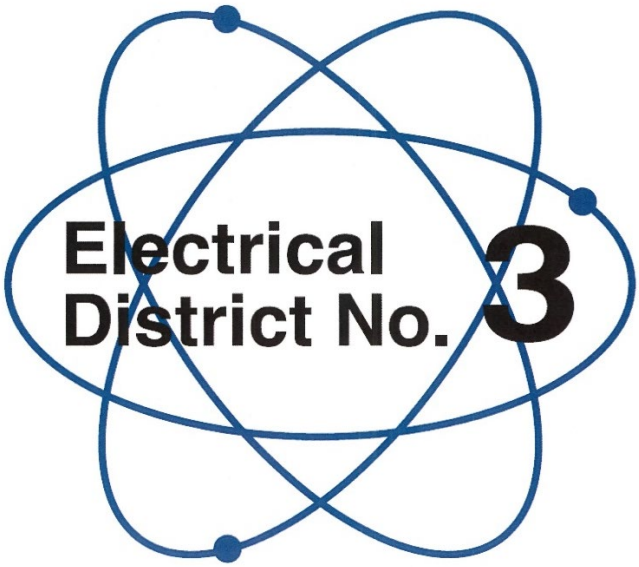

POL-ED3-004

Small Generator Interconnection Policy & Procedures

(Web Edition)

Electrical District No. 3 of Pinal County
Engineering & Operations Department
41630 W. Louis Johnson Drive
Maricopa, AZ 85138

Revision 0a
Effective Date: 11/15/2021
Review Level: 2

Electrical District No. 3 of Pinal County, Arizona Policy Approval		
The signature of the General Manager authorizes the use of this policy in all ED3 operations.		
Reviewed By:		
		Date
Reviewed By:		
		Date
Approved By:		
		Date

SIGNATURES ON FILE

Revision History

Revision	Date	Description	Approved
0	06/23/2021	Original Document	Yes
0a	11/15/2021	Changed the order of the Interconnection Request paragraphs to clarify the information requested.	Yes

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1.0 Purpose

To develop and standardize the process for interconnecting Distributed Generation (DG) sources with the ED3 Distribution System. The purpose of these policies and procedures is to assure safe operation of the ED3 Distribution System under any approved interconnection scenario.

2.0 Applicability

This policy applies to all Small Generator Interconnections, which are defined as involving an aggregate generator capacity of less than 20MW. DG interconnections involving an aggregate capacity of 20MW or more are classified as Large Generators and are covered in POL-ED3-003, *Large Generator Interconnection Policy & Procedures*.

3.0 Process Overview

1. Interconnector Submits Interconnection Request and the appropriate Application Fee.
2. ED3 reviews Request and either accepts it as complete or notifies the Interconnector that it is incomplete and needs revision.
3. Depending on the proposed GF specifications, the Fast-Track Process may be utilized. If this option is used, a simplified set of screening criteria are utilized to approve or deny interconnection. If approved, ED3 shall provide an Interconnection Agreement. If the proposed GF does not meet the screening criteria, even after supplemental review, the regular Study Process shall be utilized.
4. A Scoping Meeting is held to discuss the Interconnection Request, and review whether ED3 should perform a Feasibility Study or proceed directly to System Impact Studies, a Facility Study, or an Interconnection Agreement.
5. If the Interconnector requests a Feasibility Study, ED3 shall provide a Feasibility Study Agreement to the Interconnector.
6. ED3 or its contractor shall perform a Feasibility Study.
7. If the Feasibility Study indicates a potential for adverse Distribution or Transmission System impacts, ED3 shall provide the appropriate System Impact Study Agreements to the Interconnector.
8. When the agreement is executed, ED3 or its contractor shall perform a Distribution or Transmission System Impact Study, or both.
9. If the System Impact Studies indicate no potential for adverse impacts, ED3 shall provide either a Facility Study Agreement or an Interconnection Agreement, as appropriate.
10. ED3 or its contractor shall perform a Facility Study that specifies and estimates the cost of the equipment, engineering, procurement, and construction work (including overheads) needed to implement the conclusions of the System Impact Studies.

11. ED3 provides the Interconnector an Interconnection Agreement.
12. After the Interconnector approves of the terms of the Interconnection Agreement, ED3 shall provide the Interconnector with *Contingent Approval to Interconnect* in the form of Attachment 3.
13. The Interconnector arranges for AHJ Clearance (either City of Maricopa or Pinal County).
14. Upon receipt of a Clearance from the AHJ, the Interconnector shall arrange for Commissioning Testing with ED3.
15. After successful commissioning, ED3 shall provide the Interconnector with *Approval to Energize the GF* in the form provided in Attachment 10.

4.0 Application for Interconnection

Requests for Interconnection received by ED3 shall be processed as follows.

4.1 Process Requirements:

More information on the certification requirements of Sections 4.1.1 through 4.1.2 may be found in Attachment 11, *Certification of Small Generator Equipment Packages.*

4.1.1 Requests to interconnect residential, certified, inverter-based GFs no larger than 10 kW (AC) shall be evaluated under the *Guidelines for Customer Owned Distributed Generation*, which is included in the *Distributed Generation Application Packet* on the ED3 website.

4.1.2 Requests to interconnect commercial, certified, inverter-based GFs no larger than 20 kW (AC) shall be evaluated under the *Guidelines for Customer Owned Distributed Generation*, which is included in the *Distributed Generation Application Packet* on the ED3 website.

4.1.3 Requests to interconnect a GF no larger than 2 MW shall utilize the Interconnection Request form in Attachment 1, *Interconnection Request*, and shall be evaluated under either Section 5.0, *Fast-Track Process*, or Section 6.0, *Study Process*.

4.1.4 Requests to interconnect a GF larger than 2 MW or a GF that does not meet the criteria for the Fast-Track Process shall utilize the Interconnection Request form in Attachment 1, *Interconnection Request*, and shall be evaluated under Section 6.0, *Study Process*.

4.2 Interconnection Request

NOTE

All communications in this Policy shall be per Section 9.0, *Notifications.*

4.2.1 An Interconnection Request shall be in the form of Attachment 1, *Interconnection Request*, and addressed to the ED3 Engineering & Operations Programs Coordinator.

4.2.2 The ED3 E&O Programs Coordinator shall mark all Interconnection Requests upon receipt. These marks shall be used for the purposes of the timetables set forth in this Policy.

4.2.3 Within three (3) Business Days of the receipt of the Interconnection Request, the ED3 E&O Programs Coordinator shall confirm receipt of such Interconnection Request by sending a Confirmation of Receipt to the Interconnector.

4.2.4 Within ten (10) Business Days of the receipt of the Interconnection Request, ED3 shall review and notify the Interconnector as to whether the Interconnection Request is complete or incomplete.

1. If the request is complete, ED3 shall send a Notification of Complete Interconnection Request to the Interconnector.
2. If the request is not complete, ED3 shall send a Notification of Incomplete Interconnection Request, which shall address the items that make the Request incomplete.

4.2.5 If the Interconnection Request was Incomplete, the Interconnector shall have fifteen (15) Business Days from the date of receipt of the Notification of Incomplete Interconnection Request to submit the required information or to request an extension of time to provide such information.

4.2.6 The ED3 E&O Programs Coordinator shall mark all responses with the date and time they are received. The Interconnection Request shall be deemed complete upon receipt of the missing information listed by ED3 and shall be entered into the Queue based on that date and time.

4.2.7 If the Interconnector does not provide the listed information or a request for an extension of time within the fifteen (15) day period, the Interconnection Request shall be deemed withdrawn, and shall be subject to Section 4.8, *Withdrawal*.

4.3 Insurance Requirements

Parties interconnecting a GF to the ED3 Distribution System shall maintain general liability insurance in the amounts set forth in the following table, per Interconnection.

Liability Insurance Requirements	
DG Nameplate Rating*	**Minimum General Liability Insurance****
>=100 kW but <1 MW	$1,000,000
>=1 MW but < 5 MW	$2,000,000
>5 MW	$5,000,000

* - Based on total combined site capacity.

4.3.1 In connection with Interconnector's performance of its duties and obligations under the Interconnection Agreement, the Interconnector shall maintain, during the period of Interconnection, general liability insurance with a combined single limit of not less than the amounts specified in the table above. These limits shall be per occurrence and in the aggregate for bodily injury and/or property damage claims.

4.3.2 Insurer Requirements and Endorsements

All required insurance shall be carried by reputable insurers with an A.M. Best rating of A- or better and who are qualified to underwrite insurance in Arizona. In addition, all insurance shall:

1. Include ED3 as an additional insured for all GFs greater than 1 MW;
2. Contain a severability of interest clause or cross-liability clause;
3. Provide that ED3 shall not incur liability to the insurance carrier for payment of premium for such insurance;
4. Provide for thirty (30) Calendar Days' written notice to ED3 prior to cancellation, termination, or material change of such insurance.

4.3.3 Evidence of the required insurance shall state that coverage provided is primary and is not in excess of or contributing with any insurance or self-insurance maintained by ED3.

4.3.4 The Interconnector shall provide ED3 with evidence of insurance in compliance with this Guideline on an annual basis.

4.3.5 Prior to ED3 commencing work on system modifications, the Interconnector shall have its insurer provide ED3 with certificates of insurance evidencing the insurance coverage required above.

4.3.6 The Interconnector shall notify and send ED3 a certificate of insurance for any policy written on a "claims-made" basis. ED3 may, at its discretion, require the Interconnector to maintain tail coverage for three years on all policies written on a "claims-made" basis.

4.3.7 All insurance certificates, statements of self-insurance, endorsements, cancellations, terminations, alterations, and material changes of such insurance shall be issued and submitted to the ED3 Insurance Coordinator.

4.4 Infrastructure Security

The security of the electric system infrastructure is essential. FERC requires ED3, market participants, and GFs interconnected with the ED3 Distribution System to comply with the recommendations offered by the National Infrastructure Advisory Council and best practice recommendations from NERC. All public utilities must meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices where required. All Interconnection Requests shall be reviewed for infrastructure security concerns.

4.5 Modification

Any modification to machine data, equipment configuration or the Interconnection site not agreed to in writing by ED3 may be deemed a withdrawal of the Interconnection Request. In the event of a deemed withdrawal, the provisions of Section 4.8, *Withdrawal*, shall apply. In such a case, the Interconnector shall be responsible for the costs of restoring the system to the original configuration.

4.6 Site Control

Documentation showing proof of site control must be submitted with the Interconnection Request. Site control may be demonstrated through:

4.6.1 Ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the GF;

4.6.2 An irrevocable option to acquire any of the property rights set forth in Section 4.6.1;

4.6.3 An exclusivity or other business relationship between the Interconnector and an entity having the right to sell, lease, or grant the Interconnector the right to possess or occupy a site for such purpose; or

4.6.4 Filed applications for required permits with respect to a site on Federal or State property.

4.7 Queue Position

ED3 shall assign to each Interconnection Request a Queue position based upon date of the date-stamp described in Section 4.2.2. The queue position of each Interconnection Request will be used to determine the cost responsibility for any upgrades necessary to accommodate the Interconnection. ED3 shall maintain a single Interconnection Queue.

4.8 Withdrawal

4.8.1 The Interconnector may withdraw its Interconnection Request at any time by written notice of such withdrawal to ED3 per Section 9.0, *Notifications*.

4.8.2 In addition, if the Interconnector fails to adhere to all requirements of this Policy, subject to Section 4.8.3, ED3 shall deem the Interconnection Request to be withdrawn and shall provide written notice to the Interconnector of the deemed withdrawal and an explanation of the reasons for such deemed withdrawal.

4.8.3 Upon receipt of such written notice, if the Interconnector wishes to dispute the withdrawal notice, the Interconnector shall have fifteen (15) Business Days in which to either respond with information or actions that cure the deficiency or to notify ED3 of its intent to pursue dispute resolution in accordance with Section 7.2, *Dispute Resolution*.

4.8.4 Withdrawal of an Interconnection Request shall result in the loss of Queue position assigned to that Interconnection Request.

4.8.5 If an Interconnector disputes such withdrawal and loss of Queue position, then the Interconnector's Request shall be removed from the Queue until such time that the outcome of the dispute restores its Queue position.

4.8.6 Within thirty (30) days following a withdrawal, an Interconnector that withdraws or is deemed to have withdrawn its Interconnection Request shall pay to ED3 and any Affected Parties all costs prudently incurred with respect to such Interconnection Request prior to the receipt of notices described Section 4.8.1 or 4.8.2.

4.8.7 An Interconnector who fails to pay all monies due pursuant to Section 4.8.6 shall not be eligible to obtain any Interconnection Study reports or submit subsequent Interconnection Requests.

5.0 Fast Track Process

5.1 Applicability

The Fast-Track Process is available to any Interconnector proposing to interconnect its GF with the ED3 Distribution System if:

- The proposed GF is 20 kW or less and is certified per Attachment 11, *Certification of Small Generator Equipment Packages*, but did not pass the 20 kW or less screens; OR
- The proposed GF is no larger than 2 MW; AND
- The proposed GF
    - meets the Codes and Standards and other certification requirements of this Policy; OR
    - is judged to be safe to operate by ED3, in its sole discretion.

5.2 Initial Review

5.2.1 Within fifteen (15) Business Days after ED3 notifies the Interconnector it has received a complete Interconnection Request, ED3 shall:

1. Perform an Initial Review using the screens set forth below,
2. Notify the Interconnector of the results,
3. Provide copies of the analysis and data underlying the determinations under the screens.

5.2.2 ED3 shall use the following criteria for performing screening evaluations:

1. For Interconnection of a proposed GF to a radial distribution circuit, the aggregated generation, including the proposed GF, on the circuit shall

not exceed fifteen percent (15%) of the Line Section annual peak load as most recently measured at the substation.

2. The proposed GF, in aggregation with other generation on the distribution circuit, shall not contribute more than ten percent (10%) to the distribution circuit's maximum fault current at the point on the high voltage (primary) level nearest the proposed point of change of ownership.

