capacity (MW) of substation/area bus or bank and circuit most likely to serve proposed site.
5. Whether the proposed Generating Facility is located on an area, spot or radial network.
6. Substation nominal distribution voltage or transmission nominal voltage if applicable.
7. Nominal distribution circuit voltage at the proposed site.
8. Approximate circuit distance between the proposed site and the substation.
9. Relevant Line Section(s) peak load estimate, and minimum load data, when available.
10. Number of protective devices and number of voltage regulating devices between the proposed site and the substation/area.
11. Whether or not three-phase power is available at the site and/or distance from three-phase service.
12. Limiting conductor rating from proposed Point of Interconnection to distribution substation.

13. Based on proposed Point of Interconnection, existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks.

The Pre-Application Report need only include pre-existing data. A Pre-Application Report request does not obligate the Utility to conduct a study or other analysis of the proposed project in the event that data is not available. If the Utility cannot complete all or some of a Pre-Application Report due to lack of available data, the Utility will provide the potential Applicant with a Pre-Application Report that includes the information that is available and identify the information that is unavailable.

Notwithstanding any of the provisions of this Section, the Utility shall, in good faith, provide Pre-Application Report data that represents the best available information at the time of reporting.

### **III. INTERCONNECTION REVIEW**

#### **A. Level 1 Screening Criteria and Process for Inverter-Based Generating Facilities Not Greater than 25 kW**

1. Application: An Applicant must submit a Level 1 Application using the standard form provided in [Attachment 2](#) to these Interconnection Procedures, which may be sent electronically to a recipient designated by the Utility. Within three (3) Business Days of receipt, the Utility shall acknowledge receipt of the Application and notify Applicant whether or not the Application is complete. If the Application is incomplete, the Utility shall provide a written list detailing all information that must be provided to complete the Application. The Applicant shall have ten (10) Business Days after receipt of the list of incomplete material to submit the listed information, or to request an extension of time to provide such information. Otherwise, the Application will be deemed withdrawn. The Utility shall notify the Applicant within three (3) Business Days of receipt of a revised Application whether the Application is complete or incomplete. The Utility may deem the Application withdrawn if it remains incomplete. An Applicant executes the standard Interconnection Agreement for Level 1 by submitting a Level 1 Application.
2. Applicable Screens:
  - a. Facility Size: The Generating Facility has a Generating Capacity not greater than 25 kW.
  - b. For interconnection of a Generating Facility to a radial distribution circuit, the Generating Facility aggregated with all other generation



capable of exporting energy on a Line Section will not exceed 15 percent of the Line Section's annual peak load as most recently measured at the substation or calculated for the Line Section.<sup>7</sup> A Line Section is that portion of the radial distribution circuit to which the Applicant seeks to interconnect and is bounded by automatic sectionalizing devices or the end of a distribution line.<sup>8</sup>

- c. If the Generating Facility is to be interconnected on single-phase shared secondary, then the aggregate generation capacity on the shared secondary, including the Generating Facility, will not exceed 20 kilovolt-amperes (kVA).
- d. If the Generating Facility 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 20 percent of nameplate rating of the service transformer.
- e. For interconnection of a Generating Facility within a Spot Network or Area Network, the aggregate generating capacity including the Generating Facility may not exceed 50 percent of the Network's anticipated minimum load.<sup>9</sup> If solar energy Generating Facilities are used exclusively, only the anticipated daytime minimum load shall be considered. The Utility may select any of the following methods to determine anticipated minimum load:
  - i. the Network's measured minimum load in the previous year, if available;
  - ii. five percent of the Network's maximum load in the

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<sup>7</sup> The intent of this screen is to assure that generation on a Line Section will not exceed load at any time, but utilities typically track peak loads and not minimum loads. Fifteen percent of peak load was established in the FERC procedures as a conservative estimate of minimum load. Inexplicably, the FERC procedures call for aggregate generation on the *circuit* to not exceed 15 percent of *Line Section* peak load, when the relevant comparison is Line Section generation versus Line Section load (the correction has been made here).

<sup>8</sup> Typically, a radial distribution circuit does not have automatic sectionalizing devices, so the whole circuit is one Line Section. A fuse must be manually replaced and is therefore not considered an automatic sectionalizing device.

<sup>9</sup> Area Networks and Spot Networks use a network protector on each feeder serving the network and these protectors normally remain closed. It is important that generation not exceed load on the network to avoid the possibility of operating one or more network protectors.

- previous year;
- iii. the Applicant’s good faith estimate, if provided; or
  - iv. the Utility’s good faith estimate if provided in writing to the Applicant along with the reasons why the Utility considered the other methods to estimate minimum load inadequate.
3. Time to process screens: Within seven (7) Business Days after the Utility notifies the Applicant that the Application is complete, the Utility shall notify the Applicant whether the Generating Facility meets all of the applicable Level 1 screens.
4. Screens failure: Despite the failure of one or more screens, the Utility, at its sole option, may approve the interconnection provided such approval is consistent with safety and reliability. If the Utility cannot determine that the Generating Facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the Utility shall provide the Applicant with detailed information on the reason(s) for failure in writing. In addition, the Utility shall either:
- a. Notify Applicant in writing that the Utility is continuing to evaluate the Generating Facility under Supplemental Review if the Utility concludes that the Supplemental Review might determine that the Generating Facility could continue to qualify for interconnection pursuant to Level 2; or
  - b. Offer to continue evaluating the Interconnection Request under Level 4.<sup>10</sup>
5. Approval: If the proposed interconnection meets all of the applicable Level 1 screens, the Interconnection Request shall be approved and the Utility will provide the Applicant an executable Interconnection Agreement within the following timeframes.

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<sup>10</sup> In some cases, an Applicant’s facility may require upgrades whose costs are so significant that they are prohibitive. In these cases, a Utility sometimes refers to the particular circuit where the Applicant is trying to interconnect as “full” or “closed,” meaning that no more projects may interconnect to that circuit without prohibitively costly upgrades. These Interconnection Procedures leave the decision about whether or not to pay for necessary upgrades to the Applicant, who will ultimately bear the burden of these high upgrade costs, rather than attempting to define what constitutes a full or closed circuit. Moreover, in order to avoid this situation, a Utility could direct Applicants and potential Applicants toward more optimal locations on the Utility’s Electric Distribution System, for example through the Pre-Application process described in [Section II](#) or through publicly available mapping tools.

- a. If the proposed interconnection requires no construction of facilities by the Utility on its own system,<sup>11</sup> the interconnection agreement shall be provided within three (3) Business Days, the Utility shall send the Applicant a copy of the Application form, signed by the Utility, forming the Level 1 Interconnection Agreement. If a Utility does not notify an Applicant in writing or by email within twenty (20) Business Days whether an Application is approved or denied, the Interconnection Agreement signed by the Applicant as part of the Level 1 Application shall be deemed effective.<sup>12</sup>
- b. If the proposed interconnection requires only Interconnection Facilities or Minor System Modifications, the Interconnection Agreement, along with a non-binding good faith cost estimate and construction schedule for such upgrades, shall be provided within fifteen (15) Business Days after notification of the Level 1 review results.
- c. If the proposed interconnection requires more than Interconnection Facilities and Minor System Modifications, the Utility may elect to either provide an Interconnection Agreement along with a non-binding good faith cost estimate and construction schedule for such upgrades within thirty (30) Business Days after notification of the Level 1 review results, or the Utility may notify the Applicant that the Utility will need to complete a Facilities Study under [Section III.F](#) to determine the necessary upgrades.<sup>13</sup>

6. Unless extended by mutual agreement of the Parties, within six (6) months

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<sup>11</sup> This sub-provision (a) permits the installation of any metering or other commercial devices. If such devices are required, the three-day timeline for provision of the interconnection agreement still applies.

<sup>12</sup> In most cases approval by the local municipal electrical inspector will still be required to commence operation.

<sup>13</sup> Many states' interconnection procedures contain some version of a "no construction screen," which prohibits Generating Facilities that pass other technical screens for expedited interconnection review from obtaining an Interconnection Agreement if they require construction of any facilities by the Utility on its system. This "no construction screen" results in unnecessary studies and can be particularly problematic for Generating Systems wishing to interconnect in locations without onsite load. In contrast, the approach taken here gives utilities additional time to provide a cost estimate along with an Interconnection Agreement if it determines that upgrades are necessary, with timeframes dependent on whether these are Minor System Modifications or something more. Alternatively, the Utility may opt to proceed directly to a Facilities Study, bypassing the Impact Study.

of formation of an Interconnection Agreement or six (6) months from the completion of any upgrades, whichever is later, the Applicant shall provide the Utility with at least ten (10) Business Days notice of the anticipated start date of the Generating Facility.

7. A Utility may conduct an inspection within ten (10) Business Days of receiving the notice of the anticipated start date at a time mutually agreeable to the Parties. If a Generating Facility initially fails a Utility inspection the Utility shall offer to redo the inspection at the Applicant's expense at a time mutually agreeable to the Parties. If the Utility determines that the Generating Facility fails the inspection it must provide a written explanation detailing the reasons and any standards violated.
8. An Applicant may begin interconnected operation of a Generating Facility provided that there is an Interconnection Agreement in effect, the Utility has received proof of the electrical code official's approval, and the Generating Facility has passed any inspection required by the Utility.<sup>14</sup> Evidence of approval by an electric code official includes a signed Certificate of Completion in the form of [Attachment 5](#) or other inspector-provided documentation.
9. A Utility may elect to charge a standard Application fee of up to \$100 for Level 1 review.<sup>15</sup>

**B. Level 2 Screening Criteria and Process for Generating Facilities Meeting Specified Size Criteria Up to 5 MW, Depending on Line Capacity and Distance from Substation**

1. Application: An Applicant must submit a Level 2 Application using the standard form provided in [Attachment 3](#) to these Interconnection Procedures, which may be sent electronically to a recipient designated by the Utility. Within three (3) Business Days of receipt, the Utility shall acknowledge receipt of the Application and notify the Applicant whether or not the Application is complete. If the Application is incomplete, the Utility shall provide a written list detailing all information that must be provided to complete the Application. The Applicant will have ten (10) Business Days after receipt of the list to submit the listed information, or to request an extension of time to provide such information. Otherwise, the Application will be deemed withdrawn. The Utility shall notify the Applicant within three (3) Business Days of receipt of a revised

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<sup>14</sup> Upon interconnected operation, the Applicant becomes an Interconnection Customer.

<sup>15</sup> States have set Level 1 Application fees in a range from \$0 to \$800. California and other states with extensive renewable energy installations have chosen \$0 for net-metered facilities.

Application whether the Application is complete or incomplete. The Utility may deem the Application withdrawn if it remains incomplete.

2. Applicable screens:

- a. Facility Size:<sup>16</sup> Generating Facility’s Generating Capacity does not exceed the limits identified in the table below, which vary according to the voltage of the line at the proposed Point of Interconnection. Generating Facilities located within 2.5 miles of a substation and on a main distribution line with minimum 600-amp capacity are eligible for Level 2 interconnection under higher thresholds.