3. The proposed GF, in aggregation with other generation on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, load-break elbows, and line reclosers), or GF equipment on the Distribution System to exceed eighty-seven and one-half percent (87.5%) of the short circuit interrupting capability; nor shall the Interconnection be permitted for a circuit that already exceeds eighty-seven and one-half percent (87.5%) of the short circuit interrupting capability.

4. The table below sets forth the type of Interconnection applicable to each type of primary distribution line. This screen criterion includes a review of the type of electrical service provided to the Interconnector, including line configuration and the transformer connection to limit the potential for creating over-voltages on ED3's Distribution System due to a loss of ground during the operating time of any anti-islanding function.

Distribution Line Type	Type of Interconnection to Primary Distribution Line	Result/ **Criteria**
Three-phase, three-wire	3-phase or single-phase, phase-to-phase	Pass
Three-phase, four-wire	Effectively-grounded 3-phase or single-phase, line to neutral	Pass

5. If the proposed GF is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed GF, shall not exceed 20 kW.

6. If the proposed GF is single-phase and is to be interconnected on a center tap neutral of a 240 Volt service, its addition shall not create an imbalance between the two sides of the 240 Volt service of more than twenty percent (20%) of the nameplate rating of the affected service transformer.

7. The addition of the GF (in aggregation with other generation interconnected to the feeder where the proposed GF is to be interconnected) shall not make the aggregate generation capacity 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 busses from the Point of Interconnection).

8. Construction of additional facilities on the ED3 Distribution System shall not be required to accommodate the GF.

5.2.3 If ED3 determines that the proposed Interconnection passes the screen criteria set forth in Section 5.2.2, the Interconnection Request shall be approved and ED3 shall send the Interconnector an executable *Interconnection Agreement*, in the form of Attachment 7, within five (5) Business Days after such determination.

5.2.4 If the proposed Interconnection fails the screens, but ED3 determines that the GF may nevertheless be interconnected consistent with safety, reliability, and power quality standards, ED3 shall send the Interconnector an executable *Interconnection Agreement,* in the form of Attachment 8, within five (5) Business Days after such determination.

5.2.5 If the proposed Interconnection fails the screens, and ED3 is unable to determine from the initial review if the GF may be interconnected consistent with safety, reliability, and power quality standards, ED3 shall provide the Interconnector with the opportunity to attend a Customer Options Meeting as described in Section 5.3 below.

5.3 Customer Options Meeting

5.3.1 ED3 shall notify the Interconnector if the Interconnection Request cannot be approved as submitted, but may be approved with the one or more of the following changes:

1. Minor modifications at minimal cost,

2. A Supplemental Review or other additional studies or actions,

3. Modifications at significant cost to address safety, reliability, or power quality problems.

ED3 shall make the notification and provide copies of all analyses underlying the conclusion within the five (5) Business Days of such determination.

5.3.2 If such a determination is made, within ten (10) Business Days of such determination, ED3 shall offer to convene a Customer Options Meeting with the Interconnector. Both Parties shall use this meeting to review the results of the screens and related issues and determine possible modifications to the GF or other options that would permit the GF to be interconnected safely and reliably.

5.3.3 At the Customer Options Meeting, ED3 shall offer the following options:

1. If the cost is within reason, ED3 may offer to make the necessary modifications to ED3's Interconnection Facilities and Distribution System (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the cost to make such modifications at the Interconnector's sole expense.

2. If ED3 concludes, in its sole discretion, that a Supplemental Review could reasonably determine that the GF may qualify for Interconnection pursuant to the Fast-Track Process, ED3 may offer to perform, at the Interconnector's expense, a Supplemental Review in accordance with Section 5.4 below. In such a case, ED3 shall provide an *Offer of Supplemental Review* (Attachment 2), which includes a non-binding, good-faith estimate of the costs of such Supplemental Review.

3. If neither of the above options are valid, ED3 and the Interconnector shall agree to continue evaluating the Interconnection Request under Section 6.0, *Study Process*.

5.4 Supplemental Review

5.4.1 To accept ED3's offer to conduct a Supplemental Review, the Interconnector shall accept such offer in writing per Section 8.0, *Notifications*, within fifteen (15) Business Days of such offer. Interconnector shall include payment to ED3 for the estimated costs set forth in such offer.

5.4.2 The Interconnector shall be responsible for ED3's actual costs in conducting the Supplemental Review. If the actual costs exceed the estimated cost, the Interconnector shall pay the additional costs within twenty (20) Business Days of either receiving an invoice from ED3 or resolution of any dispute concerning such invoice. If the estimated cost exceeds the actual costs, ED3 shall refund such excess without interest within twenty (20) Business Days of true-up of the actual costs.

5.4.3 Within ten (10) Business Days of receiving the payment for a Supplemental Review, ED3 shall conduct the review to determine whether the GF can be interconnected safely and reliably.

1. If so, and modifications are not required:

   a. ED3 shall forward an Interconnection Agreement to the Interconnector for execution within five (5) Business Days of such determination.

   b. If so, but modifications to the GF are required, ED3 shall provide a written summary of the estimated costs of such modifications within five (5) Business Days of such determination.

2. If so, but modifications are required:

a. The Interconnector shall provide written notice to ED3 of their agreement to make the required GF modifications, at their own expense, within thirty (30) Business Days of receiving such written summary.

b. Within five (5) Business Days of receiving written confirmation that the Interconnector has agreed to make the required changes at the Interconnector's cost, ED3 shall forward an Interconnection Agreement (Attachment 8) to the Interconnector for execution.

c. The Interconnector shall pay the cost of all required modifications prior to Interconnection. ED3 shall forward an executable *Interconnection Agreement*, in the form of Attachment 8, to the Interconnector within ten (10) Business Days of such a determination.

3. If not, the Interconnection Request shall be evaluated under Section 6.0, *Study Process*.

6.0 Study Process

6.1 Applicability

The Study Process shall be used by an Interconnector proposing to interconnect its GF with the ED3 Distribution System if the GF is:

1. larger than 2 MW,
2. 2 MW or less but is not certified, or
3. 2 MW or less and is certified but did not pass the Fast-Track Process.

6.2 Scoping Meeting

6.2.1 Unless the Parties mutually agree to forgo the Scoping Meeting pursuant to Section 6.2.3, a Scoping Meeting shall be held within ten (10) Business Days after the Interconnector receives a Notification of Complete Interconnection Request, or as otherwise mutually agreed to by the Parties.

6.2.2 The purpose of the Scoping Meeting is to discuss the Interconnection Request and review whether the proposed project will require a corresponding System Impact Study by an Affected Party and to review existing studies relevant to the Interconnection Request. At the Scoping Meeting, the Parties shall further discuss whether ED3 should perform a Feasibility Study (Attachment 4), or proceed directly to a System Impact Study (Attachments 5 & 6), a Facility Study, or an Interconnection Agreement (Attachment 8).

If the Parties agree that a Feasibility Study should be performed, ED3 shall provide the Interconnector, within five (5) Business Days after the Scoping Meeting, a *Feasibility Study Agreement* in the form of Attachment 4,

including an outline of the scope of the Feasibility Study and a non-binding good faith estimate of the cost to perform the Feasibility Study.

6.2.3 The Parties may mutually agree to forgo the Scoping Meeting if (a) the Interconnector requests a Feasibility Study or (b) ED3 determines that a Feasibility Study is not required, and the Parties agree to proceed with a System Impact Study.

1. An Interconnector who has requested a Feasibility Study must return the executed Feasibility Study Agreement within fifteen (15) Business Days of receipt from ED3.
2. If ED3 determines that a Feasibility Study is not required and the Parties agree to proceed with a System Impact Study, ED3 shall provide the Interconnector with the appropriate Study Agreement, either the *Distribution System Impact Study Agreement* in the form of Attachment 5, or the *Transmission System Impact Study Agreement* in the form of Attachment 6 within five (5) Business Days of the scoping meeting. This shall include an outline of the scope of the System Impact Study to be performed and a non-binding, good faith estimate of the cost to perform the Study.

6.3 Feasibility Study

6.3.1 The Feasibility Study shall identify any potential adverse system impacts that would result from the Interconnection of the GF.

6.3.2 The Interconnector must pay the good faith cost estimate set forth in the Feasibility Study Agreement prior to ED3's initiation of the Feasibility Study. The scope of and cost responsibilities for the Feasibility Study are more fully described in the *Feasibility Study Agreement* (Attachment 4).

6.3.3 If the Feasibility Study shows no potential for adverse system impacts, and that no additional facilities are necessary, an *Interconnection Agreement* in the form of Attachment 8, shall be delivered to the Interconnector for execution within five (5) Business Days after the completion of the Feasibility Study.

6.3.4 If the Feasibility Study shows no potential for adverse system impacts, but additional facilities may be necessary, ED3 shall send the Interconnector a *Facility Study Agreement,* in the form of Attachment 7, including an outline of the scope of the study and a non-binding, good faith estimate of the cost to perform the study.

6.3.5 If the Feasibility Study shows the potential for adverse system impacts, the review process shall proceed to the System Impact Study.

6.3.6 In the case where either the Feasibility Study or the System Impact Study is determined to be unnecessary, ED3 shall notify the Interconnector within five (5) Business Days that such studies are not required.

6.4 System Impact Study

6.4.1 ED3 System Impact Studies come in two variations:

1. Distribution System Impact Study
2. Transmission System Impact Study

6.4.2 These studies shall identify and detail possible impacts on the local T&D Systems that could result if the proposed GF were interconnected without modifications. These studies shall focus on the adverse system impacts identified in the Feasibility Study and the Scoping Meeting.

6.4.3 If potential adverse distribution system impacts are identified at the Scoping Meeting or in the Feasibility Study, a Distribution System Impact Study shall be required, and ED3 shall send the Interconnector a *Distribution System Impact Study Agreement* (Attachment 5) within fifteen (15) Business Days of transmittal of the results of the Feasibility Study (if performed) or the Scoping Meeting (if no Feasibility Study is performed), including an outline of the scope of the study and a non-binding, good faith estimate of the cost to perform the study.

6.4.4 If potential adverse transmission system impacts are identified in the Feasibility Study or the Distribution System Impact Study, a Transmission System Impact Study shall be required, and ED3 shall send the Interconnector a *Transmission System Impact Study Agreement,* in the form of Attachment 6, within fifteen (15) Business Days following transmittal of the results of the Distribution System Impact Study. This transmittal shall include an outline of the scope of the Transmission System Impact Study and a non-binding, good faith estimate of the cost to perform the study.

6.4.5 If the System Impact Studies show no potential for adverse impacts to either the Transmission System or the Distribution System, then ED3 shall send the Interconnector either (a) a *Facility Study Agreement*, in the form of Attachment 7, including an outline of the scope of the study and a non-binding, good faith estimate of the cost to perform the study, or (b) an *Interconnection Agreement,* in the form of Attachment 8, as applicable.

6.4.6 To remain under consideration for Interconnection and in ED3's Interconnection Queue, the Interconnector must return executed System Impact Study Agreements, as applicable, within thirty (30) Business Days of receipt of same.

6.4.7 The good faith estimated System Impact Study costs shall be paid in full by the Interconnector prior to initiation of the System Impact Studies.

6.4.8 The scope of and cost responsibilities for System Impact Studies are set forth in the applicable System Impact Study Agreement (Attachments 5 and 6).

6.4.9 Any Affected Parties shall be invited to participate in the System Impact Studies and provide information necessary or helpful to complete the System Impact Studies.

6.5 Facility Study

6.5.1 Once the required System Impact Studies, if any, are completed, ED3 shall prepare a System Impact Studies Report and provide a copy of such report to the Interconnector along with a *Facility Study Agreement,* in the form of Attachment 7, within five (5) Business Days of completion of the System Impact Studies, including an outline of the scope of the Facility Study and a non-binding, good faith estimate of the cost to perform the Facility Study.

6.5.2 Within five (5) Business Days following receipt of the report described in Section 6.5.1, the Interconnector shall notify ED3 in writing as to whether it will either pursue the Facility Study or waive the Facility Study and elect an expedited Interconnection.

1. If the Interconnector waives the Facility Study, the Interconnector shall commit to the following stipulations and milestones in the Interconnection Agreement:
   a) Siting approval by the appropriate regulatory authorities for the GF and Interconnection Facilities;
   b) Engineering of Interconnection Facilities shall be subject to approval by ED3;
   c) The ordering of long lead-time material by ED3 for Interconnection Facilities and system upgrades;
   d) The In-Service Date; and
   e) Commercial Operation Date (COD).

2. If the Interconnector does not waive the Facility Study, to remain under consideration for Interconnection and in ED3's Interconnection Queue, the Interconnector must return the executed *Facility Study Agreement,* in the form of Attachment 7, or request an extension of time within thirty (30) Business Days following receipt of the Facility Study Agreement from ED3. Any such extension shall not exceed sixty (60) Business Days.

6.5.3 The Facility Study shall specify and estimate the cost of the equipment, engineering, procurement, and construction work (including overhead) needed to implement the conclusions of the System Impact Studies.

6.5.4 Design of any required Interconnection Facilities and/or GF upgrades shall be provided for under the Facility Study Agreement. ED3 may contract with outside consultants to provide such designs.

6.5.5 The Interconnector, ED3, and any Affected Parties may agree to allow the Interconnector to separately arrange for such designs. In such cases, ED3 shall make sufficient information available to the Interconnector in accordance with confidentiality and critical infrastructure requirements to permit the Interconnector to obtain an independent design and cost estimate for any necessary facilities in accordance with the Facility Study Agreement. All such designs shall be subject to review and approval by ED3.

6.5.6 The Interconnector shall pay the good faith estimated Facility Study costs in full prior to execution of the Facility Study.

6.5.7 The scope of and cost responsibilities for the Facility Study are described in the attached *Facility Study Agreement* (Attachment 7).

6.5.8 The Interconnector shall provide written notice within thirty (30) Business Days of receipt of the Facility Study results as to whether it agrees to pay for the Interconnection Facilities and upgrades identified in the Facility Study. ED3 shall deliver an executable Interconnection Agreement to the Interconnector within five (5) Business Days of receipt of such written notice.

7.0 Provisions Applying to All Interconnections

7.1 Reasonable Efforts

ED3 shall make reasonable efforts to meet all time frames provided in this Policy; provided, however, that ED3 and the Interconnector may mutually agree to different time frames. If ED3 fails to meet a deadline provided herein, it shall (a) notify the Interconnector, (b) explain the reason for the failure to meet the deadline, and (c) provide an estimated date by which it will complete the applicable Interconnection procedure in the process.

7.2 Dispute Resolution

7.2.1 Each Party shall attempt to informally resolve all disputes arising in connection with this Policy promptly, equitably, and in good faith. If the Parties are unable to informally resolve their dispute, one or both Parties may file a written request for formal dispute resolution. Upon receipt of a written request, the Parties shall negotiate in good faith for up to eight (8) Business Days to resolve such dispute. Such negotiation shall take place between each Party's senior management (Director level or above) with sufficient authority to resolve such dispute.

7.2.2 The dispute resolution process and time frames set forth in Section 7.2.1 may be modified by mutual written agreement of the Parties.

7.3 Interconnection Metering

Any metering necessitated by the GF shall be installed at the Interconnector's expense per Section 8.8, *Metering, Monitoring, and Communications*, and applicable standards then in effect.

7.4 Commissioning

7.4.1 The Interconnector shall notify ED3 ten (10) Business Days in advance of the testing.

7.4.2 ED3 shall have the right to witness the commissioning testing (pre-parallel testing) as defined in IEEE 1547.1, and may, at its option, inspect the installation.

7.4.3 Prior to notifying ED3 of the testing, the Interconnector shall provide a copy of the test procedure and the as-built versions of the one-line and three-line metering and protection system diagrams for approval.

7.4.4 ED3 shall be given a minimum of ten (10) Business Days written notice, of the performance of the Commissioning Testing to allow ED3 time to arrange personnel to witness the tests. ED3 shall not participate in, nor provide equipment for, the commissioning tests.

7.4.5 All Commissioning Testing shall be performed per Section 8.9.1, *Commissioning Testing*.

7.4.6 At the completion of testing, the Interconnector shall provide ED3 with a copy of the test report.

7.4.7 When all application review elements have been satisfied, ED3 shall provide a *Contingent Approval to Interconnect*, in the form of Attachment 3, to the Interconnector. When the Commissioning Testing has been successfully completed, ED3 shall provide the Interconnector an *Approval to Energize the GF*, in the form of Attachment 10.

7.5 Periodic Interconnection Tests

At the time of scheduling of a commissioning test, the Interconnector shall provide a written periodic Interconnection test procedure to ED3. (Such procedures are typically provided by the equipment manufacturer). The procedure shall describe a testing protocol to verify all Interconnection-related protective functions and associated devices are functional, but need not replicate the commissioning test procedures. The interval between periodic tests shall be specified by the manufacturer, system integrator, or the authority having jurisdiction (AHJ) over the Interconnection. Written test reports or a log for inspection shall be maintained by the Interconnector.

ED3 may audit the Interconnector's written test reports, logs, and other materials regarding the Interconnection or the GF at its discretion. If the functional software, firmware, or any component of the Interconnection system has been modified, replaced, or repaired with parts different from the tested configuration, and if such hardware, software, or firmware has not been previously approved, the applicable commissioning tests shall be performed by an independent testing facility. If such hardware, software, or firmware has been previously approved or if settings have been changed, then only the commissioning tests applicable to the changes made shall be conducted. This requirement is in accordance with IEEE 1547.2.

7.6 Confidentiality

ED3 shall maintain confidentiality of all information provided by the Interconnector which is clearly designated as "Confidential" except as otherwise required by system operators, or applicable laws and regulations. If ED3 is requested to produce such confidential information, ED3 shall provide advance notice to the Interconnector, if possible, to give the Interconnector an opportunity to seek protective treatment of such information. If such information is requested or

required by a regulating body with jurisdiction, ED3 shall seek protective treatment of such confidential information.

Confidential information does not include information that is:

1. In or becomes part of the public domain;
2. Previously known by ED3;
3. Independently developed by ED3;
4. Rightfully obtained by ED3 from third parties without a duty of confidentiality;
5. Required to be publicly disclosed by law, statute, or regulation.

7.7 Record Retention

ED3 shall retain records of all Interconnection Requests received under these procedures for a minimum of three (3) years, subject to audit. These records shall include the times required to complete Interconnection Request approvals and disapprovals, and justification for the actions taken on the Interconnection Requests.

7.8 Interconnection Agreement

ED3 shall provide an Interconnection Agreement to the Interconnector in accordance with this Policy, to which both the Interconnector and ED3 shall be Parties. The Interconnector shall have thirty (30) Business Days, or another mutually agreed timeframe, to sign and return the Interconnection Agreement. After the Interconnection Agreement is fully executed, the Interconnection of the GF shall proceed under the provisions of the Interconnection Agreement and this Policy.

7.9 Performance Assurance

Performance Assurance will only be required in rare cases where abnormally high ongoing maintenance costs are anticipated to support the Interconnection or in unusual cases where there is a potential for wide variation between the actual and estimated costs for the Interconnection. If performance assurance is required for an Interconnection, ED3 shall provide a written explanation of the necessity of such a requirement to the Interconnector.

7.10 Coordination with Affected Systems

If ED3 determines that any Interconnection Request may have an impact on other Affected Systems, ED3 shall invite representatives of such Affected Systems to all meetings and proceedings pertinent to such impact.

7.11 GF Capacity

The GF Capacity, for the purpose of analysis, shall be determined as follows:

7.11.1 If the Interconnection Request is for an increase in capacity for an existing GF, the Interconnection Request shall be evaluated based on the new total capacity of the GF.

7.11.2 If the Interconnection Request is for a GF that includes multiple energy production devices at a site for which the Interconnector seeks a single Point of Interconnection, the Interconnection Request shall be evaluated based on the aggregate capacity of such multiple devices.

7.11.3 The Interconnection Request shall be evaluated using the maximum rated capacity of the GF.

7.12 Financial Responsibility

The Interconnector shall be solely responsible for all costs incurred by either party in meeting the requirements of this Policy.

8.0 Technical Requirements

8.1 Scope

These Generator Interconnection Technical Requirements ("Technical Requirements") apply to the Interconnection of a GF to ED3's Distribution System, regardless of AHJ or other circumstances. This Policy delineates the requirements relevant to the safety, performance, reliability, operation, design, protection, testing, metering, and maintenance of the Interconnected GF.

The primary focus of these Technical Requirements is the safety of the public and ED3 employees. Secondarily, these Requirements are designed to protect the system equipment.

All capitalized terms shall have the meanings specified in the glossary set forth in Section 9 of this Policy.

8.2 General Requirements

8.2.1 Codes and standards listed in Attachment 12, *Codes and Standards* shall be applied as appropriate.

8.2.2 Any Party desiring Interconnection with the ED3 Distribution System or modification of an existing Interconnection must meet the specifications set forth in this section and any other requirements which may be imposed by ED3.

8.2.3 Islanding by the GF of all or part of the ED3 Distribution System is prohibited as it may result in unsafe conditions.

8.2.4 Safe Operation and Maintenance

1. The Interconnector shall operate and maintain the GF in accordance with Good Utility Practice and comply with all aspects of the Interconnection Agreement, this Policy, and applicable Guidelines, tariffs, terms, and conditions.
2. The Interconnector shall comply with all applicable laws, regulations, and other legal requirements. If the GF poses an unreasonable risk to the Distribution System at any time, the Interconnection Agreement

provides that (a) ED3 may install equipment to monitor the GF and (b) ED3 may disconnect the GF as set forth in this Policy.

8.3 Isolation Devices

8.3.1 Low Voltage Applications (<= 600 volts):

For voltages equal to or less than 600 volts on the Distribution System, the Interconnector shall own, install, operate, and maintain an external Isolation Device (or comparable device mutually agreed upon by the Parties) that can be opened to isolate the GF from the ED3 Distribution System. This Isolation Device shall be:

- Operated by the Interconnector's personnel,
- Easily accessible to ED3 personnel at all times,
- Gang operated,
- Equipped with a visible break when open,
- Rated to interrupt the maximum Generator Facility output,
- Capable of being locked open.

Although ED3 personnel will normally not operate the Isolation Device, ED3 reserves the right to have its personnel open the Isolation Device in an emergency. If an existing Isolation Device at the GF meets the requirements of this section, then this requirement for an additional Isolation Device may be waived by ED3.

The Interconnector shall maintain the Isolation Device in good working condition through a regularly scheduled maintenance program. ED3 shall not be responsible for any damage to the disconnect switch or the Isolation Device.

8.3.2 High Voltage Applications (> 600 volts):

1. ED3 shall own, install, operate, and maintain the Isolation Device when the Isolation Device is required to be installed at voltages greater than 600 volts, as measured phase-to-neutral, on the Distribution System.
2. ED3 shall determine the size, type, and rating of this Isolation Device. An existing Isolation Device, if deemed adequate for the application by the ED3, in its sole discretion, may be sufficient.

8.4 Facility Access and Contact Information

8.4.1 Emergency Reporting. In accordance with Section 9.2, *Emergency Notification*, ED3 and the Interconnector shall each provide to the other (and shall update as necessary) a contact telephone number that is monitored 24/7 which can be used to report an emergency.

8.4.2 Access to ED3 Equipment and Facilities. In accordance with Section 6.4.2, *ED3 Right to Access ED3-Owned Facilities and Equipment*, of the Interconnection Agreement, the Interconnector shall allow ED3 access to ED3's equipment and ED3's facilities located on the GFs premises.

8.4.3 Access to Isolation Device. In accordance with Section 6.4.3, *ED3 Right to Access Isolation Device*, of the Interconnection Agreement, ED3 shall have access to the Isolation Device of the GF at all times.

8.5 Future System Changes and Responsibilities

The ED3 Distribution System is ever changing and must be able to accommodate future load growth and system changes. Therefore, ED3 may, at its discretion and cost, make upgrades to the Distribution System. Such upgrades may have an impact on existing Interconnection Facilities. To ensure continued safe operation in compliance with the Interconnection Agreement, the Interconnection Facilities may need to be upgraded in accordance with the upgraded Distribution System. The Interconnector and ED3 shall work together and cooperatively to implement the appropriate changes and upgrades to provide continued safe and reliable operation of the interconnection between the Interconnector and the ED3 Distribution System.

8.6 General Design Requirements

8.6.1 Interconnection Transformer Winding and Grounding Considerations

1. To provide maximum operating flexibility for the Interconnector and to minimize possible adverse effects on the facilities of other ED3 customers due to ferroresonance or other phenomena, the Interconnector shall provide, at its sole cost, an interconnection transformer between the GF and ED3-owned equipment.
2. This requirement may be waived in writing by ED3 in its sole discretion.
3. The Interconnector shall propose an interconnection transformer and grounding configuration, which shall be subject to approval by ED3, at its sole discretion. The final winding connection and grounding configuration is also subject to review and approval by ED3.

8.6.2 Power Quality Requirements

1. The GF and its Interconnection system shall not inject DC current greater than 0.5% of the full rated output current at the POI.
2. The GF shall not create objectionable flicker to other ED3 customers.
3. Harmonics. When the GF is serving linear loads, harmonic current injection into the Distribution System at the PCC shall not exceed the limits listed below under the following test conditions:
   - Serving balanced linear loads
   - No voltage distortion present

Individual Harmonic Order (h)	Maximum Harmonic Current Distortion as a Percentage of Current (I)*
h < 11	4.0%
11 <= h <17	2.0%

17 <= h < 23	1.5%
23 <= h < 35	0.6%
35 <= h	0.3%
Total Demand Distortion (TDD)	5.0%

Even harmonics are limited to 25% of the odd harmonic limits set forth above.

* where I = the greater of:

- The Local Distribution System maximum load current integrated demand (15 or 30 minutes) without the GF,
- The GF rated current capacity (transformed to the PCC when a transformer exists between the GF and the PCC).

4. The Interconnection of the GF shall not increase the potential for ferroresonance in the ED3 Distribution System.
    a. The Interconnection of the GF shall not cause temporary undervoltages or overvoltages.
    b. An Induction Generator may be connected and brought up to speed as an induction motor if it can be demonstrated that the initial voltage drop (visible flicker) is acceptable and within limits as defined by IEEE Std 519, *IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems*. When flicker occurs, outside of the limits, soft starting shall be required, such as speed matching to within 1% of synchronous speed or other techniques.

8.6.3 Voltage Regulation

1. The GF shall not:
    a. Actively regulate the ED3 Distribution System voltage unless specifically agreed by ED3;
    b. Cause the voltage at any point along the Distribution System to deviate from the levels prescribed by ANSI C84.1; or
    c. Cause any voltage deviations, which are objectionable to other customers of ED3.
2. ED3 may regulate the voltage on its Distribution System by employing load tap changing transformers or line voltage regulators. These devices are typically designed for one-way (forward) power flow to properly regulate the voltage. Therefore, unless specifically waived in writing by ED3, the GF shall limit its output to prevent reverse power flow when the proposed Interconnection would be expected to result in reversed power flow through a load tap changing transformer absent such limitation.
3. When the proposed Interconnection is expected to result in reverse power flow through line voltage regulators, control modifications necessary to mitigate the effects of the reverse power flow may be

made, if practical, at the sole cost and expense of the Interconnector. Otherwise, the GF will be required to limit its output so that adverse levels of reverse power flow cannot occur.