Line Capacity	Level 2 Eligibility	
	Regardless of location	On $\geq$ 600 amp line and $\leq$ 2.5 miles from substation
$\leq$ 4 kV	< 1 MW	< 2 MW
5 kV – 14 kV	< 2 MW	< 3 MW
15 kV – 30 kV	< 3 MW	< 4 MW
31 kV – 60 kV	$\leq$ 4 MW	$\leq$ 5 MW

- b. For interconnection of a Generating Facility to a radial distribution circuit, the Generating Facility aggregated with all other generation capable of exporting energy on a Line Section will not exceed 15 percent of the Line Section’s annual peak load as most recently measured at the substation or calculated for the Line Section.
- c. The Generating Facility, aggregated with other generation on the distribution circuit, will not contribute more than 10 percent to the distribution circuit’s maximum Fault Current at the point on the high-voltage (primary) level nearest the proposed Point of Common Coupling.
- d. The Generating Facility, aggregated 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 Utility 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

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<sup>16</sup> The distribution line voltage at the point of interconnection is one of the key factors in determining whether a project can interconnect without full study. Likewise, larger generators may pose a lower likelihood of imposing impacts that require study when located close to the substation and on main feeder lines. These factors have been taken into account when setting the size limits for Level 2 in these Interconnection Procedures.

interrupting capability.<sup>17</sup>

- e. The Generating Facility complies with the applicable type of interconnection, based on the table below. This screen includes a review of the type of electrical service provided to the Interconnecting Customer, including line configuration and the transformer connection to limit the potential for creating over-voltages on the Utility’s Electric Delivery System due to a loss of ground during the operating time of any Anti-Islanding function. This screen does not apply to Generating Facilities with a gross rating of 11 kVA or less.<sup>18</sup>

<b>Primary Distribution Line Configuration</b>	<b>Type of Interconnection to be Made to the Primary Circuit</b>	<b>Results/Criteria</b>
Three-phase, three-wire	Any type	Pass Screen
Three-phase, four-wire	Single-phase, line-to-neutral	Pass Screen
Three-phase, four-wire (For any line that has such a section, or mixed three wire and four wire)	All Others	To pass, aggregate Generating Facility nameplate rating must be less than or equal to 10% of Line Section peak load

- f. If the Generating Facility is to be interconnected on a single-phase shared secondary, then the aggregate generation capacity on the shared secondary, including the Generating Facility, will not exceed sixty-five percent of the transformer nameplate power rating.<sup>19</sup>

<sup>17</sup> The FERC Small Generator Interconnection Procedures set the threshold at 87.5 percent of short circuit interrupting capability, but utility equipment can handle much more current than ratings allow. The utility source of fault current should always be greater than any DG source, by a significant margin, so moving toward 100% makes sense. Fault currents are always calculated with worst-case scenarios, and the actual fault current will be lower than the calculated.

<sup>18</sup> This screen allows utilities to continue to maintain safety, reliability and power quality by identifying generators that pose overvoltage concerns and mitigating them through a technical solution. At the same time, it avoids a full study when one is not needed, i.e., for Generating Facilities below 11 kVA and for Generating Facilities below 10 percent of the Line Section’s peak load. Both California (Rule 21) and Hawaii (Rule 14H) take similar approaches.

<sup>19</sup> The FERC Small Generator Interconnection Procedures set the threshold at 20 kW,

- g. If the Generating Facility 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 20 percent of nameplate rating of the service transformer.
- h. The Generating Facility, in aggregate with other generation interconnected to the distribution low-voltage side of the substation transformer feeding the distribution circuit where the Generating Facility 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., three or four transmission voltage level busses from the Point of Common Coupling), or the proposed Generating Facility shall not have interdependencies, known to the Utility, with earlier-queued Interconnection Requests.<sup>20</sup>
- i. The Generating Facility's Point of Common Coupling will not be on a transmission line.
- j. For interconnection of a Generating Facility within a Spot Network or Area Network, the Generating Facility must be inverter-based and use a minimum import relay or other protective scheme that will ensure that power imported from the Utility to the network will, during normal Utility operations, remain above one percent of the network's maximum load over the past year or will remain above a point reasonably set by the Utility in good faith.<sup>21</sup> At the

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however that may be too large in some instances and too small in others. A 2011 Sandia National Laboratory study suggests that this is an appropriately conservative threshold, which would effectively identify high-risk interconnection requests. *See* "Evaluation of Alternatives to the FERC SGIP Screens for PV Interconnection Studies," Broderick, et. al. (2011). This approach has also been adopted in New Mexico.

<sup>20</sup> This screen is traditionally intended to address whether a Generating Facility may contribute to known or posted transient stability issues, although IREC recognizes that there are no transient stability issues posted by most of the Independent System Operators and thus it is often hard for utility distribution engineers to apply this screen. In addition, the screen addresses whether the proposed generating facility has interdependencies with other queued generators on the Electric Distribution System and therefore needs further study. This latter component follows approaches to this issue taken in California (Rule 21) and in the PJM FERC-regulated tariff.

<sup>21</sup> The intent of minimum import relays is to minimize nuisance operation of network protectors by assuring that power is always flowing into the network. For some networks, 1 percent of maximum load will be too much of a minimum import requirement; for

Utility's discretion, the requirement for minimum import relays or other protective schemes may be waived.

3. Time to process under screens: Within fifteen (15) Business Days after the Utility notifies the Applicant that the Application is complete, the Utility shall notify the Applicant whether the Generating Facility meets all of the applicable Level 2 screens.
4. Screens failure: Despite the failure of one or more screens, the Utility, at its sole option, may approve the interconnection provided such approval is consistent with safety and reliability. If the Utility cannot determine that the Generating Facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the Utility shall provide the Applicant with detailed information on the reason or reasons for failure. In addition, the Utility shall either:
  - a. Notify Applicant in writing that the Utility is continuing to evaluate the Generating Facility under Supplemental Review if the Utility concludes that the Supplemental Review might determine that the Generating Facility could continue to qualify for interconnection pursuant to Level 2; or
  - b. Offer to continue evaluating the Interconnection Request under Level 4.
5. Approval: If the proposed interconnection passes the screens, the Interconnection Request shall be approved and the Utility will provide the Applicant an executable Interconnection Agreement within the following timeframes.
  - a. If the proposed interconnection requires no construction of facilities by the Utility on its own system,<sup>22</sup> the interconnection agreement shall be provided within three (3) Business Days after the notification of Level 2 review results.
  - b. If the proposed interconnection requires only Interconnection Facilities or Minor System Modifications, the interconnection agreement, along with a non-binding good faith cost estimate and construction schedule for such upgrades, shall be provided within

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instance, a sports stadium on a Spot Network may experience very light daytime loads when the stadium is not in use. Minimum import requirements can be relaxed for such networks.

<sup>22</sup> As under Level 1, this sub-provision (a) permits the installation of any metering or other commercial devices. If such devices are required, the three-day timeline for provision of the interconnection agreement still applies.



fifteen (15) Business Days after notification of the Level 2 review results.

- c. If the proposed interconnection requires more than Interconnection Facilities and Minor System Modifications, the Utility may elect to either provide an Interconnection Agreement along with a non-binding good faith cost estimate and construction schedule for such upgrades within thirty (30) Business Days after notification of the Level 2 review results, or the Utility may notify the Applicant that the Utility will need to complete a Facilities Study under [Section III.F](#) to determine the necessary upgrades.<sup>23</sup>
6. An Applicant that receives an Interconnection Agreement executed by the Utility shall have ten (10) Business Days to execute the agreement and return it to the Utility. An Applicant shall communicate with the Utility no less frequently than every six (6) months regarding the status of a proposed Generating Facility to which an Interconnection Agreement refers. Within twenty-four (24) months from an Applicant's execution of an Interconnection Agreement or six (6) months of completion of any upgrades, whichever is later, the Applicant shall provide the Utility with at least ten (10) Business Days notice of the anticipated start date of the Generating Facility.<sup>24</sup>
7. The Utility may conduct an inspection within ten (10) Business Days of receiving the notice of the anticipated start date at a time mutually agreeable to the Parties. If a Generating Facility initially fails the Utility inspection the Utility shall offer to redo the inspection at the Applicant's expense at a time mutually agreeable to the Parties. If the Utility determines that the Generating Facility fails the inspection it must provide a written explanation detailing the reasons and any standards violated.
8. Upon Utility's receipt of proof of the electric code official's approval, an Applicant may begin interconnected operation of a Generating Facility, provided that there is an Interconnection Agreement in effect and that the Generating Facility has passed any inspection required by the Utility.<sup>25</sup> Evidence of approval by an electric code official includes a signed Certificate of Completion in the form of [Attachment 5](#) or other inspector-provided documentation.
9. A Utility may elect to charge a standard Application fee of up to \$100 plus

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<sup>23</sup> See note 13 regarding "no construction screens."

<sup>24</sup> For larger Generating Facilities, an Applicant may need six months or more, to secure financing, equipment, and zoning approvals.

<sup>25</sup> Upon interconnected operation, the Applicant becomes an Interconnection Customer.

\$10 per kW of Generating Capacity up to a maximum of \$2,000 for Level 2 review.

**C. Level 3 Screening Criteria and Process for Non-Exporting Generating Facilities Not Greater than 10 MW**

An Applicant may use the Level 2 process for a Generating Facility with a Generating Capacity no greater than ten MW that uses reverse power relays, minimum import relays or other protective devices to assure that power may never be exported from the Generating Facility to the Utility.<sup>26</sup> An Applicant proposing to interconnect a Generating Facility to a Spot Network or an Area Network may not use Level 3.

**D. Supplemental Review<sup>27</sup>**

1. Within twenty (20) Business Days of determining that Supplemental Review is appropriate, the Utility shall perform Supplemental Review using the screens set forth below, notify the Applicant of the results, and include with the notification a written report of the analysis and data underlying the Utility's determinations under the screens.
  - a. Where 12 months of Line Section minimum load data is available, can be calculated, can be estimated from existing data, or can be determined from a power flow model, the aggregate Generating Facility capacity on the Line Section is less than 100 percent of the minimum load for all Line Sections bounded by automatic sectionalizing devices upstream of the proposed Generating Facility. If the minimum load data is not available, or cannot be calculated or estimated, the aggregate Generating Facility capacity on the Line Section is less than 30 percent of the peak load for all Line Sections bounded by automatic sectionalizing devices upstream of the proposed Generating Facility.

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<sup>26</sup> Note that the first screen in Level 2 is inapplicable to a Level 3 Applicant because that screen limits aggregate "generation capable of exporting energy."

<sup>27</sup> A clear Supplemental Review process can enable efficient interconnections at higher penetrations while still ensuring system protection. Specifically, it can maintain a fast process for projects in low-penetration areas, but can provide Utilities with sufficient time to conduct additional analysis in higher penetration cases where full study is not necessary. The full study process (Level 4) is typically lengthy and costly; however, an abbreviated study process may be appropriate for certain projects, such as projects that do not exceed 100 percent of minimum load on a circuit. In addition to benefiting generators by minimizing their review time and costs, a robust Supplemental Review process may help to minimize congestion in Utility study queues. The approach proposed here has been adopted in California (Rule 21), and is under consideration in Massachusetts and Ohio, as well as at FERC. Hawaii has also adopted a similar approach to its supplemental review.

*IREC 2013 Model Interconnection Procedures*

- i. The type of generation used by the proposed Generating Facility will be taken into account when calculating, estimating, or determining circuit or Line Section minimum load relevant for the application of this screen. Solar photovoltaic (PV) generation systems with no battery storage use daytime minimum load (e.g., 8 a.m. to 6 p.m.), while all other generation uses absolute minimum load.
  - ii. When this screen is being applied to a Generating Facility that serves some onsite electrical load, only the net export in kW, if known, that may flow into the Utility's system will be considered as part of the aggregate generation.
  - iii. The Utility will not consider as part of the aggregate generation for purposes of this screen generating facility capacity, including combined heat and power (CHP) facility capacity, known to be already reflected in the minimum load data.
- b. In aggregate with existing generation on the Line Section:
- i. The voltage regulation on the Line Section can be maintained in compliance with relevant requirements under all system conditions;
  - ii. The voltage fluctuation is within acceptable limits as defined by IEEE 1453 or utility practice similar to IEEE 1453; and
  - iii. The harmonic levels meet IEEE 519 limits at the Point of Interconnection.
- c. The location of the proposed Generating Facility and the Aggregate Generation Capacity on the Line Section do not create impacts to safety or reliability that cannot be adequately addressed without Application of Level 4. The Utility may consider the following factors and others in determining potential impacts to safety and reliability in applying this screen.
- i. Whether the Line Section has significant minimum loading levels dominated by a small number of customers (i.e., several large commercial customers).
  - ii. If there is an even or uneven distribution of loading along the feeder.