8.6.4 VAR (Power Factor)

1. All generators, other than Induction generators, shall be capable of operating within a power factor range of 0.9 leading to 0.9 lagging. Unless specifically determined through studies performed by ED3 and as may be specified in the Interconnection Agreement, the power factor as measured at the PCC shall be within such range. If the power factor is outside of this range the method and compensation for power factor correction shall be determined by ED3.
2. The VAR requirements for Induction generators shall be determined by the Distribution System. There is no charge to the Interconnector for VAR correction if the aggregate generation capacity is 100 kW or less. For aggregate generation greater than 100 kW, ED3 shall charge the Interconnector as follows:
    a. A one-time Capacitor Charge to cover the cost of supplying the reactive current to the GF. This charge shall be based on 0.5 kVAR of capacitors per kW of generator nameplate capacity and shall calculated using the prevailing rate of installed cost per KVAR of utility grade equipment.
    b. An annual Maintenance Charge to cover the cost of both preventive and corrective maintenance. This charge shall be based on the average maintenance costs of capacitor banks on the ED3 Distribution System proportioned by the ratio of the capacitance required for this generator compared to all capacitor banks on the ED3 Distribution System

8.6.5 Insulation Coordination

1. The GF and all other equipment connected to the ED3 Distribution System must be able to withstand abnormal voltages that can occur on the system without damage or reduction in the reliability of any connected equipment.
2. The Interconnector shall be responsible for procuring equipment with a level of insulation and fault withstand capability compatible with the configuration and operating mode of the ED3 Distribution System.

8.6.6 BIL (Basic Impulse Insulation Level)

1. Equipment connected to the ED3 Distribution System must be designed with a certain minimum Basic Impulse Insulation Level (BIL). BIL, in general terms, is a measure of the ability of a piece of equipment to

withstand normal and abnormal voltages. Lightning and switching of equipment are two common sources of abnormal voltage transients.

2. The following table represents minimum BIL levels of equipment connected to the ED3 Distribution System:

Nominal Circuit Voltage (kV)	**Voltage Class (kV)**	**Minimum BIL (kV)**
12.47	15.0	95.0
69.0	69.0	250.0

3. The Interconnector shall ensure that the BIL of all installed equipment meets the applicable standards set forth above, as well as applicable ANSI, IEC, and IEEE standards. Furthermore, such equipment shall be installed in compliance with all applicable local, state, and federal codes.

8.6.7 Grounding and Bonding

The grounding scheme of the GF Interconnection shall not cause voltages that exceed the rating of the equipment on the ED3 Distribution System and shall not disrupt the coordination of the Distribution System ground fault protection.

8.6.8 Arc Flash

The interconnection of a GF to ED3's Distribution System shall not increase available fault current and associated arc flash energy to a level where ED3 workers would have to use the next level of enhanced Personal Protective Equipment (PPE) and/or restrictive work methods above and beyond what the workers would normally use for work at the same location without the GF present.

8.7 Protection and Control Requirements

8.7.1 Generator Protection Philosophy

The core objectives of this section are to protect the public, personnel, and the ED3 Distribution System from unsafe or unstable operating conditions. Therefore, much of the focus of this section is on the use of protective functions designed to prevent the GF from causing a system failure or propagating disturbances onto the ED3 Distribution System during normal operations.

NOTE

These requirements are designed solely to protect the public, employees, and the ED3 Distribution System; they are not designed to protect the GF or the Interconnector's other facilities and equipment.

The Interconnection of the GF to the ED3 Distribution System shall not degrade the reliability of the Distribution System, either due to its operation, or due to changes to the Distribution System to accommodate the Interconnection.

From time to time, microprocessor-based protective relays and inverters must be removed from service for maintenance, testing, and revision updates. During such times, the GF shall not operate in parallel with the ED3 Distribution System without adequate protection in service per the requirements of this section. Additionally, for firmware updates, ED3 may require commissioning testing to determine the effects the changes applied. The GF is required to review all such upgrades with ED3, and receive ED3 approval, before any such upgrade is attempted.

8.7.2 General Requirements

1. The requirements of Attachment 12, *Codes and Standards*, are generally applicable to all of these requirements and should be reviewed in concert with Section 8.7, *Protection and Control Requirements*.

NOTE

The specifications and requirements listed herein are primarily intended to protect the public, ED3 personnel, and other ED3 customers. They are also intended to mitigate adverse impacts on ED3's equipment and the reliability of its Distribution System which may be caused by the GF. They are not intended to address protection of the GF itself or internal load on the GF side of the PCC.

2. It is the responsibility of the Interconnector to comply with the requirements of all appropriate standards, codes, statutes, and authorities to protect itself and its loads. The Interconnector must be aware of the risk of single phasing and voltage transients (and other normal system disturbances as described herein) that accompany Interconnection with the ED3 Distribution System. In accordance with the Interconnection Agreement, it is the Interconnector's responsibility to protect the GF from these risks.
3. Upon request, ED3 shall make system protection information that is directly related to the POI available to the Interconnector. This information may be used by the Interconnector solely to evaluate protection of its GF during parallel operation and for no other purpose.
4. The design of the GFs protection and control scheme shall accommodate ED3's practice of automatically reclosing portions of its Distribution System without synchronism check after one or more portions have tripped. The de-energized portion of the Distribution System may be re-energized at any time after de-energization.
5. Unless otherwise agreed by ED3 in writing, if the GF trips off-line, the GFs control system shall not allow the GF to reconnect to the Distribution System until normal system operating conditions have been re-established for a period of more than five (5) minutes.

6. The GF shall be designed to accommodate reclosing of the Distribution circuits even if no reclosing exists at the time of Interconnection. If the GFs protection cannot be designed to be compatible with ED3's reclosing practices, other anti-Islanding measures shall be installed at the Interconnector's sole cost. Examples of such measures include a dedicated supply circuit or protective relay direct transfer trips from all ED3 sources and isolation points.
7. Protective relays required by these Technical Requirements shall either be certified to UL1741/UL 1741 SA and IEEE C62.41 and IEEE C62.45, as amended from time to time. Equipment tested to UL 1741/UL 1741 SA after the May 7, 2007 date need only prove compliance with UL 1741/1741 SA. The time characteristics of these relays must be reviewed and approved by ED3 prior to Interconnector purchase to ensure timing coordination with ED3's protective devices.
8. The GF shall not operate in parallel with the ED3 Distribution System without being equipped with properly functioning protective equipment as required by these Technical Requirements.
    a. GFs of less than or equal to 1 MW in size are not required to provide redundancy in protective functions. However, if such a GF desires to operate in parallel with the ED3 Distribution System while a portion of its required protective equipment is out of service for maintenance or any other reason, the design of that facility shall include redundant protection functionality capable of meeting all the requirements of these Technical Requirements.
    b. GFs above 1MW in size shall be designed in a manner such that the GF protection shall provide sufficient redundancy in protective functions so that no single protective equipment failure can remove any protective function required by these Technical Requirements.
9. ED3 has adopted UL 1741 and UL 1741 SA (including IEEE C62.41) for certifying the electrical protective functionality of independent power systems, including GFs. UL 1741/1741 SA compliance may be established by UL or other Accredited, Nationally Recognized Testing Laboratories. ED3 also accepts inverter-based GFs that are installed in multiple packs and that have been certified to UL 1741/1741 SA in this configuration.
10. GFs that are not intended to export power to the ED3 Distribution System, but are capable of doing so, must include at least one of the following protective devices:
    a. A Reverse Power Relay (32R) which operates whenever power is exported from a GF onto the Distribution System for periods beyond those expected during normal system transient conditions.
    b. An Under-Power Relay (32U) which ensures the GF is always importing some preset level of power. If the import level drops below the "under-power" threshold, then the element will operate to trip the GF.

c. A corresponding function to those listed above that is implemented in a multifunction, microprocessor-based protective device.

The under-power element (32U) must be used in cases where a reliable (32R) (export trip) cannot be guaranteed. (See Attachment 13, *Protective Relay Settings Guidelines*, for recommended settings).

Due to business model reasons, technical reasons such as limitations in an existing facility, or process reasons such as the acceleration of the application approval or a reduction in the studies required, the Interconnector may choose to operate the facility exclusively in a non-export mode.

11. The Interconnector shall submit to ED3 for review and acceptance the settings for all devices with protection functions that could affect the Interconnection. These devices include all relays, adjustable inverters, and controllers that provide protective functions used for ED3-required protection. These settings shall be provided to ED3 no later than twenty (20) Business Days prior to the scheduled date for setting those relays/inverters/controllers. The Interconnector shall provide an electronic copy of the settings files for all settings within electronic multifunction relays. The Interconnector must also provide the most recent revisions to the schematics and wiring diagrams listed in Attachment 1, *Interconnection Request*.

    The Interconnector shall also submit to ED3 a written description of the operation as programmed for each of the protective relay schemes that could affect the Interconnection. Each such protective relay scheme description shall list all inputs to the protective relay, the function of each input, and a list of all relay outputs. The vendor instruction manual is not acceptable for this purpose.

12. Over-and under-voltage and over-and under-frequency protective relay functions are required for all GFs interconnected to the ED3 Distribution System. This requirement also applies to closed transition transfer schemes that result in the GF operating in parallel with the ED3 Distribution System for 100 milliseconds or longer. Voltage sensing on all three phases shall be used for the required voltage relaying for maximum sensitivity to phase disturbances.

13. All protection functions required by ED3 for protection of its Distribution System shall be designed in such a way that a loss of AC power will not compromise that protection. Acceptable methods include but are not limited to: undervoltage trip, DC battery systems, and UPS systems.

14. An Interconnection interrupting device such as a circuit breaker or contactor shall be installed to isolate the GF from the Distribution System. All such Interconnection interrupting devices must be capable of interrupting the maximum available fault current as well as the high current and voltages produced when the GF is connected out of phase.

If the GF has multiple interrupting devices, this requirement applies to each such device.

15. An interconnection circuit breaker equipped with all appropriate protective devices defined in this document shall be located at the PCC in addition to any required interrupting devices and protection devices required at the generator. However, if an Interconnector meets certain requirements, ED3 may elect to waive the separate protection devices at the PCC. For ED3 to consider waiving the separate protection devices at the PCC, all of the following conditions must be met: (unless waived by ED3):
    a. Total Generation Facility Capacity is less than 1MW.
    b. Generation Facility Capacity is less than 1/3 of its total minimum load.
    c. GF is designed and operated as a net-import facility at all times (no power exported to ED3).
    d. The Interconnector has interrupting and protection devices meeting all other requirements in this document.
16. Voltage relays that are directly connected to the GFs line voltage without a voltage transformer (VT) are acceptable to ED3 only if the GFs nominal line voltage is 120 VAC or less.
17. Unless otherwise agreed by ED3 in writing, protective relay schemes shall be hardwired to the device they are tripping. Test switches are required in hardwired protective relay current, voltage, and trip circuits.
18. Current Transformer (CT) ratios and accuracy classes for CTs used for GF protection shall be consistent with ANSI and IEEE standards.
19. Voltage Transformers
    a. The GF shall be equipped with a direct voltage connection or a VT, which shall be connected to ED3's side of the interrupting device. For three-phase applications, a VT for each phase is required.
    b. If the interconnecting voltage transformer is ungrounded at ED3 voltage, these VTs shall be connected from each phase to ground on ED3's side of the GFs interconnecting transformer and shall be rated for full phase-to phase nominal voltage.
    c. The secondary windings shall be connected in open delta, have a loading resistor to prevent ferroresonance, and be equipped with a zero-sequence over-voltage relay. On one side of the relay/resistor, the connection shall be grounded. Protective Relays capable of calculating zero-sequence voltages and can be directly connected at the utilization voltage, may be utilized in lieu of grounded-wye to open delta VTs.

8.7.3 Additional Requirements for Inverter-Based Installations

1. Modern inverter systems can perform many of the required protective functions internally, without the need for additional protective equipment. Therefore, additional standards are applicable to inverter-based technologies.
2. Two external standards shall apply to inverter-based Interconnections:
    a. IEEE Standard 1547, *Standard for Interconnecting Distributed Resources with Electric Power Systems*.
    b. UL Standard 1741 and UL Standard 1741 SA, *Inverters, Converters, Controllers, and Interconnection System Equipment for use with Distributed Energy Resources.*
3. These standards set forth the nominal voltage and frequency parameters that must be met and the limits allowed for anomalies such as flicker and interference, as well as the time allowed for disconnection when the required parameters are no longer being met or for reconnection following a system failure or automatic disconnection.
4. ED3 recognizes the concept of "Type Certification" (sometimes called pre-certification) which requires inverter-based units to undergo standardized testing, usually by an accredited Nationally Recognized Testing Laboratory (NRTL), and the results of those tests be made publicly available. Type certified units typically must also be "listed" by the laboratory and the equipment labeled as such.
5. Advanced inverters also provide grid support functionality and can assist with resource availability in the event of a bulk power system disturbance. As such and unless agreed upon by ED3, inverters must also be set per the guidance provided in Attachment 13, Protect*ive Relay Setting Guidelines.*
6. The technical requirements for certified inverter-based GFs, of 10kW and less (Residential) and 20kW and less (Commercial), can be found in the *Guidelines for Customer Owned Distributed Generation,* which is included in the Distributed Generation Application Packet on the ED3 website.
7. The requirements of UL 1741/1741 SA may be applied to inverters with photovoltaic and other electric energy sources. An inverter is considered approved if it is certified to the UL 1741/1741 SA testing procedure and it has passed the required tests without failure to comply with IEEE C62.41 and C62.45. Proof of certification under UL1741/1741 SA and compliance with IEEE C62.41, and C62.45 shall be required. As of May 7, 2007, UL 1741 includes the requirements within it of IEEE C62.41, and C62.45. Therefore, equipment tested to UL 1741/1741 SA after that date need only prove compliance with UL 1741/1741 SA.
8. It is the Interconnector's responsibility to submit written evidence that the proposed GF has been UL 1741/1741 SA certified. Interconnectors should contact the GFs supplier to determine if it has been listed.
9. Non-certified inverters shall be equipped with anti-islanding protection as defined by IEEE 1547, and conform to the maximum harmonic limits

prescribed in IEEE 519. Noncertified inverters must be protected by certified or Utility-Grade Relays, using settings approved by ED3.