*IREC 2013 Model Interconnection Procedures*

- iii. If the proposed Generating Facility is located in close proximity to the substation (i.e.,  $\leq 2.5$  electrical line miles), and if the distribution line from the substation to the Generating Facility is composed of large conductor/feeder section (i.e., 600A class cable).
  - iv. If the proposed Generating Facility incorporates a time delay function to prevent reconnection of the generator to the system until system voltage and frequency are within normal limits for a prescribed time.
  - v. If operational flexibility is reduced by the proposed Generating Facility, such that transfer of the Line Section(s) of the Generating Facility to a neighboring distribution circuit/substation may trigger overloads or voltage issues.
  - vi. If the proposed Generating Facility utilizes certified Anti-Islanding functions and equipment.
2. If the proposed interconnection passes the supplemental screens, the Interconnection Request shall be approved and the Utility will provide the Applicant an executable Interconnection Agreement within the timeframes established below.
- a. If the proposed interconnection requires no construction of facilities by the Utility on its own system, the Interconnection Agreement shall be provided within five (5) Business Days after the notification of the Supplemental Review results.
  - b. If the proposed interconnection requires only Interconnection Facilities or Minor System Modifications, the Interconnection Agreement, along with a non-binding good faith cost estimate and construction schedule for the Interconnection Facilities and/or Minor System Modifications, shall be provided within fifteen (15) Business Days after notification of the Supplemental Review results.
  - c. If the proposed interconnection requires more than Supplemental Review, the Utility may elect to either provide an Interconnection Agreement along with a non-binding good faith cost estimate and construction schedule for such upgrades within thirty (30) Business Days after notification of the Supplemental Review results, or the Utility may notify the Applicant that the Utility will need to complete a Facilities Study under Level 4 to determine the necessary upgrades.

3. An Applicant that receives an Interconnection Agreement executed by the Utility shall have ten (10) Business Days to execute the agreement and return it to the Utility.
  - a. For Level 1 Applicants: Unless extended by mutual agreement of the Parties, within six (6) months of formation of an Interconnection Agreement or six (6) months from the completion of any upgrades, whichever is later, the Applicant shall provide the Utility with at least ten (10) Business Days notice of the anticipated start date of the Generating Facility.
  - b. For Level 2 and 3 Applicants: An Applicant shall communicate with the Utility no less frequently than every six (6) months regarding the status of a proposed Generating Facility to which an Interconnection Agreement refers. Within twenty-four (24) months from an Applicant's execution of an Interconnection Agreement or six (6) months of completion of any upgrades, whichever is later, the Applicant shall provide the Utility with at least ten (10) Business Days notice of the anticipated start date of the Generating Facility.<sup>28</sup>
4. The Utility may conduct an inspection within ten (10) Business Days of receiving the notice of the anticipated start date at a time mutually agreeable to the Parties. If a Generating Facility initially fails a Utility inspection, the Utility shall offer to redo the inspection at the Applicant's expense at a time mutually agreeable to the Parties. If the Utility determines that the Generating Facility fails the inspection it must provide a written explanation detailing the reasons and any standards violated.
5. Upon Utility's receipt of proof of the electric code official's approval, an Applicant may begin interconnected operation of a Generating Facility, provided that there is an Interconnection Agreement in effect and that the Generating Facility has passed any inspection required by the Utility.<sup>29</sup> Evidence of approval by an electric code official includes a signed Certificate of Completion in the form of [Attachment 5](#) or other inspector-provided documentation.

**E. Applicant Options Meeting<sup>30</sup>**

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<sup>28</sup> For larger Generating Facilities, an Applicant may need six months or more, to secure financing, equipment, and zoning approvals.

<sup>29</sup> Upon interconnected operation, the Applicant becomes an Interconnection Customer.

<sup>30</sup> California integrated this approach into its Rule 21 to allow an Applicant and the Utility another opportunity to discuss the interconnection of the facility before undertaking the typically lengthy and costly study process (Level 4).

If the Utility determines the Interconnection Request cannot be approved without evaluation under Level 4 review, at the time the Utility notifies the Applicant of either the Level 1, 2 or 3 review, or Supplemental Review, results, it shall provide the Applicant the option of proceeding to Level 4 review or of participating in an Applicant Options Meeting with the Utility to review possible Generating Facility modifications or the screen analysis and related results, to determine what further steps are needed to permit the Generating Facility to be connected safely and reliably. The Applicant shall notify the Utility that it requests an Applicant Options Meeting or that it would like to proceed to Level 4 review in writing within fifteen (15) Business Days of the Utility's notification or the Interconnection Request shall be deemed withdrawn. If the Applicant requests an Options Meeting, the Utility shall offer to convene a meeting at a mutually agreeable time within the next fifteen (15) Business Days.

**F. Level 4 Process for All Other Generating Facilities**

1. Application: An Applicant must submit a Level 4 Application using the standard form provided in [Attachment 3](#) to these Interconnection Procedures, which may be sent electronically to a recipient designated by the Utility. An Applicant whose Level 1, Level 2 or Level 3 Application was denied may request that the Utility treat that existing Application already in the Utility's possession as a new Level 4 Application. Within three (3) Business Days of receipt, the Utility shall acknowledge receipt of the Application or transfer of an existing Application to the Level 4 process and notify the Applicant whether or not the Application is complete. If the Application is incomplete, the Utility shall provide a written list detailing all information that must be provided to complete the Application. The Applicant will have twenty (20) Business Days after receipt of the list to submit the listed information, or to request an extension of time to provide such information. Otherwise, the Application will be deemed withdrawn. The Utility shall notify the Applicant within three (3) Business Days of receipt of the revised Application whether the Application is complete or incomplete. The Utility may deem the Application withdrawn if it remains incomplete.
2. The Utility will conduct an initial review that includes a scoping meeting with the Applicant within ten (10) Business Days of determination that an Application is complete. The scoping meeting shall take place in person, by telephone or electronically by a means mutually agreeable to the Parties. At the scoping meeting the Utility will 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 Generating Facility, and the configuration of the distribution line at the proposed point of interconnection. By mutual agreement of the Parties, the Impact Study or Facilities Study may be waived.
3. If the Parties do not waive the Impact Study, within five (5) Business Days

of the completion of the scoping meeting, the Utility shall provide the Applicant with an agreement in the form of the Impact Study in [Attachment 6](#), including a good faith estimate of the cost and time to undertake the Impact Study.

4. An Impact Study for a Generating Facility with a Generating Capacity of no more than 10 MW shall include a review of the Generating Facility's protective devices for adherence to IEEE Standard 1547. An Impact Study for a Generating Facility with a Generating Capacity of more than 10 MW shall use IEEE Standard 1547 for guidance. For Generating Facility components that are Certified, the Utility may not charge the Applicant for review of those components in isolation.
5. 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:
  - a. Load-Flow Study
  - b. Short-Circuit Study
  - c. Circuit Protection and Coordination Study
  - d. Impact on System Operation
  - e. Stability Study (and the conditions that would justify including this element in the Impact Study)
  - f. Voltage-Collapse Study (and the conditions that would justify including this element in the Impact Study).
6. Once an Applicant delivers an executed Impact Study agreement and payment in accordance with that agreement, the Utility will conduct the Impact Study. The Impact Study shall be completed within forty (40) Business Days of the Applicant's delivery of the executed Impact Study agreement, although the Utility may take longer when a proposed Generating Facility will be impacted by other proposed Generating Facilities.
7. If the Utility determines that Electric Delivery System modifications required to accommodate the proposed interconnection are not substantial, the Impact Study will identify the scope and cost of the modifications defined in the Impact Study results and no Facilities Study shall be required.
8. If the Utility determines that necessary modifications to the Utility's

*IREC 2013 Model Interconnection Procedures*

Electric Delivery System are substantial, the results of the Impact Study will include an estimate of the cost of the Facilities Study and an estimate of the modification costs. The detailed costs of any Electric Delivery System modifications necessary to interconnect the Applicant's proposed Generating Facility will be identified in a Facilities Study to be completed by the Utility.

9. If the Parties do not waive the Facilities Study, within five (5) Business Days of the completion of the Impact Study, the Utility shall provide a Facilities Study agreement, in the form of the Facilities Study in [Attachment 6](#), including a good faith estimate of the cost and time to undertake the Facilities Study.
10. Once the Applicant executes the Facilities Study agreement and pays the Utility pursuant to the terms of that agreement, the Utility will conduct the Facilities Study. The Facilities Study shall include a detailed list of necessary Electric Delivery System upgrades and a cost estimate for completing such upgrades, which may not be exceeded by 125 percent in any future Utility facilities installation. The Facilities Study shall be completed within sixty (60) Business Days of the Applicant's delivery of the executed Facilities Study agreement, though the Utility may take longer when a proposed Generating Facility will be impacted by other proposed Generating Facilities.
11. Within five (5) Business Days of completion of the last study that the Utility deems necessary, the Utility shall execute and send the Applicant an Interconnection Agreement using the standard form agreement provided in [Attachment 4](#) of these Interconnection Procedures. The Interconnection Agreement shall include a quote for any required Electric Delivery System modifications, subject to the cost limit set by the Facilities Study cost estimate. The Facilities Study shall indicate the milestones for completion of the Applicant's installation of its Generating Facility and the Utility's completion of any Electric Delivery System modifications, and the milestones from the Facilities Study (if any) shall be incorporated into the Interconnection Agreement.
12. Within forty (40) Business Days of the receipt of an Interconnection Agreement,<sup>31</sup> the Applicant shall execute and return the Interconnection Agreement and notify the Utility of the anticipated start date of the Generating Facility. Unless the Utility agrees to a later date or requires

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<sup>31</sup> Typically, the Applicant will be eager to sign and return the Interconnection Agreement quickly, particularly where no expense is involved. However, the Interconnection Agreement can include a significant commitment by the Applicant to pay for Utility upgrades. Forty Business Days are provided to allow the Applicant time to finalize financing, if needed.



more time for necessary modifications to its Electric Delivery System, the Applicant shall identify an anticipated start date that is within twenty-four (24) months of the Applicant's execution of the Interconnection Agreement.

13. The Utility shall inspect the completed Generating Facility installation for compliance with requirements and shall attend any required commissioning tests pursuant to IEEE Standard 1547. For systems greater than 10 MW, IEEE Standard 1547 may be used as guidance. If a Generating Facility initially fails a Utility inspection the Utility shall offer to redo the inspection at the Applicant's expense at a time mutually agreeable to the Parties. If the Utility determines that the Generating Facility fails the inspection it must provide a written explanation detailing the reasons and any standards violated. Provided that any required commissioning tests are satisfactory, the Utility shall notify the Applicant in writing within five (5) Business Days of completion of the inspection that operation of the Generating Facility is approved.
14. The Applicant shall notify the Utility if there is any change in the anticipated start date of interconnected operations of the Generating Facility. Upon Utility's receipt of proof of the electric code official's approval, an Applicant may begin interconnected operation of a Generating Facility, provided that there is an Interconnection Agreement in effect and that the Generating Facility has passed any inspection required by the Utility. Evidence of approval by an electric code official includes a signed Certificate of Completion in the form of [Attachment 5](#) or other inspector-provided documentation.
15. Fees: An Application fee shall not exceed \$100 plus \$10 per kW of Generating Capacity up to a maximum of \$2,000, as well as charges for actual time spent on any interconnection study. Costs for Utility facilities necessary to accommodate the Applicant's Generating Facility interconnection shall be the responsibility of the Applicant.

#### **IV. GENERAL PROVISIONS AND REQUIREMENTS**

##### **A. Online Applications and Electronic Signatures**

1. Each Utility shall allow interconnection Applications to be submitted through the Utility's website.
2. Each Utility shall dedicate a page on their website to interconnection procedures. That page shall be able to be reached by no more than three logical, prominent hyperlinks from the Utility's home page.<sup>32</sup> The relevant

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<sup>32</sup> For instance, a Utility's home page could have a hyperlink to a subpage for clean energy,

website page shall include:

- a. These Interconnection Procedures and attachments in an electronically searchable format,
  - b. The Utility's interconnection Application forms in a format that allows for electronic entry of data,
  - c. The Utility's interconnection agreements, and
  - d. The Utility's point of contact for submission of interconnection Applications including email and phone number.
3. Each Utility shall allow electronic signatures to be used for interconnection Applications.<sup>33</sup>

## **B. Dispute Resolution**

1. For a dispute related to these rules, either Party may submit a written request to the other Party for an informal meeting by phone, electronic media, or in person to attempt to resolve the dispute. Following such a request, each Party shall make available a person with authority to resolve the dispute. A meeting shall be scheduled for at least one hour, but may be shorter at the option of the Party requesting the meeting. The meeting shall take place at a time and in a manner agreeable to the Party receiving the request within three (3) Business Days of the Party's receipt of the request for a meeting. If a dispute involves technical issues, persons with sufficient technical expertise and familiarity with the issue in dispute from each Party shall attend the informal meeting.
2. If an informal meeting of the Parties does not resolve a dispute, the Parties may mutually agree to further discussions or either Party may seek resolution of the dispute through the complaint or mediation procedures available at the Commission. Dispute resolution at the Commission will be initially conducted in an informal, expeditious manner to reach resolution with minimal costs and delay. If no resolution is reached after informal discussions, either Party may file a formal complaint with the Commission.

## **C. Utility Reporting Requirement**

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which has a hyperlink to a subpage for customer-sited generation, which has a hyperlink to these procedures.

<sup>33</sup> Electronic signatures are generally recognized in commercial activities, and 47 states have adopted the substance of the Uniform Electronic Transaction Act (UETA), a model act developed by the National Conference of Commissioners on Uniform State Laws.

Each Utility shall electronically make available a spreadsheet listing all interconnected Generating Facilities with their respective resource types, Generating Capacities, year of interconnection, and zip code of geographic location. At a minimum, such information shall be provided to the Commission by March 1 of each year. Such information shall be submitted in both a database format for data analysis and in an image format that is legible and intuitive when printed.

**D. Miscellaneous Requirements**

1. Applicant is responsible for construction of the Generating Facility and obtaining any necessary local code official approval (electrical, zoning, etc.).
2. Applicant shall conduct the commissioning test pursuant to the IEEE Standard 1547 and comply with all manufacturer requirements.
3. To assist Applicants in the interconnection process, the Utility shall designate an employee or office from which basic information on interconnections can be obtained. Upon request, the Utility shall provide interested Applicants with all relevant forms, documents and technical requirements for filing a complete Application. Upon an Applicant's request, the Utility shall meet with an Applicant at the Utility's offices or by telephone prior to submission for up to one hour for Level 1 Applicants and two hours for other Applicants.
4. The authorized hourly rate for engineering review under Supplemental Review or Level 4 shall be \$100 per hour.<sup>34</sup>
5. A Utility shall not require an Applicant to install additional controls (other than a utility accessible disconnect switch for non-inverter-based Generating Facilities<sup>35</sup>), or to perform or pay for additional tests to obtain approval to interconnect.
6. A Utility may only require an Applicant to purchase insurance covering

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<sup>34</sup> The fixed hourly fee for engineering review may be adjusted to reflect standard rates in each state, but the hourly charge should be fixed so there are no disparities among Utilities.

<sup>35</sup> A number of states have allowed Utilities to require external disconnect switches but specified that the Utility must reimburse Applicants for the cost of the switch. Several states have specified that an external disconnect switch may not be required for smaller inverter-based Generating Facilities. Recognizing that non-inverter-based Generating Facilities might present a hazard, Utilities may require a switch for these Generating Facilities.

*IREC 2013 Model Interconnection Procedures*

Utility damages, and then only in the following amounts:<sup>36</sup>

a. For non-inverter-based Generating Facilities:

Generating Capacity > 5 MW	\$3,000,000
2 MW < Generating Capacity ≤ 5 MW	\$2,000,000
500 kW < Generating Capacity ≤ 2 MW	\$1,000,000
50 kW < Generating Capacity ≤ 500 kW	\$500,000
Generating Capacity ≤ 50 kW	no insurance

b. For inverter-based Generating Facilities:

Generating Capacity > 5 MW	\$2,000,000
1 MW < Generating Capacity ≥ 5 MW	\$1,000,000
Generating Capacity ≥ 1 MW	no insurance

7. Additional protection equipment not included with the Interconnection Equipment Package may be required at the Utility's discretion as long as the performance of an Applicant's Generating Facility is not negatively impacted and the Applicant is not charged for any equipment that provides protection that is already provided by interconnection equipment Certified in accordance with [Section I.C.](#)
8. Metering and Monitoring shall be as set forth in the Utility's tariff for sale or exchange of energy, capacity or other ancillary services.
9. Once an interconnection has been approved under these procedures, a Utility shall not require an Interconnection Customer to test its Generating Facility except that the Utility may require any manufacturer-recommended testing and:
  - a. For Levels 2 and 3, an annual test in which the Interconnection Customer's Generating Facility is disconnected from the Utility's equipment to ensure that the Generating Facility stops delivering power to the Electric Delivery System.
  - b. For Level 4, all interconnection-related protective functions and associated batteries shall be periodically tested at intervals specified by the manufacturer, system integrator, or authority that

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<sup>36</sup> Insurance requirements are not typically separated by inverter and non-inverter-based Generating Facilities. However, concerns seem to center on the potential for non-inverter-based systems to cause damage to utility property. To IREC's knowledge, there has never been a claim for damages to a utility's property caused by an inverter-based system, and it seems that there is little theoretical potential for damage to a utility's property caused by an inverter-based system of less than a megawatt.

has jurisdiction over the interconnection. Periodic test reports or a log for inspection shall be maintained.

10. A Utility shall have the right to inspect an Interconnection Customer's Generating Facility before and after interconnection approval is granted, at reasonable hours and with reasonable prior notice provided to the Interconnection Customer. If the Utility discovers an Interconnection Customer's Generating Facility is not in compliance with the requirements of IEEE Standard 1547, and the non-compliance adversely affects the safety or reliability of the electric system, the Utility may require disconnection of the Interconnection Customer's Generating Facility until the Generating Facility complies with IEEE Standard 1547.
11. The Interconnection Customer may disconnect the Generating Facility at any time without notice to the Utility and may terminate the Interconnection Agreement at any time with one day's notice to the Utility.
12. An Applicant may designate a representative to process an Application on Applicant's behalf, and an Interconnection Customer may designate a representative to meet some or all of the Interconnection Customer's responsibilities under the Interconnection Agreement.<sup>37</sup>
13. For a Generating Facility offsetting part or all of the load of a utility customer at a given site, that customer is the Interconnection Customer and that customer may assign its Interconnection Agreement to a subsequent occupant of the site.<sup>38</sup> For a Generating Facility providing all of its energy directly to a Utility, the Interconnection Customer is the owner of the Generating Facility and may assign its Interconnection Agreement to a subsequent owner of the Generating Facility. Assignment is only effective after the assignee provides written notice of the assignment to the Utility and agrees to accept the Interconnection Customer's responsibilities under the Interconnection Agreement.

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<sup>37</sup> In the most common case, a residential customer may designate an installer as the representative. For larger Generating Facilities, a third-party owner might be the designated representative.

<sup>38</sup> In the most common case, an Interconnection Customer is a homeowner and this clause allows the homeowner to sell the home and assign the Agreement to the new owner. In many commercial situations, the Interconnection Customer is a lessee and this clause allows that lessee to move out at the end of a lease and assign the Agreement to a new lessee.

## ATTACHMENT 1: GLOSSARY OF TERMS

“Anti-Islanding” means a control scheme installed as part of the Generating or Interconnection Facility that senses and prevents the formation of an Unintended Island.

“Applicant” means a person or entity that has filed an Application to interconnect a Generating Facility to an Electric Delivery System. For a Generating Facility that will offset part or all of the load of a Utility customer, the Applicant is that customer, regardless of whether the customer owns the Generating Facility or a third party owns the Generating Facility.<sup>39</sup> For a Generating Facility selling electric power to a Utility, the owner of the Generating Facility is the Applicant.

“Applicant Options Meeting” has the meaning provided in [Section III.E](#) of these procedures.

“Distribution Service” means the service of delivering energy over the Electric Delivery System pursuant to the approved tariffs of the Utility other than services directly related to the interconnection of a Generating Facility under these Interconnection Procedures.

“Application” means the Applicant’s request, in accordance with these Interconnection Procedures, to interconnect a new Generating Facility, or to increase the capacity of, or make a Material Modification to the operating characteristics of, an existing Generating Facility that is interconnected with the Utility’s Electric Distribution System.

“Area Network” means a section of an Electric Delivery System served by multiple transformers interconnected in an electrical network circuit generally used in large, densely populated metropolitan areas in order to provide high reliability of service, and having the same definition as the term “secondary grid network” as defined in IEEE Standard 1547.

“Available Capacity” means the Total Capacity less the sum of Installed Capacity and Queued Capacity.

“Business Day” means Monday through Friday, excluding Federal and State Holidays.

“Certified” has the meaning provided in [Section I.C](#) of these procedures, regarding IEEE and UL standards applicable to Generating Facility components.

“Commission” means the *[insert name of the state utility commission]*.<sup>40</sup>

“Customer” means the entity that receives or is entitled to receive Distribution Service through the Utility’s Electric Delivery System or is a retail customer of the Utility.

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<sup>39</sup> For a variety of reasons, a Generating Facility may be owned by a third party that contracts to sell energy or furnish the Generating Facility to the Utility’s customer. In those cases, the Utility’s customer is still the Applicant under this Agreement, though the Applicant may choose to designate the owner as Applicant’s representative.

<sup>40</sup> For a utility not regulated by a state utility commission, the regulator of the utility should be listed with the appropriate defined term, such as “Board” instead of “Commission.”

“Electric Delivery System” means the equipment operated and maintained by a Utility to deliver electric service to end-users, including without limitation transmission and distribution lines, substations, transformers, Spot Networks and Area Networks.

“Facilities Study” has the meaning provided in [Section III.F](#) and [Attachment 6](#) of these procedures.

“Fault Current” means 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.

“Generating Capacity” means the rated capacity of a Generating Facility in alternating current (AC). For an inverter-based Generating Facility, the Generating Capacity is the rated capacity of the inverter.

“Generating Facility” means the equipment used by an Interconnection Customer to generate, store, manage, interconnect and monitor electricity. A Generating Facility includes an Interconnection Equipment Package.

“IEEE” means the Institute of Electrical and Electronic Engineers.

“IEEE Standards” means the standards published by the IEEE, available at [www.ieee.org](http://www.ieee.org).

“Impact Study” has the meaning provided in [Section III.F](#) and [Attachment 6](#) of these procedures.

“Installed Capacity” means existing aggregate generation capacity in megawatts (MW) interconnected to a substation/area bus, bank or circuit (i.e., amount of generation online).

“Interconnection Agreement” means a standard form agreement between an Interconnection Customer and a Utility governing the interconnection of a Generating Facility to a Utility’s Electric Delivery System, as well as the ongoing operation of the Generating Facility after it is interconnected. For Level 1, the standard form Interconnection Agreement is incorporated with the Level 1 Application, provided in [Attachment 2](#) to these Interconnection Procedures. For Levels 2, 3 or 4, the standard form Interconnection Agreement is provided in [Attachment 4](#) to these Interconnection Procedures.

“Interconnection Customer” means an Applicant that has entered into an Interconnection Agreement with a Utility to interconnect a Generating Facility and has interconnected that Generating Facility.

“Interconnection Equipment Package” means 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 Interconnection Equipment Package may

include an integrated generator or electric source.<sup>41</sup>

“Interconnection Facilities” means the electrical wires, switches and related equipment that are required in addition to the facilities required to provide electric Distribution Service to a Customer to allow Interconnection. Interconnection Facilities may be located on either side of the Point of Common Coupling as appropriate to their purpose and design. Interconnection Facilities may be integral to a Generating Facility or provided separately. Interconnection Facilities may be owned by either the Interconnection Customer or the Utility.