10. Self-commutated inverters with external frequency sensing may be used to synchronize the GF with the ED3 Distribution System. The following requirements apply to such inverters:

    a. The Interconnector shall use one or more synchronizing devices such as motorized breakers, contactor/breaker combinations, or a fused contactor (if mutually agreeable) to connect the GF to the ED3 Distribution System. This synchronizing device shall not be the Interconnection interrupting device. This synchronizing device shall be capable of interrupting the current and voltages produced when the GF is connected out of phase with the Distribution System per IEEE 1547.

    b. All synchronizing shall be done by the Interconnector at the GF. The GF shall not be used to energize a de-energized ED3 distribution circuit.

    c. In-line breakers, contactors, or switches without synchronizing devices require electrical or mechanical interlocks to prevent out-of-phase closing with the ED3 Distribution System.

    d. All synchronizing schemes used for interconnecting a GF with the ED3 Distribution must conform to the synchronizing requirements of the latest version of IEEE 1547. Automatic synchronizing schemes are preferred.

8.7.4 Additional Requirements for Induction Generators

Unless ED3 determines otherwise, there are no additional protection requirements applicable only to Induction Generators.

8.7.5 Additional Requirements for Synchronous Generators

1. The following additional relay functions are required for Synchronous Generators. Settings for these relays shall be submitted to ED3 for review and approval. See Attachment 13, Protect*ive Relay Settings Guidelines* for guidance.

    a. 51V Over-Current (Voltage Control or Restrained). This element provides backup phase over-current protection for system faults under a collapsed voltage condition.

    b. 59G Over-Voltage (Ground). This element detects ground faults in the event that a ground (or neutral) over-current source is lost. When studies show it can operate reliably, an alternative to the 59G is a 51N over-current (Ground). This element provides ground over-current protection and operates with an inverse time-current characteristic when its input current exceeds a predetermined value.

    c. 25 Synchronizing or Synch-Check. This element supervises the operation of the generator automatic or manual synchronizing

system by ensuring proper voltage phase angle matching and, where appropriate, slip frequency between the ED3 Distribution System and the GF before the breaker is allowed to close.

2. The following additional relay functions may be required by ED3. Settings for these relays shall be submitted to ED3 for review. See Attachment 13, Protect*ive Relay Setting Guidelines*.

    a. 32R Reverse Power. This element is used on systems designed as import-only systems to ensure no power is exported onto the ED3 Distribution System.

    b. 32U Under-Power. This element performs a similar function to the 32R element, except it ensures the GF is always importing some level of power.

    c. 46 Negative Sequence Current. This element serves to protect both the ED3 Distribution System and the interconnecting system from system imbalances including single phasing.

    d. 51 Phase Over-Current. This element provides over-current protection and operates with an inverse time-current characteristic when its input current exceeds a predetermined value.

    e. 51N Ground Over-Current. This element provides ground over-current protection and operates with an inverse time-current characteristic when its input current exceeds a predetermined value.

    f. 67 Directional Phase Over-Current. This element provides directional phase overcurrent protection and operates with an inverse time-current characteristic when its input current exceeds a predetermined value in a specified direction.

    g. 67N Directional Ground Over-Current. This element provides directional ground over-current protection and operates with an inverse time-current characteristic when its current exceeds a predetermined value in a specified direction.

    h. 86 Lockout Relay. This auxiliary relay is electrically tripped by the GF protection and in turn trips the isolating circuit breakers. It can only be reset manually after all protective trips have been cleared.

3. Synchronizing Devices

    a. The Interconnector shall designate one or more synchronizing devices such as motorized breakers, contactor/breaker combinations, or a fused contactor (if mutually agreeable) to be used to connect the GF to the ED3 Distribution System.

    b. This synchronizing device may be something other than the Interconnection interrupting device. The synchronizing device must be capable of interrupting the current and voltages produced

when the GF is connected out of phase with the ED3 Distribution System, consistent with IEEE 1547.

c. All synchronizing will be done by the Interconnector at the GF. The GF shall not be used to energize a de-energized ED3 Distribution System circuit.

d. In-line breakers, contactors, or switches without synchronizing devices shall be equipped with electrical or mechanical interlocks to prevent out-of-phase closing onto the ED3 Distribution System.

e. All synchronizing schemes used for interconnecting a GF with the ED3 Distribution System must conform to the synchronizing requirements of IEEE 1547. Automatic synchronizing schemes are preferred.

4. The Interconnector shall provide protective relay functions to clear both phase and ground circuit faults on ED3's distribution circuits. The operating characteristics thereof shall be subject to review and approval by ED3.

8.7.6 Closed-Transition Generators

1. A closed-transition, "make-before-break" GF must be synchronized with the ED3 Distribution System prior to transfer occurring. The transfer scheme will then parallel the GF with the ED3 Distribution System for less than 100 milliseconds. During this brief period, the load will be either transferred to the GF from the ED3 Distribution System or to the ED3 Distribution System from the GF. The design of the transfer scheme shall prevent the possibility of sustained parallel operation of the GF with the ED3 Distribution System.

2. The closed-transition scheme and transition equipment used by the Generator must be reviewed and approved by ED3 prior to operation of the GF. The closed-transition scheme must provide voltage, frequency and phase angle matching as appropriate to provide a smooth transition. It must also provide maximum paralleling time protection. This protection is described in the next paragraph below.

3. Protective relays isolating the GF from faults in the ED3 Distribution System shall not be required if the paralleling operation is automatic and takes place for less than 100 milliseconds.

4. Maximum paralleling time protection must be provided by a separate device from the equipment used for control and paralleling of the generator and operation of the transfer switch. (See Attachment 13, Protect*ive Relay Setting Guidelines* for details on the required logic for this protection). This protection shall:

   a. use a discrete solid-state timer; pneumatic timers are unacceptable for this purpose,

   b. Be powered by the generator battery and

c. Trip an interrupting device that ceases parallel operation of the generator (This may be the generator breaker). This requirement shall prevent sustained operation should the control equipment malfunction.

5. The parallel operation of a closed-transition GF lasting 100 milliseconds or more requires the same protective relay functions as would a GF operating in sustained parallel operation with the ED3 Distribution System as described in this section.
6. The Interconnector, at a minimum, must perform the following functional tests after its transfer equipment has been energized, but before the closed-transition transfer is allowed on the ED3 Distribution System as a normal operation:
    a. Voltage, frequency, and phase rotation.
    b. Transfer test (maximum paralleling time must be less than 100 milliseconds); and
    c. Excessive parallel time test to detect if an ED3 source switch failed to open. If so, the protection must trip an interrupting device, which may be the GFs main breaker, to cease parallel operation of the generator.
    d. The Interconnector shall notify ED3 a minimum of ten (10) Business Days in advance of such testing so that ED3 may, at its option and expense, have personnel observe the testing, and/or inspect the installation.
7. Before ED3 may approve a closed-transition generator transfer scheme, the Interconnector shall provide a test report showing successful completion of the above testing. Clearance from the local AHJ, approving the installation, shall also be provided. ED3 shall provide the Interconnector written notice of approval.

8.7.7 Open-Transition GFs

1. An Interconnection Application shall be submitted and approval received prior to connection of a GF to the ED3 Distribution System with an open-transition transfer scheme.
2. Technical specifications of the open-transition switches and equipment shall be submitted with the application for review.
3. The open-transition transfer is typically referred to as "break-before-make," which means that the GFs transfer switch must be designed and operated to prevent ED3 Distribution System and the GF from powering the Interconnector's facility at the same time. Consequently, this mode of operation will also prevent the GF from potentially energizing the ED3 Distribution System.
4. ED3's review shall verify that the design prevents parallel operation of the GF with the ED3 Distribution System. Upon approval of the

submitted design, ED3 shall issue an *Approval to Operate an Open-Transition Interconnection*, in the form of Attachment 15.

5. Any changes to the design after approval is received shall require re-approval per this Policy.

8.7.8 Special Protection Systems

1. Direct Transfer Trip Protection Schemes
    a. ED3 May Require a DTT in the following circumstances, as well as during other possible events:
        i. The minimum load to generation on a circuit creates the possibility that an unacceptable abnormal operating condition could occur.
        ii. It is determined that the GFs protective relaying may not operate during certain conditions or faults; or
        iii. The installation could increase the length of outages on a distribution circuit or jeopardize the reliability of the circuit.
2. Current Supervision of Under-Frequency Load Shedding
    a. Studies have revealed that larger generators may have an undesirable impact on ED3's underfrequency load shedding schemes. If transmission supply is lost to ED3's distribution substation for a period of time, the generators paralleled to that substation may cause the underfrequency load shedding scheme to operate as the generators hold up the ED3 Distribution System voltage and the frequency drops. Because operation of the load shedding scheme in this manner results in the tripping of lockout relays that cannot be reset remotely, this mis-operation results in extended outages for some customers after transmission supply is restored.
    b. To mitigate this problem, for generators above 1 MW, Interconnectors may be required to pay for the addition of current supervision of the underfrequency load shedding protection at ED3's closest substation.
3. High-Speed Protection

    If ED3 determines that relaying used traditionally on their Distribution System cannot operate quickly enough to avoid adverse system impacts, ED3 may require the GF to use either direct transfer tripping techniques or more sophisticated tripping techniques that rely on protective relay communication to increase operating speed.
4. Recloser Schemes
    a. Special studies are required if the GFs proposed Interconnection point to the ED3 Distribution System is supplied by an existing recloser. These special studies shall determine the feasibility of the Interconnection as proposed.

b. The Interconnection of the GF to the ED3 Distribution System shall not degrade the reliability of the ED3 Distribution System due to either of the following:

   1) The operation of the GF itself,

   2) Changes made to the ED3 Distribution System to accommodate the Interconnection.

c. If the GFs protection cannot be designed to meet these requirements, other anti-Islanding measures shall be implemented (such as a dedicated circuit supply or DTT protective relaying from all ED3 isolation points).

d. All changes necessary to accommodate the Interconnection, whether to the ED3 Distribution System protective schemes or to the GF itself, shall be made at the sole cost of the Interconnector.

8.7.9 Protection System Changes

1. The Interconnector shall provide ED3 with reasonable advance notice of any proposed modifications to the GFs protective relay system, relay settings, operating procedures, or other equipment affecting the Interconnection. ED3 will determine if such proposed modifications require re-acceptance of the Interconnection per the requirements of this Policy.
2. ED3 shall provide the Interconnector with reasonable advance notice of any proposed changes to be made to its protective relay system, relay settings, operating procedures or other equipment that affects the Interconnection.

8.7.10 Underfrequency Protection

1. ED3 shall review the existing underfrequency load-shedding relay schemes on their Distribution System to determine if they will operate properly with the Interconnection of the proposed GF. All changes made to the load-shedding scheme to provide proper operation shall be at the sole expense of the Interconnector. See Section 8.7.8.2 for more information on possible impacts on load-shedding schemes.
2. To mitigate the effects of extreme capacity deficiencies caused by a sudden loss of generating capacity has on the Bulk Electric System (BES), the Western Electricity Coordinating Council (WECC) and its member utilities have designed and installed an underfrequency load-shedding scheme throughout the Western Interconnect. ED3, as a member of the AEPCO BA, is obligated to implement this scheme. The purpose of this arrangement is to shed load quickly enough to allow the remaining generation to stay online and prevent a system-wide collapse.
3. The primary purpose of the frequency settings recommended in IEEE 1547 is the prevention of Unintended Islanding. However, these settings are somewhat faster than the WECC underfrequency load shedding

scheme and can conflict with the WECC scheme in its goals of keeping the BES operating.

4. To maximize the likelihood of surviving a system-wide capacity deficiency, ED3 may require some larger GFs to incorporate settings that conform to the WECC Southern Island Load Tripping Plan (SILTP) rather than IEEE 1547. These requirements are as follows:

    a. All GFs with an aggregate capacity less than or equal to 100kW shall always utilize the faster IEEE 1547 trip settings.

    b. GFs with an aggregate capacity of 100 kW or more, which are in net export mode, shall utilize the settings dictated by WECC & AEPCO. The underfrequency relay shall trip the POI circuit breaker at the frequency setpoint of Trip #1 shown in Table 4-10 below (59.5 Hz).

Trip#	Setpoint	Amount of Load
1	59.5 Hz	5.3%
2	58.9 Hz	5.9%
3	58.7 Hz	6.5%
4	58.5 Hz	6.7%
5	58.3 Hz	6.7%

    c. GFs with an aggregate capacity 100 kW or more, which are in net import mode, shall utilize IEEE 1547 trip settings. The under-frequency relay shall trip the point of interconnection circuit breaker. In some special net import cases, as permitted in section 8.7.2.15, ED3 may require the slower WECC SILTP settings to ensure there is no net load increase to the ED3 Distribution System due to an underfrequency trip. See Attachment 13, Protect*ive Relay Settings Guidelines* for guidance.

8.8 Metering, Monitoring, and Communications

All Generation Facility metering, data acquisition, and appurtenant equipment shall conform to the following standards:

- ANSI Standard C12.1, *Code for Electricity Metering*
- ANSI Standard C57.13, *Requirements for Instrument Transformers*
- ED3 design standards per the ED3 Electric Service Guidelines Section 3.0, *Service Entrance – Metering & Construction Provisions*, and Attachment 14, *ED3 Metering and Data Acquisition Design Standards*

8.8.1 Communications Channels and SCADA

a. ED3 may require communications channels between ED3 and the GF. If so, the Interconnector shall be solely responsible for providing protection from transients and over-voltages at both ends of such equipment.

b. To facilitate safe, efficient, and reliable operation of the ED3 Distribution System, any GF with a size of 1MW or greater shall have telemetry equipment compatible with ED3's SCADA System, per Attachment 14, ED3 *Metering and Data Acquisition Design Standards*.

c. ED3 may require the GF to have additional equipment, such as protective devices, supervisory control and alarms, and a dedicated communications channel. ED3 shall advise the applicant of its communications requirements after a preliminary review of the Interconnector's Interconnection Request.