“Interconnection Procedures” means these procedures including attachments.

“Island” or “Islanding” means a condition on the Utility’s Electric Delivery System in which one or more Generating Facilities deliver power to Customers using a portion of the Utility’s Electric Delivery System that is electrically isolated from the remainder of the Utility’s Electric Delivery System.

Level 1 has the meaning provided in [Section III.A](#) and [Attachment 2](#) of these procedures.

Level 2 has the meaning provided in [Section III.B](#) and [Attachments 3 and 4](#) of these procedures.

Level 3 has the meaning provided in [Section III.C](#) and [Attachments 3 and 4](#) of these procedures.

Level 4 has the meaning provided in [Section III.D](#) and [Attachments 3 and 4](#) of these procedures.

“Line Section” means that portion of the Utility’s Electric Delivery System connected to a Customer bounded by automatic sectionalizing devices or the end of the distribution line.

“Material Modification” means a modification that has a material impact on the cost or timing of processing the Application or an Interconnection Request with a later queue priority date.

“Minor System Modifications” means modifications to a Utility’s Electric Delivery System, including activities such as changing the fuse in a fuse holder cut-out, changing the settings on a circuit recloser and other activities that usually entail less than four hours of work and \$1000 in materials.

“Parties” means the Applicant and the Utility in a particular Interconnection Agreement. “Either Party” refers to either the Applicant or the Utility.

“Point of Common Coupling” means the point in the interconnection of a Generating Facility with an Electric Delivery System at which the harmonic limits are applied and shall have the same meaning as in IEEE Standard 1547.

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<sup>41</sup> The most common Interconnection Equipment Package is an inverter. However, a solar array and an inverter can be bundled as a complete Interconnection Equipment Package. In that case, the Generating Facility would simply be the Interconnection Equipment Package.



“Point of Interconnection” means the point where the Interconnection Facilities connect with the Utility’s Electric Delivery System. This may or may not be coincident with the Point of Common Coupling.

Pre-Application Report has the meaning provided in [Section II.B](#) of these procedures.

Pre-Application Report Request has the meaning provided in [Section II.A](#) of these procedures.

“Queued Capacity” means the aggregate generation capacity in MW of Applicants’ Generating Facilities intending to interconnect to a substation/area bus, bank or circuit.

“Spot Network” means a section of an 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 Utility customer or to a small group of Utility customers, and has the same meaning as the term is used in IEEE Standard 1547.

“Supplemental Review” has the meaning provided in [Section III.D](#) of these procedures.

“Total Capacity” means the aggregate capacity of a substation/area bus, bank or circuit and is equal to the sum of Installed Capacity, Available Capacity and Queued Capacity.

“UL” means Underwriters Laboratories, which has established standards available at <http://ulstandardsinfont.net.ul.com/> that relate to components of Generating Facilities.

“Unintended Island” means the creation of an Island without the approval of the Utility, usually following a loss of a portion of the Utility’s Electric Delivery System.

“Utility” means an operator of an Electric Delivery System.<sup>42</sup>

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<sup>42</sup> Some interconnection procedures reference the operator of the Electric Delivery System as the “Company” or the “Electric Delivery Company (EDC).” Here the term “Utility” is meant to include all investor-owned and public utilities, including cooperatives, municipal utilities and public utility districts. In deregulated states, the “wires” company is the Utility while the energy provider is not.

**ATTACHMENT 2:  
Level 1 Application and Interconnection Agreement for Inverter-Based Generating  
Facilities Not Greater than 25 kW**

This Application is complete when it provides all applicable and correct information required below and includes a one-line diagram if required by the Utility and a standard Processing Fee of up to \$100 if required by the Utility.

Applicant:

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: State, Zip: \_\_\_\_\_

Telephone (Day): \_\_\_\_\_ (Evening): \_\_\_\_\_

Fax: \_\_\_\_\_ Email Address: \_\_\_\_\_

Utility Customer Number (if applicable): \_\_\_\_\_

Electricity Provider (if different from Utility): \_\_\_\_\_

Contact: (if different from Applicant)

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Telephone (Day): \_\_\_\_\_ (Evening): \_\_\_\_\_

Fax: \_\_\_\_\_ Email Address: \_\_\_\_\_

Generating Facility:

Location (if different from above): \_\_\_\_\_

Facility Owner (include percent ownership by any electric utility): \_\_\_\_\_

Inverter Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Nameplate Rating: (kW) (kVA) (AC Volts): \_\_\_\_\_

Single Phase: \_\_\_\_\_ Three Phase: \_\_\_\_\_ (check one)

System Design Capacity: \_\_\_\_\_ (kW) \_\_\_\_\_ (kVA)

Prime Mover: Photovoltaic / Turbine/ Fuel Cell / Other (describe): \_\_\_\_\_

Energy Source: Solar / Wind / Hydro / Other (describe): \_\_\_\_\_

*IREC 2013 Model Interconnection Procedures*

Is the equipment UL1741 Listed? Yes: \_\_\_\_\_ No: \_\_\_\_\_

If Yes, attach evidence of UL1741 listing.

Estimated Installation Date: \_\_\_\_\_ Estimated In-Service Date: \_\_\_\_\_

List components of the Interconnection Equipment Package that are certified:

<u>Equipment Type</u>	<u>Certifying Entity</u>
1. _____	_____
2. _____	_____
3. _____	_____

**If required by the Utility, attach a one-line diagram of the Generating Facility.**

Applicant Signature (may be electronic)

I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the terms and conditions for a Level 1 Interconnection Agreement, provided on the following pages.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Operation is contingent on Utility approval to interconnect the Generating Facility.

Utility Signature (may be electronic)

Interconnection of the Generating Facility is approved contingent upon the terms and conditions for a Level 1 Interconnection Agreement, provided on the following pages (“Agreement”).

Utility Signature: \_\_\_\_\_

Title: \_\_\_\_\_ Application ID number: \_\_\_\_\_

Date: \_\_\_\_\_

Utility waives inspection? Yes \_\_\_\_\_ No \_\_\_\_\_

## **Terms and Conditions for a Level 1 Interconnection Agreement**

### **1.0 Construction of the Generating Facility**

After the Utility executes the Interconnection Agreement by signing the Applicant's Level 1 Application, the Applicant may construct the Generating Facility, including interconnected operational testing not to exceed two hours.

### **2.0 Interconnection and Operation**

The Applicant may operate the Generating Facility and interconnect with the Utility's Electric Delivery System once all of the following have occurred:

- 2.1 The Generating Facility has been inspected and approved by the appropriate local electrical wiring inspector with jurisdiction, and the Applicant has sent documentation of the approval to the Utility; and
- 2.2 The Utility has either:
  - 2.2.1 Inspected the Generating Facility and has not found that the Generating Facility fails to comply with a Level 1 technical screen or a UL and IEEE standard; or
  - 2.2.2 Waived its right to inspect the Generating Facility by not scheduling an inspection in the allotted time; or
  - 2.2.3 Explicitly waived the right to inspect the Generating Facility.

### **3.0 Safe Operations and Maintenance**

The Interconnection Customer shall be fully responsible to operate, maintain, and repair the Generating Facility as required to ensure that it complies at all times with IEEE Standard 1547.

### **4.0 Access**

The Utility shall have access to the metering equipment of the Generating Facility at all times. The Utility shall provide reasonable notice to the Interconnection Customer when possible prior to using its right of access.

### **5.0 Disconnection**

The Utility may temporarily disconnect the Generating Facility upon the following conditions:

- 5.1 For scheduled outages upon reasonable notice.
- 5.2 For unscheduled outages or emergency conditions.
- 5.3 If the Generating Facility does not operate in the manner consistent with these terms and conditions of the Agreement.
- 5.4 The Utility shall inform the Interconnection Customer in advance of any

scheduled disconnection, or as is reasonable after an unscheduled disconnection.

#### **6.0 Indemnification**

Each Party shall at all times indemnify, defend, and hold the other Party harmless from any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the indemnified Party's action or inactions of its obligations under this Agreement on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.

#### **7.0 Insurance**

The Interconnection Customer is not required to provide general liability insurance coverage as part of this Agreement, or through any other Utility requirement.

#### **8.0 Limitation of Liability**

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under paragraph 6.0.

#### **9.0 Termination**

9.1 This Agreement may be terminated under the following conditions:

9.1.1 By the Interconnection Customer: By providing written notice to the Utility.

9.1.2 By the Utility: If the Generating Facility fails to operate for any consecutive 12- month period or the Interconnection Customer fails to remedy a violation of these terms and conditions of the Agreement.

9.2 Permanent Disconnection: In the event the Agreement is terminated, the Utility shall have the right to disconnect its facilities or direct the Interconnection Customer to disconnect its Generating Facility.

9.3 Survival Rights: This Agreement shall continue in effect after termination to the extent necessary to allow or require either Party to fulfill rights or obligations that arose under the Agreement.

#### **10.0 Assignment**

For a Generating Facility offsetting part or all of the load of a utility customer at a given site, that customer is the Interconnection Customer and that customer may assign its Interconnection Agreement to a subsequent occupant of the site. For a Generating Facility providing energy

*IREC 2013 Model Interconnection Procedures*

directly to a Utility, the Interconnection Customer is the owner of the Generating Facility and may assign its Interconnection Agreement to a subsequent owner of the Generating Facility. Assignment is only effective after the assignee provides written notice of the assignment to the Utility and agrees to accept the Interconnection Customer's responsibilities under the Interconnection Agreement.

**ATTACHMENT 3:  
Level 2, Level 3 and Level 4 Interconnection Application**

An Application is complete when it provides all applicable information required below and any required Application fee. A one-line diagram and a load flow data sheet must be supplied with this Application. Additional information to evaluate a request for interconnection may be required after an Application is deemed complete.

Applicant requests review under (select one):

\_\_\_\_\_ Level 2    \_\_\_\_\_ Level 3    \_\_\_\_\_ Level 4

Written Applications should be submitted by mail, e-mail or fax to:

Utility: \_\_\_\_\_

Address: \_\_\_\_\_

Fax Number: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

Utility Contact Name: \_\_\_\_\_

Utility Contact Title: \_\_\_\_\_

**1. Applicant Information**

Legal Name of Applicant (if an individual, individual's full name)

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Generating Facility Location (if different from above): \_\_\_\_\_

Telephone (Day): \_\_\_\_\_ (Evening): \_\_\_\_\_

Fax: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

Type of interconnection (choose one):  
\_\_\_\_\_ Net Metering  
\_\_\_\_\_ Load Response (no export)  
\_\_\_\_\_ Wholesale Provider

Utility Account Number (for Generating Facilities at Utility customer locations): \_\_\_\_\_

**2. Generating Facility Specifications**

Prime Mover: Photovoltaic / Turbine/ Fuel Cell / Other (describe): \_\_\_\_\_

Energy Source: Solar / Wind / Hydro / Other (describe): \_\_\_\_\_

Type of Generating Facility: \_\_\_ Inverter \_\_\_ Synchronous \_\_\_ Induction

Generating Facility Nameplate Rating: \_\_\_\_\_(kW) \_\_\_\_\_ (kVA)

Applicant Load: \_\_\_\_\_ kW (if none, so state)

Typical Reactive Load (if known): \_\_\_\_\_

Maximum Physical Export Capability Requested: \_\_\_\_\_ kW

List components of the Interconnection Equipment Package that are UL or IEEE certified:

Equipment Type	Certifying Entity
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____

Is the prime mover compatible with the Interconnection Equipment Package? \_\_\_ Yes \_\_\_ No

Individual generator data (attach additional sheets if needed)

Manufacturer, Model Name & Number: \_\_\_\_\_

Version Number: \_\_\_\_\_

Nameplate Output Power Rating in kW: (Summer) \_\_\_\_\_ (Winter) \_\_\_\_\_

Nameplate Output Power Rating in kVA: (Summer) \_\_\_\_\_ (Winter) \_\_\_\_\_

Rated Power Factor: (Leading) \_\_\_\_\_ (Lagging) \_\_\_\_\_

Total Number of generators to be interconnected pursuant to this Application: \_\_\_\_\_

Elevation: \_\_\_\_\_

Single phase: \_\_\_ Three phase: \_\_\_ (check one)

List of adjustable set points for the protective equipment or software: \_\_\_\_\_

Inverter-based Generating Facilities

Inverter Manufacturer, Model Name & Number: \_\_\_\_\_

Max design fault contribution current (choose one): Instantaneous \_\_\_\_\_ RMS \_\_\_\_\_



*IREC 2013 Model Interconnection Procedures*

Harmonics Characteristics: \_\_\_\_\_

Start-up requirements: \_\_\_\_\_

Rotating Machines (of any type)

RPM Frequency: \_\_\_\_\_

Neutral Grounding Resistor (If Applicable): \_\_\_\_\_

Synchronous Generators

Direct Axis Synchronous Reactance,  $X_d$ : \_\_\_\_\_ P.U.