8.8.2 Revenue Metering Equipment General Requirements

1. ED3 shall purchase, install, read, and maintain all revenue metering equipment for tariff administration. The Interconnector shall furnish and maintain all meter mounting equipment, including meter sockets, test switches, conduits, and enclosures. Except as provided below, ED3 shall own all revenue meters and the Interconnector shall pay the applicable ED3 tariffs, as amended from time to time.

2. The Interconnector shall provide suitable space within the GF for installation of the metering and communication equipment at no cost to ED3.

3. All metering equipment installed within the GF shall be routinely tested by ED3 at the Interconnector's sole cost in accordance with applicable ED3 and ANSI/IEEE rules and standards. If any metering equipment is found to be inaccurate by a margin greater than that allowed under the ED3 Electric Service Guidelines (ESG), ED3 shall cause such metering equipment to be corrected or replaced. The Interconnector shall be responsible for the cost to replace or correct the meter unless the meter is owned by ED3.

   In the case where the test shows the meter to be outside of the limits specified in the ED3 ESGs, an adjustment shall be made to the Interconnector's bill over a period of not more than ninety (90) days prior to the date of such test and the cost of the testing shall be borne by ED3.

4. The Interconnector and ED3 shall each accommodate the other in the following:

   a. Any reasonable request of the other Party concerning the sealing of meters,

   b. The presence of a representative of the other Party when the seals are broken and the tests are conducted,

   c. Other matters affecting the accuracy of the measurement of electricity delivered from the GF.

   If either Party has reason to believe that there has been a meter failure, it shall immediately notify the other Party.

5. The Metering Point shall be collocated with the Point of Delivery/Receipt. If they cannot be located at the same physical location, the losses accrued between the two shall be mutually agreed upon by both Parties, and the monthly billings adjusted accordingly.

8.8.3 Revenue Metering Equipment Technical Requirements

1. All equipment, including self-contained meters and instrument transformers, shall meet the following standards:
   a. ANSI C12.1 Code for Electricity Metering
   b. ANSI C57.13 Requirements for Instrument Transformers
   c. Requirements contained in Attachment 14, ED3 *Metering and Data Acquisition Design Standards*
2. ED3 does not allow hot sequence secondary metering where the revenue meter or instrument transformers are on the line side of the customer's main switch or protection. Any new meter installation (or any changes to an existing revenue meter installation) must be cold sequence (on the load side of the main switch), in accordance with the ED3 Electric Service Guidelines.
3. The type of metering equipment to be installed at a GF is dependent on the size of the GF, if power is to be exported, and if so, how the Interconnector plans to export power. For Interconnectors who will export power, the available equipment options and associated requirements are:
   a. Bi-directional, non-interval meter, including a distribution class meter with multiple registers:
      i. One set of registers shall record energy flows from ED3 to the Interconnector during periods when the Interconnector is a net consumer of energy.
      ii. A second set of registers shall record energy flows from the Interconnector to ED3 during periods when the Interconnector is a net producer of energy.
      iii. Each set of registers shall record total flows only and shall not record flows during specific intervals.
   b. Bi-directional, interval meter with, including a distribution class meter with multiple registers:
      i. One set of registers shall record energy flows from ED3 to the GF during periods when the GF is a net consumer of energy. The second set of registers shall record no flow during these periods.
      ii. A second set of registers shall record energy flows from the GF to ED3 during periods when the GF is a net producer of energy.

The first set of registers shall record no flow during these periods.

iii. Each set of registers will record total flows as well as flows during hourly intervals.

4. The Interconnector shall provide ED3 with remote access to the meter. This may be accomplished either by using the Interconnector's communications path or by providing a separate, dedicated path.
5. The Interconnector shall, at their sole expense, maintain and test all communication and transducer equipment at the GF in accordance with ED3 rules and standards.
6. The Interconnector shall provide, install, test, and maintain ED3-specified test switches in all meter and transducer circuits.

If the Interconnector desires, ED3 will purchase, own, test, and maintain all communication equipment specified in this Policy at the Interconnector's sole expense.

8.9 Testing and Maintenance Requirements

All testing shall be completed in accordance with the latest approved versions of IEEE 1547 and IEEE 1547.1.

8.9.1 Commissioning Testing.

Commissioning Testing shall be scheduled per Section 7.4, *Commissioning*, and performed per this Section 8.9.1.

1. Commissioning of the Interconnector's installed equipment shall be performed per the equipment manufacturers' recommendations, applicable Codes and Standards, and this Section 8.9.1.
2. An individual qualified and experienced in testing electrical protection system equipment shall perform commissioning testing per the manufacturer's recommendations to verify the systems meet the standards of Section 8.0, *Technical Requirements*. All testing shall be conducted at the expense of the Interconnector.
3. Testing shall, at a minimum, cover the following functionality:
   a. CT polarity, ratio, insulation, excitation, continuity, and burden tests
   b. VT polarity, ratio, insulation, and continuity tests
   c. Relay pick-up and time delay tests
   d. Functional breaker trip tests from protective relays
   e. Relay in-service test to check for proper phase rotation and accurate voltage and current readings
   f. Breaker interlock testing
   g. Paralleling and disconnection operation
   h. Anti-islanding function, if applicable
   i. Non-export function, if applicable

j. Synchronizing Controls, if applicable
k. Proof of the GFs inability to feed de-energized lines.

6. Each commissioning test shall include a calibration check and an actual trip check of the circuit breaker or contactor from the device being tested. Visually setting a calibration dial, index, or tap is not considered an adequate calibration.
7. ED3 reserves the right to test the Interconnector's control equipment and protection systems related to the protection of ED3's system at any time.
8. ED3 reserves the right to install at a mutually agreed upon location, special test equipment as may be required to monitor the operation and control of the GF or for evaluating the quality of power produced by the GF.

8.9.2 Periodic Testing

1. The Interconnector is responsible for the periodic maintenance of all relays, interrupting devices, control schemes, and batteries that involve the protection of the ED3 Distribution System.
2. Batteries shall be load tested once every twenty-four (24) months, or more frequently based on the manufacturer's recommendations.
3. The test cycle for protective relaying must not be less frequent than once every sixty (60) calendar months or the cycle recommended by the manufacturer, whichever is shorter. The Interconnector shall provide copies of these test records to ED3.
4. ED3 shall have the right to monitor the periodic maintenance performed. The preventive maintenance checks shall verify the equipment meets the same specifications per Section 8.9.1, *Commissioning Testing.*

8.9.3 Safe Operations and Maintenance

1. The Interconnector shall operate, maintain, repair, and inspect, and shall be fully responsible for the GF all appurtenant facilities that it now or hereafter may own unless otherwise specified in the Interconnection Agreement.
2. The Interconnector and ED3 shall each be responsible for the maintenance, repair, and condition of its respective lines and appurtenances on its respective side of the Point of Interconnection.
3. ED3 and the Interconnector shall each provide equipment on its respective side of the Point of Interconnection that adequately protects the EPS, personnel, and other persons from damage and injury. All maintenance shall be performed as specified in the Interconnection Agreement as executed by the parties.

8.10 Certified Facilities

8.10.1 Pre-Certified Facilities

1. GFs may interconnect under *Guidelines for Customer Owned Distributed Generation*, which is included in the *Distributed Generation Application Packet* on the ED3 website:
    a. The interconnection facilities are located at a facility within the ED3 service territory,
    b. The interconnection uses only Qualified Inverter-Based Facilities,
    c. The GF has an aggregate nameplate power rating that meets the requirements of the *Guidelines for Customer Owned Distributed Generation*,
    d. The GF is Interconnecting on a radial feeder.
    e. The aggregate GF capacity on the feeder is less than 5% of feeder peak load.

8.10.2 Non-Pre-Certified Facilities

1. Inverter-based GFs with aggregate nameplate power ratings of 20 kW or less that do not use qualified inverters, shall be reviewed per Section 5.0, *Fast Track Process* or Section 6.0, *Study Process*.

8.10.3 Certification of Generator Equipment Packages

1. Some Generator equipment packages have been certified. This facilitates the Interconnection since properly certified equipment need not be reviewed by ED3 in as much detail as non-certified equipment. This results in a faster, less costly review process for the Interconnector. For more information on certification of generator equipment packages see Attachment 11, *Certification of Small Generator Equipment Packages*.

9.0 Notifications

9.1 Interconnection Request Notifications

Interconnectors shall submit all Interconnection Requests to the ED3 Engineering & Operations Department Programs Coordinator:

ED3 Notifications	
Name:	INFORMATION ON FILE
Title:	
Email:	

Phone:	
Address:	

9.2 Non-Emergency Notifications

All non-emergency notifications pursuant to this Policy shall be made through the following personnel:

ED3 Notifications	
Name:	INFORMATION ON FILE
Title:	
Email:	
Phone:	
Address:	

Interconnector Notifications	
Name:	
Title:	
Email:	
Phone:	

Address:	

9.3 Emergency Notifications

The following contact information is provided by ED3 and the Interconnector to allow the other to report an emergency condition associated with the Interconnection. It is only to be used in case of emergency.

ED3 Notifications	
Title:	INFORMATION ON FILE
Phone:	

Interconnector Notifications	
Title:	INFORMATION ON FILE
Phone:	

10.0 Glossary

AEPCO: Arizona Electric Power Cooperative

ANSI: American National Standards Institute.

Affected Party or Parties: The entity that owns, operates or controls an Affected System, or any other entity that otherwise may be a necessary party to the Interconnection process.

Affected System: Any electric system that is in the vicinity of the ED3 service territory, including, but not limited to Interconnector-owned electric facilities that may be affected by the proposed Interconnection.

Applicable Laws and Regulations: All duly promulgated applicable federal, state, and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, judicial or administrative orders, permits, and other duly authorized actions of any Governmental Authority.

Applicable Reliability Standards: The requirements and guidelines of NERC, WECC, and the AEPCO BA, including publicly available local reliability requirements of ED3 or other Affected Systems, and any successor documents.

Application Review: A review by ED3 of the completed Interconnection Request Form to determine if Feasibility, Impact, or Facility Studies are required.

Arizona Electric Power Cooperative (AEPCO): The organization which provides energy balancing services for ED3, and is the operating authority for the AEPCO Balancing Area.

BA or BAA: Balancing Area or Balancing Area Authority (used interchangeably)

Balancing Area (Authority) (BA/BAA): A defined area for which the Authority is charged with controlling power flow across the boundaries to keep it balanced at a net zero.

Business Day: Monday through Friday, excluding Federal Holidays.

Calendar Day: Any day including Saturday, Sunday, as well as all Federal and State Holidays.

Codes and Standards: The codes and standards set forth in Attachment 12 hereto.

Commercial Operation Date (COD): The date on which the Interconnector commences commercial operation of the unit after the unit has been commissioned and likely to be associated with a specific date that is identified in a purchased power agreement or the date that the power transaction starts.

Commissioning Testing: The testing required to be completed prior to placing a GF into operation. The testing requirements vary, depending on the configuration of the GF.

Communications Costs: Any costs associated with installing, testing, and maintaining the communications infrastructure necessary to provide protection and/or monitoring for the GF.

Contract Path: A specific contiguous electrical path from a point of receipt to a point of delivery for which Distribution System rights have been contracted.

Default: The failure of a breaching Party to cure its breach under the Generator Interconnection Agreement.

Distribution System: ED3's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries. The voltage levels at which the Distribution System operate are 69 kV and 12.47kV.

Distribution System Impact Study (DSI Study): An engineering study that evaluates the impact of the proposed Interconnection on the safety and reliability of the Distribution System. The study shall identify and detail the system impacts that would result if the GF were interconnected without project modifications or system modifications, focusing on the adverse system impacts identified in the Interconnection Feasibility Study, or to study potential impacts, including but not limited to those identified in the Scoping Meeting.

ED3: Electrical District No. 3 of Pinal County, AZ is a political subdivision of the State of Arizona, established in 1926 primarily to provide irrigation power to the area to support agricultural development. ED3 is the owner and operator of the Distribution System for which Interconnection Requests under this Policy are made.

Facility Study: The study conducted by ED3 to determine the scope and costs of required modifications and upgrades to the Distribution System or GF that are necessary to accommodate an Interconnection of such GF.

Fault: An equipment failure, short circuit, or other condition resulting from abnormally high amounts of current from the power source.

Feasibility Study: A preliminary study to assess the feasibility of interconnecting the GF to the Distribution System.

FERC: Federal Energy Regulatory Commission.

Generating Facility: The devices identified in the Interconnection Request that produce electricity, exclusive of the Interconnection Facilities.

GF: Generating Facility

GF Capacity: The maximum gross megawatt electrical output at an ambient temperature of 20 degrees Fahrenheit of the GF or the aggregate maximum gross megawatt electrical output of the GF at an ambient temperature of 20 degrees Fahrenheit where it includes multiple energy production devices.

Good Utility Practice: The practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

IEEE: Institute of Electrical and Electronics Engineers.

Interconnector: The owner and/or operator of a GF.

Induction Generator: A rotating AC machine that operates above synchronous speed over its range of power output. The faster it is driven above synchronous speed by a prime mover, the more electrical power is generated. Excitation is provided by the utility in the form of reactive power. The induction generator normally loses its ability to produce voltage and power output when it is isolated from the utility since it loses its source of excitation.

In-Service Date: The date on which the GF and system modification (if applicable) are complete and ready for service, even if the GF is not placed in service on such date. This term is used in accounting.

Intentional Islanding: This occurs when the GF has been isolated from the EPS by planned operation of disconnecting means consistent with the Technical Requirements and the GF as a result is serving segregated load(s) on the GFs side of the Point of Interconnection.

Interconnection: The physical connection of a GF to the Distribution System so that parallel operation can occur.

Interconnection Agreement: A written agreement between an Interconnector and ED3 that sets forth the terms, conditions, obligations, and rights with respect to an Interconnection. An Interconnection Agreement is required to be signed by the Interconnector and ED3 before parallel operation of the GF may commence. See Attachment 8, *Interconnection Agreement*.