Direct Axis Transient Reactance,  $X'_d$ : \_\_\_\_\_ P.U.

Direct Axis Subtransient Reactance,  $X''_d$ : \_\_\_\_\_ P.U.

Negative Sequence Reactance,  $X_2$ : \_\_\_\_\_ P.U.

Zero Sequence Reactance,  $X_0$ : \_\_\_\_\_ P.U.

KVA Base: \_\_\_\_\_

Field Volts: \_\_\_\_\_

Field Amperes: \_\_\_\_\_

For synchronous generators, provide appropriate IEEE model block diagram of excitation system, governor system and power system stabilizer (PSS) in accordance with the regional reliability council criteria. A PSS may be determined to be required by applicable studies. A copy of the manufacturer's block diagram may not be substituted.

Induction Generators

Motoring Power (kW): \_\_\_\_\_

$I^2t$  or K (Heating Time Constant): \_\_\_\_\_

Rotor Resistance,  $R_r$ : \_\_\_\_\_ Rotor Reactance,  $X_r$ : \_\_\_\_\_

Stator Resistance,  $R_s$ : \_\_\_\_\_ Stator Reactance,  $X_s$ : \_\_\_\_\_

Magnetizing Reactance,  $X_m$ : \_\_\_\_\_

Short Circuit Reactance,  $X_d$ : \_\_\_\_\_

Exciting Current: \_\_\_\_\_

Temperature Rise: \_\_\_\_\_

Frame Size: \_\_\_\_\_

Design Letter: \_\_\_\_\_

IREC 2013 Model Interconnection Procedures

Reactive Power Required In Vars (No Load): \_\_\_\_\_

Reactive Power Required In Vars (Full Load): \_\_\_\_\_

Total Rotating Inertia, H: \_\_\_\_\_ Per Unit on kVA Base

**3. Transformer and Protective Relay Specifications**

Will a transformer be used between the generator and the Point of Common Coupling?

\_\_\_\_\_ Yes \_\_\_\_\_ No

Will the transformer be provided by the Interconnection Customer? \_\_\_\_\_ Yes \_\_\_\_\_ No

Transformer Data: (if applicable, for Interconnection Customer-Owned Transformer)

Is the transformer: \_\_\_\_\_ single phase \_\_\_\_\_ three phase (check one) Size: \_\_\_\_\_ kVA

Transformer Impedance: \_\_\_\_\_ percent on \_\_\_\_\_ kVA Base

If Three Phase:

Transformer Primary: \_\_\_\_\_ Volts \_\_\_\_\_ Delta \_\_\_\_\_ Wye \_\_\_\_\_ Wye Grounded

Transformer Secondary: \_\_\_\_\_ Volts \_\_\_\_\_ Delta \_\_\_\_\_ Wye \_\_\_\_\_ Wye Grounded

Transformer Tertiary: \_\_\_\_\_ Volts \_\_\_\_\_ Delta \_\_\_\_\_ Wye \_\_\_\_\_ Wye Grounded

Transformer Fuse Data: (if applicable, for Interconnection Customer-Owned Fuse)

(Attach copy of fuse manufacturer’s Minimum Melt and Total Clearing Time-Current Curves)

Manufacturer: \_\_\_\_\_ Type: \_\_\_\_\_ Size: \_\_\_\_\_ Speed: \_\_\_\_\_

Interconnecting Circuit Breaker: (if applicable)

Manufacturer: \_\_\_\_\_ Type: \_\_\_\_\_

Load Rating (Amps): \_\_\_\_\_ Interrupting Rating (Amps): \_\_\_\_\_ Trip Speed (Cycles): \_\_\_\_\_

Interconnection Protective Relays: (if applicable)

If Microprocessor-Controlled:

List of Functions and Adjustable Setpoints for the protective equipment or software:

Setpoint Function	Minimum	Maximum
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____

Discrete Components: (if applicable)

*IREC 2013 Model Interconnection Procedures*

(Enclose Copy of any Proposed Time-Overcurrent Coordination Curves)

Manufacturer: \_\_\_\_\_ Type: \_\_\_\_\_ Style/Catalog No.: \_\_\_\_\_

Proposed Setting: \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Type: \_\_\_\_\_ Style/Catalog No.: \_\_\_\_\_

Proposed Setting: \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Type: \_\_\_\_\_ Style/Catalog No.: \_\_\_\_\_

Proposed Setting: \_\_\_\_\_

Current Transformer Data: (if applicable)

(Enclose Copy of Manufacturer's Excitation and Ratio Correction Curves)

Manufacturer: \_\_\_\_\_

Type: \_\_\_\_\_ Accuracy Class: \_\_\_\_\_ Proposed Ratio Connection: \_\_\_\_\_

Potential Transformer Data: (if applicable)

Manufacturer: \_\_\_\_\_

Type: \_\_\_\_\_ Accuracy Class: \_\_\_\_\_ Proposed Ratio Connection: \_\_\_\_\_

**4. General Information**

Enclose copy of site electrical one-line diagram showing the configuration of all Generating Facility equipment, current and potential circuits, and protection and control schemes. This one-line diagram must be signed and stamped by a licensed Professional Engineer if the Generating Facility is larger than 200 kW.

Is one-line diagram enclosed? \_\_\_\_\_ Yes \_\_\_\_\_ No

Enclose copy of any site documentation that indicates the precise physical location of the proposed Generating Facility and all protective equipment (e.g., USGS topographic map or other diagram or documentation).

Is site documentation enclosed? \_\_\_\_\_ Yes \_\_\_\_\_ No

Enclose copy of any site documentation that describes and details the operation of the protection and control schemes.

Is available documentation enclosed? \_\_\_\_\_ Yes \_\_\_\_\_ No

Enclose copies of schematic drawings for all protection and control circuits, relay current circuits, relay potential circuits, and alarm/monitoring circuits (if applicable).

Are schematic drawings enclosed? \_\_\_\_\_ Yes \_\_\_\_\_ No

**5. Applicant Signature** (may be electronic)

I hereby certify that, to the best of my knowledge, all the information provided in this Interconnection Application is true and correct. I also agree to install a warning label provided by (utility) on or near my service meter location. Generating Facilities must be compliant with IEEE, NEC, ANSI, and UL standards, where applicable. By signing below, the Applicant also certifies that the installed generating equipment meets the appropriate preceding requirement(s) and can supply documentation that confirms compliance.

Signature of Applicant: \_\_\_\_\_

Date: \_\_\_\_\_

**6. Information Required Prior to Physical Interconnection**

A Certificate of Completion in the form of [Attachment 5](#) of the Interconnection Procedures must be provided to the Utility prior to interconnected operation. The Certificate of Completion must either be signed by an electrical inspector with the authority to approve the interconnection or be accompanied by the electrical inspector's own form authorizing interconnection of the Generating Facility.

**ATTACHMENT 4:**  
**Level 2, 3 and 4 Interconnection Agreement**  
*(Standard Agreement for interconnection of Generating Facilities)*

This agreement (“Agreement”) is made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ (“Effective Date”) by and between \_\_\_\_\_, a \_\_\_\_\_ organized and existing under the laws of the State of \_\_\_\_\_, (“Interconnection Customer”) and \_\_\_\_\_, a \_\_\_\_\_, existing under the laws of the State of \_\_\_\_\_, (“Utility”). Interconnection Customer and Utility each may be referred to as a “Party,” or collectively as the “Parties.”

**Recitals:**

**Whereas**, Interconnection Customer, as an Applicant, is proposing to develop a Generating Facility, or generating capacity addition to an existing Generating Facility, consistent with the Application completed by Interconnection Customer on \_\_\_\_\_; and

**Whereas**, Interconnection Customer desires to interconnect the Generating Facility with the Utility’s Electric Delivery System;

**Now, therefore**, in consideration of and subject to the mutual covenants contained herein, the Parties agree as follows:

**Article 1. Scope and Limitations of Agreement**

- 1.1 This Agreement shall be used for all approved Level 2, Level 3, and Level 4 Interconnection Applications according to the procedures set forth in the Interconnection Procedures. Capitalized terms in this Agreement if not defined in the Agreement have the meanings set forth in the Interconnection Procedures.
- 1.2 This Agreement governs the terms and conditions under which the Generating Facility will interconnect to, and operate in parallel with, the Utility’s Electric Delivery System.
- 1.3 This Agreement does not constitute an agreement to purchase or deliver the Interconnection Customer’s power.
- 1.4 Nothing in this Agreement is intended to affect any other agreement between Utility and Interconnection Customer. However, in the event that the provisions of this Agreement are in conflict with the provisions of a Utility tariff, the Utility tariff shall control.
- 1.5 Responsibilities of the Parties
  - 1.5.1 The Parties shall perform all obligations of this Agreement in accordance

with all applicable laws and regulations, and operating requirements.

- 1.5.2 The Interconnection Customer shall arrange for the construction, interconnection, operation and maintenance of the Generating Facility in accordance with the applicable manufacturer's recommended maintenance schedule, in accordance with this Agreement.
- 1.5.3 The Utility shall construct, own, operate, and maintain its Electric Delivery System and its facilities for interconnection ("Interconnection Facilities") in accordance with this Agreement.
- 1.5.4 The Interconnection Customer agrees to arrange for the construction of the Generating Facility or systems in accordance with applicable specifications that meet or exceed the National Electrical Code, the American National Standards Institute, IEEE, Underwriters Laboratories, and any operating requirements.
- 1.5.5 Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for the facilities that it now or subsequently may own unless otherwise specified in the Exhibits to this Agreement and shall do so in a manner so as to reasonably minimize the likelihood of a disturbance adversely affecting or impairing the other Party.
- 1.5.6 Each Party shall be responsible for the safe installation, maintenance, repair and condition of their respective lines and appurtenances on their respective sides of the Point of Common Coupling.

**Article 2. Inspection, Testing, Authorization, and Right of Access**

- 2.1 **Equipment Testing and Inspection**  
The Interconnection Customer shall arrange for the testing and inspection of the Generating Facility prior to interconnection in accordance with IEEE Standard 1547 and the Interconnection Procedures.
- 2.2 **Certificate of Completion**  
Prior to commencing parallel operation, the Interconnection Customer shall provide the Utility with a Certificate of Completion substantially in the form of [Attachment 5](#) of the Interconnection Procedures. The Certificate of Completion must either be signed by an electrical inspector with the authority to approve the interconnection or be accompanied by the electrical inspector's own form authorizing interconnection of the Generating Facility.
- 2.3 **Authorization**  
The Interconnection Customer is authorized to commence parallel operation of the Generating Facility when there are no contingencies noted in this Agreement remaining.

2.4 Parallel Operation Obligations

The Interconnection Customer shall abide by all permissible written rules and procedures developed by the Utility which pertain to the parallel operation of the Generating Facility. In the event of conflicting provisions, the Interconnection Procedures shall take precedence over a Utility's rule or procedure, unless such Utility rule or procedure is contained in an approved tariff, in which case the provisions of the tariff shall apply. Copies of the Utility's rules and procedures for parallel operation are either provided as an exhibit to this Agreement or in an exhibit that provides reference to a website with such material.