Interconnection Facilities: Interconnection Facilities include all facilities and equipment between the GF and the Point of Interconnection, including any modification, additions, or upgrades that are necessary to physically and electrically interconnect the GF to the Distribution System. ED3 and the Interconnector may each own Interconnection Facilities with respect to the GF.

Interconnection Request: An Interconnector's request, in the form of Attachment I, to interconnect a new GF to ED3's Distribution System or increase the capacity or operating characteristics of an existing GF currently interconnected to ED3's Distribution System.

Interconnection Service: The service provided by ED3 associated with interconnecting the GF to the Distribution System, enabling the delivery of electric energy and capacity from the GF at the Point of Interconnection, pursuant to the terms of the Interconnection Agreement.

Interconnector: The owner and/or operator of a GF.

Inverter: A machine, device, or system that changes direct-current (DC) power to alternating-current (AC) power.

Islanding: A situation where electrical power remains in a portion of the Distribution System after it has been isolated by either automatic or manual action.

ISO: Independent System Operator: An entity supervising the collective transmission facilities of a power region; the ISO is charged with nondiscriminatory coordination of market transactions, system-wide transmission planning, and bulk power network reliability.

Isolation Device: A device used for isolating a circuit or equipment from a source of power. Also referred to as a "Disconnect Switch".

Line Section: That section of the Distribution System connected or proposed to be connected to a GF, bounded by automatic sectionalizing devices or the end of the distribution line.

Material Modification: (i) Any modification to an Interconnection Request submitted by an Interconnector that would be reasonably expected to require significant additional study of the Interconnection Request, substantially change the Interconnection design, or have a material impact on the cost or timing of any studies or upgrades associated with any other Interconnection Request with a later queue priority date; (ii) a change to the design or operating characteristics of an existing GF currently interconnected with the ED3 Distribution System which may have an adverse effect on the Distribution System's reliability; or (iii) a significant delay to the Commercial Operation Date or In-Service Date, the reason for which is unrelated to construction schedules or permitting.

Metering Point: The point at which the billing meter is connected (for meters that do not use instrument transformers). For meters that use instrument transformers, the point at which the instrument transformers are connected.

NEC: National Electric Code

NEMA: National Electrical Manufacturers Association.

NERC: North American Electric Reliability Corporation.

NESC: National Electric Safety Code.

Net Metering: The process, in accordance with applicable ED3 rates, whereby the metered electrical energy production by a GF is subtracted from the metered electrical energy sales to the Interconnector at such GF.

Non-Islanding: Describes the ability of a GF to avoid unintentional islanding through the operation of its Interconnection equipment.

NRTL: An accredited Nationally Recognized Testing Laboratory, which has been approved to perform the certification testing required for GFs.

Operating Requirements: Any operating or technical requirements that may be required by ED3, including those set forth in the *Interconnection Agreement* (Attachment 8), or the Applicable Reliability Standards, as defined in this Section.

Point of Delivery: See Contract Path

POI: Point of Interconnection

Point of Interconnection: The point at which the GFs local electric power system connects to ED3's Distribution System such as the electric power revenue meter or premises service transformer.

Point of Receipt: See Contract Path

Policy: This Policy for Small Generator Interconnection that describes the protocols and procedures for interconnecting to ED3's Distribution System.

Pre-certified, Pre-certification: A specific generating and protective equipment system or systems that have been certified and documented as meeting applicable test requirements and standards relating to safety and reliability by a NRTL.

Qualified Facility: A GF that only uses equipment that has been certified to:

- UL 1741, *Standard for Inverters, Converters, Controllers, and Interconnection System Equipment for Use with Distributed Energy Resources*
- UL 1741 SA, Supplement A to UL 1741
- IEEE C62.41, *Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits*

Qualified Inverter-Based Facility: A Qualified Facility which only uses inverters; no rotating generators.

SCADA: Supervisory Control and Data Acquisition

Scoping Meeting: A scoping meeting is to discuss the Interconnection Request, review any existing studies relevant to the application, and discuss whether ED3 should perform a Feasibility Study or proceed directly to an Impact Study, or a Facility Study, or an Interconnection Agreement.

Southern Island Load Tripping Plan (SILTP): is a plan developed by WECC to implement a set of Underfrequency Load Shedding requirements that shed load in a controlled manner during severe generation shortages to protect against system collapse.

Supervisory Control and Data Acquisition (SCADA): a system used to remotely monitor and control the ED3 Distribution System.

Switchgear: Components for switching, protecting, monitoring and controlling the Distribution System.

Synchronous Generator: A synchronous alternating-current machine that transforms mechanical power into electric power of which the average speed is exactly proportional to the frequency of the system to which it is connected.

System Impact Studies: The Transmission System Impact Study and the Distribution System Impact Study.

Tariffs: Rates and charges for service through ED3's Distribution System, as filed and approved by the ED3 Board of Directors.

Technical Requirements: Technical requirements for the Interconnection, as defined in Section 8.0, *Technical Requirements*.

Telemetry: The transmission of GF data using telecommunications techniques.

Terms and Conditions: ED3's terms and conditions for providing electric delivery service as approved by the Board of Directors.

Transfer Switch: A switch designed so that it will disconnect the load from one power source and reconnect it to another source.

Transmission System: Facilities and equipment used to transmit electricity generally at voltage levels greater than 69 kV. There are currently no transmission assets operated by ED3.

Transmission System Impact Study: An engineering study that evaluates the impact of the proposed Interconnection on the safety and reliability of the Transmission System without project modifications or system modifications, focusing on the adverse system impacts identified in the Feasibility Study and/or at the Scoping Meeting.

UL: Underwriter's Laboratories

Underwriter's Laboratories (UL): An NRTL that tests equipment for conformance with established standards. UL does not write standards itself.

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

- ANSI/ IEEE C37.90
- ANSI/ IEEE C37.90.1
- ANSI/ IEEE C37.90.2
- ANSI/ IEEE C37.90.3
- IEEE C37.98 Seismic Testing (fragility) of Protective and Auxiliary Relays
- ANSI C37.2 Electric Power System Device Function Numbers
- IEC 255-21-1 Vibration
- IEC 255-22-2 Electrostatic Discharge
- IEC 255-5 Insulation (Impulse Voltage Withstand)

Attachments: Procedures and Forms

1. Interconnection Request
2. Offer of Supplemental Review
3. Contingent Approval to Interconnect
4. Feasibility Study Agreement
5. Distribution System Impact Study
6. Transmission System Impact Study Agreement
7. Facility Study Agreement
8. Interconnection Agreement
9. Not Used
10. Approval to Energize the GF
11. Certification of Small Generator Equipment Packages
12. Codes and Standards
13. Protective Relay Setting Guidelines
14. ED3 Metering and Data Acquisition Design Standards
15. Approval to Operate an Open-Transition Interconnection

Interconnection Request

Instructions

Requests meeting the requirements of Sections 4.1.1 & 4.1.2 shall utilize the *Distributed Generation Application Packet* on the ED3 website. All others shall utilize this form. Prospective Interconnectors shall complete and submit this Interconnection Request to the Engineering & Operations Programs Coordinator per Section 9.0, Notifications.

Application fees are required with each Interconnection Request. The applicable fees are delineated in the table below:

Application and Study Fees			
Process	Interconnector Applicability	Application Fee	Study Fee
ED3 Review	< 20kW (<10kW Residential), certified, and passed the Screen	$100	N/A
Fast Track	0-2MW, unless DG Facility does not qualify for Fast Track Process	$500	Actual Cost
	20kW or less and certified but did not pass the <20kW Screen		
Study	>2MW but <20MW	$1,000	Actual Cost
	<=2MW but not certified		
	<=2MW and certified but did not pass the Fast-Track Process		

Once a fully completed Interconnection Request is received and the Application Fee is paid, the Request shall be placed in the Queue. An Interconnection Request is considered complete when it provides all applicable and correct information as required below. Documentation of site control must be submitted with the Interconnection Request.

System Owner Information

For installations at locations with existing electric service to which the proposed Generating Facility will interconnect, provide:

Existing Account Number: _____

Name: _____

Title (if applicable): _____

Address, City, State, Zip: _____

Phone (primary): _____ Phone (alternate): _____

Fax: _____ E-Mail Address: _____

Requested Point of Interconnection: _____

Generating Facility's Requested In-Service Date: _____

Is a new service request or new construction associated with this project?

Yes_____ No_____

Interconnector Information

If different from System Owner, provide legal name of the Interconnector (or, if an individual, the individual's name)

Name: _____

Contact Person (if different from above): _____

Address: _____

City, State, Zip: _____

Facility Location (if different from above): _____

Phone (primary): _____ Phone (alternate): _____

Fax: _____ E-Mail Address: _____

Alternate Contact Information (if different from the Interconnector)

Contact Name: _____

Title: _____

Address: _____

Phone (primary): _____ Phone (alternate): _____

Fax: _____ E-Mail Address: _____

Generating Facility (GF) General Information

Is this application for:

A new Generating Facility?

Yes ___No ___

Capacity addition to or Material Modification of an existing Generating Facility:

Yes ___No ___

If capacity addition to or Material Modification of an existing facility, please describe:

_____

_____

_____

_____

_____

Will the Generating Facility be used for any of the following?

To Supply Power to the Generating Facility? Yes ___No ___

To Supply Power to Others? Yes _____ No _____

Is this Request for a retail customer interconnecting a new Generating Facility that will produce electricity to be consumed only on the retail customer's site?

Yes_____ No_____

If power is to be used onsite, describe the mode of operation: (Please Check all that Apply)

□ Peak Shaving

□ Demand Management

□ Primary Power/Base Load

□ Combined Heat and Power or Cogeneration

□ Standby/Emergency/Backup

Will the Generating Facility operate in parallel with the ED3 Distribution System for any amount of time?

Yes_____ No_____

If No: Then Generator is operating in Open Transition mode.

If Yes: Will the Generating Facility operate in parallel with the ED3 Distribution System for longer than 100 milliseconds?

Yes_____ No_____

If No: Then Generator is operating in Closed Transition mode

If Yes: Then Generator is operating in Parallel Operation mode

Will it vary by season? (if so, please describe)

Yes_____ No_____

_____

_____

_____

Is this to be a Qualifying Facility where 100% of the output will be sold to its host utility?

Yes_____ No_____

Is this a new Generating Facility that plans to participate in the wholesale markets?

Yes_____ No_____

An existing Generating Facility commencing participation in the wholesale markets?

Yes_____ No_____

Generating Facility Information

These questions apply only to the Generating Facility, not the Interconnection Facilities.

Generating Facility or Customer Site Load: _____kW (if none, so state)

Typical GF/Customer Site Reactive Load (if known): _____ kVAR

Maximum Physical Export Capability Requested: _____ kW

Total Number of Generators to be interconnected: _____

Components of the Generating Facility equipment package that are currently certified:

Equipment	**Quantity**	**Certifying Agency**

Generator General Information

Energy Source: _____ (solar/wind/diesel/NG/H2/etc.)

Prime Mover: _____ (PV/fuel cell/Reciprocating Engine/gas turbine/steam turbine/micro-turbine/etc.)

Manufacturer: _____

Model: _____ Number: _____

Configuration: _____ (3Ø/1Ø/Δ/Y/Split) Version: _____

Type: _____ (inverter/synchronous/induction)

Nameplate Real Output Power Rating (max continuous output)

(Summer) _____ kW (Winter) _____ kW

Nameplate Apparent Output Power Rating:

(Summer) _____ kVA (Winter) _____ kVA

Nameplate Power Factor Rating: Leading: _____ Lagging: _____

Nameplate BIL Rating: _____kV

Inverter-Based Generating Facility Technical Data

AC Ratings:

Output Voltage: _____ VAC

Output Current: _____ A

Power Factor: _____ %

Max design fault contribution current: _____ A (Instantaneous or RMS)

Maximum Total Harmonic Distortion: _____ %

Available fault current: _____ A

Rotating Machine Generating Facility Technical Data

Machine RPM: _____ Machine Frequency: _____

Neutral Grounding Resistance (If Applicable): _____

Total Rotational Inertia, H: _____ Per Unit on kVA Base

Synchronous Generator-Specific Data:

Direct Axis Synchronous Reactance, Xd: _____ Per Unit

Direct Axis Transient Reactance, Xd': _____ Per Unit

Direct Axis Sub Transient Reactance, Xd": _____ Per Unit

Negative Sequence Reactance, X2: _____ Per Unit

Zero Sequence Reactance, X0: _____ Per Unit

KVA Base: _____

Field Volts: _____ VAC Field Amperes: _____ A

Motoring Power: _____ kW

I_2^2 t or K (Heating Time Constant): _____

Rotor Resistance, Rr: _____Per Unit

Stator Resistance, Rs: _____ Per Unit

Stator Reactance, Xs: _____Per Unit

Rotor Reactance, Xr: _____ Per Unit

Magnetizing Reactance, Xm: _____Per Unit

Short Circuit Reactance, Xd'': _____Per Unit

Exciting Current: _____ A

Temperature Rise: _____ °C

Frame Size: _____

Design Letter: _____

Reactive Power Required (No Load): _____ kVAR

Reactive Power Required (Full Load): _____ kVAR

Excitation and Governor System Data

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

Interconnection Transformer Data:

Configuration: _____ (3Ø/1Ø/Δ/Y/Y-Gnd/Split)

Nameplate Power Output: _____ kVA

Nameplate Voltage: Primary: _____ kV Secondary: _____ kV

Tertiary (if applicable): Volts: _____ kV Configuration: _____

Impedance: _____% on _____kVA Base

Positive-Sequence Short-Circuit Impedances (pu):

Zps= _____, Zpt=_____, Zst=_____

Zero-Sequence Impedances (pu):

Zpm0= _____, Zsm0=_____, Zmg0=_____

Neutral Grounding Reactor/Resistor Impedance: _____ Ω

BIL Rating: _____kV

General Requirements

The Requestor shall enclose the following with the Interconnection Request:

- The proposed site one-line electrical diagram showing the configuration of all Generating Facility equipment, current and potential circuits, and protection and control schemes. If the Generating Facility is larger than 50 kW This diagram shall be signed and stamped by a Professional Engineer licensed in the State of Arizona.
- Site documentation that indicates the precise physical location of the proposed Generating Facility. If the planned location of the GF is in an area without a current address, use GIS coordinates to specify the location.