2.5 Reactive Power

The Interconnection Customer shall design its Generating Facility to maintain a composite power delivery at continuous rated power output at the Point of Common Coupling at a power factor within the range of 0.95 leading to 0.95 lagging.

2.6 Right of Access

At reasonable hours, and upon reasonable notice, or at any time without notice in the event of an emergency or hazardous condition, the Utility shall have reasonable access to the Interconnection Customer's premises for any reasonable purpose in connection with the performance of the obligations imposed on the Utility under this Agreement, or as is necessary to meet a legal obligation to provide service to customers.

**Article 3. Effective Date, Term, Termination, and Disconnection**

3.1 Effective Date

This Agreement shall become effective upon execution by the Parties.

3.2 Term of Agreement

This Agreement shall remain in effect unless terminated earlier in accordance with Article 3.3 of this Agreement.

3.3 Termination

No termination shall become effective until the Parties have complied with all applicable laws and regulations applicable to such termination.

3.3.1 The Interconnection Customer may terminate this Agreement at any time by giving the Utility twenty (20) Business Days' written notice.

3.3.2 Either Party may terminate this Agreement pursuant to Article 6.6.

3.3.3 Upon termination of this Agreement, the Generating Facility will be disconnected from the Electric Delivery 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.

3.3.4 The provisions of this Article shall survive termination or expiration of this Agreement.

3.4 Temporary Disconnection

The Utility may temporarily disconnect the Generating Facility from the Electric Delivery System for so long as reasonably necessary in the event one or more of the following conditions or events:

3.4.1 Emergency Conditions: “Emergency Condition” shall mean a condition or situation:

- (1) that in the judgment of the Party making the claim is imminently likely to endanger life or property; or
- (2) that, in the case of Utility, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of the Utility’s Interconnection Facilities or damage to the Electric Delivery System; or
- (3) that, in the case of the Interconnection Customer, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Generating Facility.

Under emergency conditions, the Utility or the Interconnection Customer may immediately suspend interconnection service and temporarily disconnect the Generating Facility. The Utility shall notify the Interconnection Customer promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Interconnection Customer’s operation of the Generating Facility. The Interconnection Customer shall notify the Utility promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Utility’s Electric Delivery System. To the extent information is known, the notification shall describe the Emergency Condition, the extent of the damage or deficiency, the expected effect on the operation of both Parties’ facilities and operations, its anticipated duration, and any necessary corrective action.

3.4.2 Routine Maintenance, Construction, and Repair: The Utility may interrupt interconnection service or curtail the output of the Generating Facility and temporarily disconnect the Generating Facility from the Electric Delivery System when necessary for routine maintenance, construction, and repairs on the Electric Delivery System. The Utility shall provide the Interconnection Customer with five (5) Business Days notice prior to such interruption. The Utility shall use reasonable efforts to coordinate such repair or temporary disconnection with the Interconnection Customer.



- 3.4.3 Forced Outages: During any forced outage, the Utility may suspend interconnection service to effect immediate repairs on the Electric Delivery System. The Utility shall use reasonable efforts to provide the Interconnection Customer with prior notice. If prior notice is not given, the Utility shall, upon request, provide the Interconnection Customer written documentation after the fact explaining the circumstances of the disconnection.
- 3.4.4 Adverse Operating Effects: The Utility shall provide the Interconnection Customer with a written notice of its intention to disconnect the Generating Facility if, based on good utility practice, the Utility determines that operation of the Generating Facility will likely cause unreasonable disruption or deterioration of service to other Utility customers served from the same electric system, or if operating the Generating Facility could cause damage to the Electric Delivery System. Supporting documentation used to reach the decision to disconnect shall be provided to the Interconnection Customer upon request. The Utility may disconnect the Generating Facility if, after receipt of the notice, the Interconnection Customer fails to remedy the adverse operating effect within a reasonable time which shall be at least five (5) Business Days from the date the Interconnection Customer receives the Utility's written notice supporting the decision to disconnect, unless emergency conditions exist in which case the provisions of Article 3.4.1 apply.
- 3.4.5 Modification of the Generating Facility: The Interconnection Customer must receive written authorization from Utility before making any change to the Generating Facility that may have a material impact on the safety or reliability of the Electric Delivery System. Such authorization shall not be unreasonably withheld. Modifications shall be completed in accordance with good utility practice. If the Interconnection Customer makes such modification without the Utility's prior written authorization, the latter shall have the right to temporarily disconnect the Generating Facility.
- 3.4.6 Reconnection: The Parties shall cooperate with each other to restore the Generating Facility, Interconnection Facilities, and the Electric Delivery System to their normal operating state as soon as reasonably practicable following a temporary disconnection.

**Article 4. Cost Responsibility for Interconnection Facilities and Distribution upgrades**

4.1 Interconnection Facilities

- 4.1.1 The Interconnection Customer shall pay for the cost of the interconnection facilities itemized in the Exhibits to this Agreement ("Interconnection Facilities"). If a Facilities Study was performed, the Utility shall identify

its Interconnection Facilities necessary to safely interconnect the Generating Facility with the Electric Delivery System, the cost of those facilities, and the time required to build and install those facilities.

4.1.2 The Interconnection Customer shall be responsible for its share of all reasonable expenses, including overheads, associated with (1) owning, operating, maintaining, repairing, and replacing its Interconnection Equipment Package, and (2) operating, maintaining, repairing, and replacing the Utility's Interconnection Facilities as set forth in any exhibits to this Agreement.

4.2 Distribution Upgrades

The Utility shall design, procure, construct, install, and own any Electric Delivery System upgrades ("Utility Upgrades"). The actual cost of the Utility Upgrades, including overheads, shall be directly assigned to the Interconnection Customer.

**Article 5. Billing, Payment, Milestones, and Financial Security**

5.1 Billing and Payment Procedures and Final Accounting

5.1.1 The Utility shall bill the Interconnection Customer for the design, engineering, construction, and procurement costs of the Utility provided Interconnection Facilities and Utility Upgrades contemplated by this Agreement as set forth in the exhibits to this Agreement, on a monthly basis, or as otherwise agreed by the Parties. The Interconnection Customer shall pay each bill within thirty (30) calendar days of receipt, or as otherwise agreed by the Parties.

5.1.2 Within sixty (60) Calendar Days of completing the construction and installation of the Utility's Interconnection Facilities and Utility Upgrades described in the exhibits to this Agreement, the Utility shall provide the Interconnection Customer with a final accounting report of any difference between (1) the actual cost incurred to complete the construction and installation and the budget estimate provided to the Interconnection Customer and (2) the Interconnection Customer's previous deposit and aggregate payments to the Utility for such Interconnection Facilities and Utility Upgrades. The Utility shall provide a written explanation for any actual cost exceeding a budget estimate by 25 percent or more. If the Interconnection Customer's cost responsibility exceeds its previous deposit and aggregate payments, the Utility shall invoice the Interconnection Customer for the amount due and the Interconnection Customer shall make payment to the Utility within thirty calendar days. If the Interconnection Customer's previous deposit and aggregate payments exceed its cost responsibility under this Agreement, the Utility shall refund to the Interconnection Customer an amount equal to the difference

within thirty (30) Business Days of the final accounting report.

5.2 Interconnection Customer Deposit

At least twenty (20) Business Days prior to the commencement of the design, procurement, installation, or construction of a discrete portion of the Utility's Interconnection Facilities and Utility Upgrades, the Interconnection Customer shall provide the Utility with a deposit equal to 50 percent of the cost estimated for its Interconnection Facilities prior to its beginning design of such facilities.

**Article 6. Assignment, Liability, Indemnity, Force Majeure, Consequential Damages, and Default**

6.1 Assignment

This Agreement may be assigned by either Party as provided below upon fifteen (15) Business Days' prior written notice to the other Party.

6.1.1 Either Party may assign this Agreement without the consent of the other Party to any affiliate of the assigning Party and with the legal authority and operational ability to satisfy the obligations of the assigning Party under this Agreement.

6.1.2 The Interconnection Customer shall have the right to assign this Agreement, without the consent of the Utility, for collateral security purposes to aid in providing financing for the Generating Facility.

6.1.3 For a Generating Facility offsetting part or all of the load of a utility customer at a given site, that customer is the Interconnection Customer and that customer may assign its Interconnection Agreement to a subsequent occupant of the site. For a Generating Facility providing energy directly to a Utility, the Interconnection Customer is the owner of the Generating Facility and may assign its Interconnection Agreement to a subsequent owner of the Generating Facility. Assignment is only effective after the assignee provides written notice of the assignment to the Utility and agrees to accept the Interconnection Customer's responsibilities under this Interconnection Agreement.

6.1.4 All other assignments shall require the prior written consent of the non-assigning Party, such consent not to be unreasonably withheld.

6.1.5 Any attempted assignment that violates this Article is void and ineffective. Assignment shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof. An assignee is responsible for meeting the same obligations as the Interconnection Customer.

6.2 Limitation of Liability

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, consequential, or punitive damages, except as specifically authorized by this Agreement.

6.3 Indemnity

6.3.1 This provision protects each Party from liability incurred to third Parties as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in Article 6.2.

6.3.2 Each Party shall at all times indemnify, defend, and hold the other Party harmless from any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the indemnified Party's action or failure to meet its obligations under this Agreement on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.

6.3.3 If an indemnified Party is entitled to indemnification under this Article as a result of a claim by a third party, the indemnifying Party shall, after reasonable notice from the indemnified Party, assume the defence of such claim. If the indemnifying Party fails, after notice and reasonable opportunity to proceed under this Article, to assume the defense of such claim, the indemnified Party may at the expense of the indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.

6.3.4 If the indemnifying Party is obligated to indemnify and hold the indemnified Party harmless under this Article, the amount owing to the indemnified Party shall be the amount of such indemnified Party's actual loss, net of any insurance or other recovery.

6.3.5 Promptly after receipt of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in this Article may apply, the indemnified Party shall notify the indemnifying Party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying Party.

6.4 Consequential Damages

Neither Party shall be liable under any provision of this Agreement for any losses, damages, costs or expenses for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services, whether based in whole or in part in contract, in tort, including negligence, strict liability, or any other theory of liability; provided, however, that damages for which a Party may be liable to the other Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.

6.5 Force Majeure

6.5.1 As used in this Article, a Force Majeure Event shall mean any act of God, labor disturbance, act of the public enemy, war, acts of terrorism, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A Force Majeure Event does not include an act of negligence or intentional wrongdoing.

6.5.2 If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the Force Majeure Event ("Affected Party") shall promptly notify the other Party of the existence of the Force Majeure Event. The notification must 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, and if the initial notification was verbal, it should be promptly followed up with a written notification. The Affected Party shall keep the other Party informed on a continuing basis of developments relating to the Force Majeure Event until the event ends. The Affected Party will be entitled to suspend or modify its performance of obligations under this Agreement (other than the obligation to make payments) only to the extent that the effect of the Force Majeure Event cannot be reasonably mitigated by the Affected Party. The Affected Party shall use reasonable efforts to resume its performance as soon as possible.

6.6 Default

6.6.1 Default exists where a Party has materially breached any provision of this Agreement, except that no default shall exist where a failure to discharge an obligation (other than the payment of money) is the result of a Force Majeure Event as defined in this Agreement, or the result of an act or omission of the other Party.

6.6.2 Upon a default, the non-defaulting Party shall give written notice of such

default to the defaulting Party. Except as provided in Article 6.6.3, the defaulting Party shall have 60 calendar days from receipt of the default notice within which to cure such default; provided however, if such default is not capable of cure within 60 calendar days, the defaulting Party shall commence efforts to cure within 20 calendar days after notice and continuously and diligently pursue such cure within six months from receipt of the default notice; and, if cured within such time, the default specified in such notice shall cease to exist.

- 6.6.3 If a default is not cured as provided in this Article, or if a default is not capable of being cured within the period provided for herein, the non-defaulting Party shall have the right to terminate this Agreement by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due hereunder, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this Article will survive termination of this Agreement.

#### **Article 7. Insurance**

The Interconnection Customer is not required to provide insurance coverage for utility damages beyond the amounts listed in [Section IV.D.6](#) of the Interconnection Procedures as part of this Agreement, nor is the Interconnection Customer required to carry general liability insurance as part of this Agreement or any other Utility requirement. It is, however, recommended that the Interconnection Customer protect itself with liability insurance.

#### **Article 8. Dispute Resolution**

Any dispute arising from or under the terms of this Agreement shall be subject to the dispute resolution procedures contained in the Interconnection Procedures.

#### **Article 9. Miscellaneous**

- 9.1 **Governing Law, Regulatory Authority, and Rules**  
The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of \_\_\_\_\_, without regard to its conflicts of law principles (*if left blank, such state shall be the state in which the Generating Facility is located*). This Agreement is subject to all applicable laws and regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a governmental authority.

- 9.2 **Amendment**  
The Parties may only amend this Agreement by a written instrument duly executed by both Parties.
- 9.3 **No Third-Party Beneficiaries**  
This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest, and, where permitted, their assigns.
- 9.4 **Waiver**
- 9.4.1 The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.
- 9.4.2 Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any failure to comply with any other obligation, right, or duty of this Agreement. Termination or default of this Agreement for any reason by the Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Utility. Any waiver of this Agreement shall, if requested, be provided in writing.
- 9.5 **Entire Agreement**  
This Agreement, including all exhibits, constitutes the entire Agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.
- 9.6 **Multiple Counterparts**  
This Agreement may be executed in two or more counterparts, each of which is deemed an original but all of which constitute one and the same Agreement.
- 9.7 **No Partnership**  
This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties nor to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative

of, or to otherwise bind, the other Party.

9.8 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 or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore, insofar as practicable, the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

9.9 Environmental Releases

Each Party shall notify the other Party, first orally and then in writing, of the release any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Generating Facility or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than 24 hours after such Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any governmental authorities addressing such events.

9.10 Subcontractors

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain liable for the performance of such subcontractor.

9.10.1 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall Utility be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having Application to, any subcontractor of such Party.

9.10.2 The obligations under this Article will not be limited in any way by any limitation of subcontractor's insurance.

**Article 10. Notices**



10.1 General

Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement (“Notice”) shall be deemed properly given if delivered in person, delivered by recognized national carrier service, or sent by first class mail, postage prepaid, to the person specified below:

Interconnection Customer:

\_\_\_\_\_

Attention: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

Utility:

Attention: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

10.2 Billing and Payment

Billings and payments to Interconnection Customer shall be sent to the address provided in Section 10.1 unless an alternative address is provided here:

Interconnection Customer:

\_\_\_\_\_

Attention: \_\_\_\_\_

Address: \_\_\_\_\_

*IREC 2013 Model Interconnection Procedures*

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

**10.3 Designated Operating Representative**

The Parties may also designate operating representatives to conduct the communications which may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party's facilities.

Interconnection Customer's operating representative:

\_\_\_\_\_

Attention: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

Utility's operating representative:

Attention: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

**Article 11. Signatures**

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

For the Utility:

*IREC 2013 Model Interconnection Procedures*

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

For the Interconnection Customer:

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Exhibits incorporated in this Agreement: [*which may include:*

*a) one-line diagram and site maps*

*b) Interconnection Facilities to be constructed by the Utility. The interconnection facilities exhibit shall include any milestones for both the Interconnection Customer and the Utility as well as cost responsibility and apportionments if there is more than one Generating Facility interconnecting and sharing in the Distribution Upgrade costs;*

*c) operational requirements or reference to Utility website with these requirements – this exhibit shall require the Interconnection Customer to operate within the bounds of IEEE Standard 1547 and associated standards;*

*d) reimbursement of costs (Utility may, in its sole discretion, reimburse Interconnection Customer for Utility Upgrades that benefit future Generating Facilities);*

*e) operating restrictions (no operating restrictions apply to Levels 1, 2 or 3 interconnections but may apply, in the discretion of the Utility, to Generating Facilities approved under Level 4);*

*f) copies of, Impact and Facilities Study agreements.]*

**ATTACHMENT 5:  
Certificate of Completion**

**Installation Information**

Check if owner-installed

Applicant: \_\_\_\_\_ Contact Person: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
Location of Generating Facility (if different from above): \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
Telephone (Daytime): \_\_\_\_\_ (Evening): \_\_\_\_\_  
Facsimile Number: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

**Electrician:**

Installing Electrician: \_\_\_\_\_ Firm: \_\_\_\_\_  
License No.: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
Telephone (Daytime): \_\_\_\_\_ (Evening): \_\_\_\_\_  
Facsimile Number: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

Installation Date: \_\_\_\_\_ Interconnection Date: \_\_\_\_\_

**Electrical Inspection:**

The system has been installed and inspected in compliance with the local Building/Electrical Code of \_\_\_\_\_ (appropriate governmental authority).

Local Electrical Wiring Inspector (*or attach signed electrical inspector's form*):

Signature: \_\_\_\_\_  
Name (printed): \_\_\_\_\_ Date: \_\_\_\_\_

*The electrical inspector's form may be used in place of this form, so long as it contains substantively the same information and approval.*

**ATTACHMENT 6:  
Impact and Facilities Study Agreements**

As noted in the Interconnection Procedures, a Utility may require that a proposed Level 4 Generating Facility be subject to Impact and Facilities Studies. At the Utility's discretion, any of these studies may be combined or foregone. Also at the Utility's discretion, for any study, the Applicant may be required to provide information beyond the contents of the Application. Sample study agreements are provided on the following pages.

## Interconnection System Impact Study Agreement

This agreement (“Agreement”) is made and entered into this \_\_\_\_\_ day of \_\_\_\_\_ by and between \_\_\_\_\_, a \_\_\_\_\_ organized and existing under the laws of the State of \_\_\_\_\_, (“Applicant,”) and \_\_\_\_\_, a \_\_\_\_\_ existing under the laws of the State of \_\_\_\_\_, (“Utility”). The Applicant and the Utility each may be referred to as a “Party,” or collectively as the “Parties.”

### Recitals:

**Whereas**, Applicant is proposing to develop a Generating Facility or Generating Capacity addition to an existing Generating Facility consistent with the Application completed by Applicant on and;

**Whereas**, Applicant desires to interconnect the Generating Facility with the Utility’s Electric Delivery System;

**Whereas**, Applicant has requested the Utility to perform an Impact Study to assess the impact of interconnecting the Generating Facility to the Utility’s Electric Delivery System;

**Now, therefore**, in consideration of and subject to the mutual covenants contained herein the Parties agree as follows:

1. When used in this Agreement, Capitalized terms shall have the meanings indicated. Capitalized terms not defined in this Agreement shall have the meanings specified in the Interconnection Procedures.
2. Applicant elects and the Utility shall cause to be performed an Impact Study consistent with [Section III.F](#) of the Interconnection Procedures.
3. The scope of the Impact Study shall be based on information supplied in the Application, any prior study of the Generating Facility completed by the Utility, and any other information or assumptions set forth in any attachment to this Agreement.
4. The Utility reserves the right to request additional technical information from Applicant as may reasonably become necessary consistent with good utility practice during the course of the Impact Study. If after signing this Agreement, Applicant modifies its Application or any of the information or assumptions in any attachment to this Agreement, the time to complete the Impact Study may be extended.
5. The Impact Study shall provide the following information:
  - 5.1. Identification of any circuit breaker short circuit capability limits exceeded as a result of the interconnection,
  - 5.2. Identification of any thermal overload or voltage limit violations resulting from the interconnection,
  - 5.3. Identification of any instability or inadequately damped response to system disturbances resulting from the interconnection and
  - 5.4. Description and non-binding, good faith estimated cost of facilities required to interconnect the Generating Facility to the Electric Delivery System and to address the identified short circuit, instability, and power flow issues.
6. The Utility may require a study deposit of the lesser of 50 percent of estimated non-

*IREC 2013 Model Interconnection Procedures*

- binding good faith study costs or \$3,000.
7. The Impact Study shall be completed and the results transmitted to Applicant within forty (40) Business Days after this Agreement is signed by the Parties, unless the proposed Generating Facility will impact other proposed generating facilities.
  8. Study fees shall be based on actual costs and will be invoiced to Applicant after the study is transmitted to Applicant. The invoice shall include an itemized listing of employee time and costs expended on the study.
  9. Applicant shall pay any actual study costs that exceed the deposit without interest within thirty (30) calendar days on receipt of the invoice. The Utility shall refund any excess amount without interest within thirty calendar days of the invoice.

In witness thereof, the Parties have caused this agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

For the Utility

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

For the Applicant

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Are attachments included to supplement or modify information contained in the Application?

\_\_\_\_\_ Yes      \_\_\_\_\_ No

### Interconnection Facilities Study Agreement

This agreement (“Agreement”) is made and entered into this \_\_\_\_\_ day of \_\_\_\_\_ by and between \_\_\_\_\_, a \_\_\_\_\_ organized and existing under the laws of the State of \_\_\_\_\_, (“Applicant,”) and \_\_\_\_\_, a \_\_\_\_\_ existing under the laws of the State of \_\_\_\_\_, (“Utility”). The Applicant and the Utility each may be referred to as a “Party, ” or collectively as the “Parties.”

**Recitals:**

**Whereas**, Applicant is proposing to develop a Generating Facility or generating capacity addition to an existing Generating Facility consistent with the Application completed by Applicant on; and

**Whereas**, Applicant desires to interconnect the Generating Facility with the Utility’s Electric Delivery System;

**Whereas**, the Utility has completed or waived an Impact Study and provided the results of said studies to Applicant; and

**Whereas**, Applicant has requested that Utility perform a Facilities Study to specify and estimate the cost of the engineering, procurement and construction work needed to physically and electrically connect the Generating Facility to the Electric Delivery System in accordance with good utility practice.

**Now, therefore**, in consideration of and subject to the mutual covenants contained herein the Parties agree as follows:

1. When used in this agreement, capitalized terms shall have the meanings indicated. Capitalized terms not defined in this agreement shall have the meanings specified in the Interconnection Procedures.
2. Applicant elects and the Utility shall cause to be performed a Facilities Study consistent with [Section III.F](#) of the Interconnection Procedures.
3. The scope of the Facilities Study shall be subject to information supplied in the Application, and any feasibility study or Impact Study performed by the Utility for the Generating Facility and any other information or assumptions set forth in any attachment to this agreement.
4. The Utility reserves the right to request additional technical information from Applicant as may reasonably become necessary consistent with good utility practice during the course of the Facilities Study.
5. A Facilities Study report (1) shall provide a description, estimated cost, and schedule for required facilities to interconnect the Generating Facility to the Electric Delivery System and (2) shall address the short circuit, instability, and power flow issues identified in the Impact Study.
6. The Utility may require a study deposit of the lesser of 50 percent of estimated non-binding good faith study costs or \$10,000.
7. The Facilities Study shall be completed and the results shall be transmitted to Applicant within sixty (60) Business Days after this agreement is signed by the Parties, unless the proposed Generating Facility will impact other proposed generating facilities.
8. Study fees shall be based on actual costs and will be invoiced to Applicant after the study



*IREC 2013 Model Interconnection Procedures*

is transmitted to Applicant. The invoice shall include an itemized listing of employee time and costs expended on the study.

9. Applicant shall pay any actual study costs that exceed the deposit without interest within thirty (30) calendar days on receipt of the invoice. The Utility shall refund any excess amount without interest within thirty (30) calendar days of the invoice.

In witness whereof, the Parties have caused this agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

For the Utility

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

For the Applicant

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Are attachments included to supplement or modify information contained in the Application and the Impact Study (if performed)?

\_\_\_\_\_ Yes      \_\_\_\_\_ No