- Documents that describe the operation of the GF protection and control schemes, including copies of schematic drawings for all protection and control circuits.

Applicant Signature

I have read the ED3 Small Generator Interconnection Policy & Procedures and agree to abide by all terms and conditions. I understand that my Interconnection Request may be rejected by ED3 or there may be a delay in processing my Interconnection Request if ED3 determines that I have not complied with this Policy.

I hereby certify that, to the best of my knowledge, all the information provided in this Interconnection Request is true and correct.

Requesting Company:	
Name:	
Title:	
Signature:	
Date:	

Offer of Supplemental Review

Contingent Approval to Interconnect

Date:		ED3 Job #:	
Interconnector Company Name:		Interconnection Application #:	
Clearance Date:		Interconnection Agreement	
ED3 Witness of Commissioning:		Commissioning Date:	
Interconnection of the GF with the ED3 Distribution System is approved contingent upon compliance with the ED3 Small Generator Interconnection Policy, the Interconnection Agreement, and the Interconnector's submission of a completed Commissioning Report to ED3.			
Signature		Date	
Name (Print)		Title	

Feasibility Study Agreement

This Feasibility Study Agreement ("Agreement"), dated as of _____ ("Effective Date") is entered into, by and between Electrical District No. 3 of Pinal County, Arizona, a Political Subdivision of the State of Arizona ("ED3"), and _____, a _____ ("Interconnector"). ED3 and Interconnector are collectively referred to as the "Parties" and individually as a "Party." Any capitalized term used but not defined in this Agreement shall have the meaning ascribed to such term in POL-ED3-004, Small Interconnector Interconnection Policy & Procedures ("Policy"), as may be amended from time to time, and of which this Agreement is part.

RECITALS

WHEREAS, Interconnector is proposing to develop a Generating Facility or increase the generating capacity of an existing Generating Facility consistent with the Interconnection Request completed by Interconnector on_____;

WHEREAS, Interconnector desires to interconnect the Generating Facility with the ED3 Distribution System; and

WHEREAS, Interconnector has requested ED3 perform a Feasibility Study to assess the feasibility of interconnecting the proposed Generating Facility with the facilities that are part of the ED3 Distribution System, and of any Affected Systems (the "Feasibility Study").

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein the Parties agree as follows:

1. Capitalized terms used herein but not defined herein shall have the meanings ascribed to such terms in the ED3 Small Generator Interconnection Policy ("Policy").
2. ED3 or its consultant shall conduct a Feasibility Study in accordance with the Guidelines.
3. The scope of the Feasibility Study shall be subject to the assumptions set forth in Exhibit A to this Agreement.
4. The Feasibility Study shall be based on the technical information provided by the Interconnector in its Interconnection Request, as may be modified as the result of the Scoping Meeting. At the reasonable request of ED3, the Interconnector shall promptly provide additional technical information.

5. In performing the Feasibility Study, ED3 may rely, to the extent reasonably practicable, on other existing studies in ED3's possession.

6. At the request of the Interconnector and at the Interconnector's sole cost and expense, the Feasibility Study shall include the feasibility of any Interconnection at a proposed project site where there could be multiple potential Points of Interconnection.

7. In conjunction with the execution of this Agreement, ED3 shall provide to the Interconnector a written, good faith estimate of the cost of the Feasibility Study (the "Cost Estimate"). Prior to commencement of the Feasibility Study, the Interconnector shall pay ED3 the Cost Estimate amount in full.

8. Following the conclusion of the Feasibility Study, ED3 shall prepare a Feasibility Study report (the "Report"), which shall provide the following analyses for the purpose of identifying any potential adverse system impacts that would result from the Interconnection of the Generating Facility as proposed:

   8.1 Initial identification of any circuit breaker or other facility short circuit capability limits exceeded as a result of the Interconnection;

   8.2 Initial identification of any thermal overload or voltage limit violations resulting from the Interconnection;

   8.3 Initial review of grounding requirements and electric system protection;

   8.4 A non-binding estimate of the cost (including a description thereof) of facilities required to interconnect the proposed Generating Facility.

9. ED3 shall use commercially reasonable efforts to provide the Report to the Interconnector within thirty (30) days of the later of (a) execution of this Agreement and (b) payment of the Cost Estimate by the Interconnector.

10. Within thirty (30) days of the completion of the Feasibility Study, the ED3 shall calculate the actual costs of the Feasibility Study (the "Actual Cost") and provide an invoice to the Interconnector which shall include the Actual Cost and the basis for the calculation of the Actual cost.

    In the event the Actual Cost exceeds the Cost Estimate, the Interconnector shall pay the difference to ED3 within thirty (30) Calendar Days of the invoice date (without interest). In the event the Cost Estimate exceeds the Actual Cost, ED3 shall pay the excess to the Interconnector within thirty (30) Calendar Days of the invoice date (without interest).

11. Miscellaneous.

    11.1 Accuracy of Information. The Interconnector represents and warrants that, to the best of its knowledge, the information it provides ED3 in connection with this Agreement and the Feasibility Study shall be accurate and

complete as of the date such information is provided. The Interconnector shall promptly provide ED3 with any additional information needed to update information previously provided.

11.2 Disclaimer of Warranty. In performing the Feasibility Study, ED3 may rely on information provided by the Interconnector and third parties and may not have control over the accuracy of such information. ACCORDINGLY, ED3 HEREBY EXPRESSLY DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, WHETHER ARISING BY OPERATION OF LAW, COURSE OF PERFORMANCE OR DEALING, CUSTOM, USAGE IN THE TRADE OR PROFESSION, OR OTHERWISE, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Interconnector acknowledges that it has not relied on any representations or warranties not specifically set forth herein and that no such representations or warranties have formed the basis of its bargain hereunder.

11.3 Force Majeure, Liability, and Indemnification.

11.3.1 Force Majeure. If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, such Party shall promptly notify the other Party in writing and shall keep the other Party informed on a continuing basis of the scope and duration of the Force Majeure Event. The affected Party shall specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the affected Party is taking to mitigate the effects of the event on its performance.

The affected Party may suspend or modify its performance of obligations under this Agreement, other than the obligation to make payments then due or becoming due under this Agreement, but only to the extent that the effect of the Force Majeure Event cannot be mitigated by commercially reasonable efforts. The affected Party shall use commercially reasonable efforts to resume its performance as soon as possible. Without limiting this section, the Interconnector shall immediately notify ED3 verbally if the failure to fulfill the Interconnector's obligations under this Agreement may impact the safety or reliability of the ED3 Distribution System.

For purposes of this Agreement, "Force Majeure Event" means any event or circumstance that (a) is beyond the reasonable control of the affected Party and (b) the affected Party is unable to prevent or provide against by exercising commercially reasonable efforts. Force Majeure Events include the following events or circumstances, but only to the extent they satisfy the foregoing requirements: (i) acts

of war or terrorism, public disorder, insurrection, or rebellion; (ii) floods, hurricanes, earthquakes, lighting, storms, and other natural calamities; (iii) explosions or fire; (iv) strikes, work stoppages, or labor disputes; (v) embargoes; and (vi) sabotage. In no event shall the lack of funds or the inability to obtain funds constitute a Force Majeure Event.

11.3.2 Liability. Except with respect to a Party's fraud or willful misconduct, and except with respect to damages sought by a third party in connection with a third party claim: (a) neither Party shall be liable to the other Party, for any damages other than direct damages; and (b) each Party agrees that it is not entitled to recover and agrees to waive any claim with respect to, and will not seek, consequential, punitive or any other special damages as to any matter under, relating to, arising from or connected to this Agreement.. Notwithstanding the foregoing, nothing in this Section 13.3.2 shall be deemed to limit Interconnector's obligations under Section 13.3.3.

11.3.3Indemnification. The Interconnector shall indemnify, defend and hold harmless ED3 and its trustees, directors, officers, employees and agents (including affiliates, contractors and their employees) from and against any liability, damage, loss, claim, demand, complaint, suit, proceeding, action, audit, investigation, obligation, cost, judgment, adjudication, arbitration decision, penalty (including fees and fines), or expense (including court costs and attorneys' fees) relating to, arising from or connected to this Agreement.

11.4 Term and Termination. This Agreement shall be effective from the Effective Date until the earlier of (a) one year from the Effective Date and (b) the withdrawal of the Interconnector's Interconnection Request, unless extended by written agreement of the Parties. Notwithstanding the foregoing, ED3 may terminate this Agreement fifteen (15) days after providing written notice to the Interconnector that it has breached any of its obligations hereunder, if such breach has not been cured within such fifteen (15) day period.

11.5 Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Arizona applicable to contracts made and performed in such State and without regard to conflicts of law doctrines.

11.6 Severability. If any provision of this Agreement is held to be unenforceable for any reason, such provision shall be adjusted rather than voided, if possible, to achieve the intent of the Parties. If no such adjustment is possible, such provision shall be fully severable and severed, and all other

provisions of this Agreement will be deemed valid and enforceable to the extent possible

11.7 Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, and all counterparts so executed shall constitute one agreement binding on all Parties hereto, notwithstanding that all of the Parties are not signatories to the same counterpart. Facsimile counterparts may be delivered by any Party, with the intention that they shall have the same effect as an original counterpart hereof.

11.8 Amendment. No amendment, modification or waiver of any term hereof shall be effective unless set forth in writing and signed by the Parties hereto.

11.9 Survival. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of termination.

11.10 Independent Contractor. ED3 shall at all times be deemed to be an independent contractor of the Interconnector, and none of ED3's employees, contractors, or the employees of its contractors shall be deemed to be employees of the Interconnector as a result of this Agreement.

11.11 No Implied Waivers. No failure on the part of any Party to exercise or delay in exercising any right hereunder shall be deemed a waiver thereof, nor shall any single or partial exercise of any right hereunder preclude any further or other exercise of such or any other right.

11.12 Successors and Assigns. Neither Party may assign this Agreement, by operation of law or otherwise, without the prior written consent of the other Party, which consent shall not be unreasonably withheld. In the event of an assignment authorized hereunder, all terms and conditions hereof shall be binding upon and inure to the benefit of the Parties and their respective successors and assigns.

11.13 Due Authorization. Each Party represents and warrants to the other that (a) it has full power and authority to enter into this Agreement and to perform its obligations hereunder, (b) execution of this Agreement will not violate any other agreement with a third party, and (c) the individual signing this Agreement on its behalf has been properly authorized and empowered to enter into this Agreement.

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.

Interconnector: _____

Signed: _____

Name (Printed): _____

Title: _____

Electrical District No. 3 of Pinal County

Signed: _____

Name (Printed): _____

Title: _____

EXHIBIT A

ASSUMPTIONS

The Feasibility Study will be based upon the information set forth in the Interconnection Request and agreed upon in the Scoping Meeting held on _____.

Designation of Point of Interconnection (POI) and configuration to be studied (to be completed by the Interconnector).

Other assumptions (listed below) are to be provided by the Interconnector and ED3.

Distribution System Impact Study Agreement

This System Impact Study Agreement ("Agreement"), dated as of _____ ("Effective Date") is entered into, by and between Electrical District No. 3 of Pinal County, Arizona, a Political Subdivision of the State of Arizona ("ED3"), and _____, a _____ ("Interconnector"). ED3 and Interconnector are collectively referred to as the "Parties" and individually as a "Party." Any capitalized term used but not defined in this Agreement shall have the meaning ascribed to such term in POL-ED3-004, *Small Interconnector Interconnection Policy & Procedures* ("Policy"), as may be amended from time to time, and of which this Agreement is part.

RECITALS

WHEREAS, Interconnector is proposing to develop a Generating Facility or increase the generating capacity of an existing Generating Facility consistent with the Interconnection Request completed by Interconnector on_____;

WHEREAS, Interconnector desires to interconnect the Generating Facility with the ED3 Distribution System;

[WHEREAS, ED3 has completed a Feasibility Study with respect to the proposed Interconnection of the Generating Facility and has provided the results of such study to Interconnector;] and [This recital to be omitted if the Parties have agreed to forego the Feasibility Study in accordance with the Policy.]

WHEREAS, Interconnector has requested the ED3 to perform a Distribution System Impact Study to assess the impact of the proposed Interconnection of the Generating Facility.

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein the Parties agree as follows:

1. Capitalized terms used herein but not defined herein shall have the meanings ascribed to such terms in the *ED3 Small Generator Interconnection Policy & Procedures* ("Policy").

2. ED3 shall conduct or cause to be conducted a Distribution System Impact Study in accordance with the Guidelines ("DSI Study").

3. The DSI Study shall be based upon the results of the Feasibility Study, if conducted, the technical information provided by Interconnector in the Interconnection Request, and the assumptions set forth in Exhibit A to this

Agreement ("Assumptions"). At the reasonable request of ED3, the Interconnector shall promptly provide additional technical information.

4. The DSI Study shall incorporate any combination of the following: (a) short circuit analyses; (b) stability analyses; (c) power flow analyses; (d) distribution load flow studies; (e) analyses of equipment interrupting ratings; (f) voltage drop and flicker studies; (g) protection coordination studies; (h) protection and set point coordination studies; and (i) grounding reviews.

5. Any Affected System may participate in the DSI Study at its own cost.

6. In connection with the DSI Study, ED3 shall consider the impact of the proposed Interconnection of the Generating Facility in light of other generating facilities that, on the date the Study is commenced:

   6.1 Are currently interconnected with the ED3 Distribution System or an Affected System;

   6.2 Are expected to be interconnected with the ED3 Distribution System or an Affected System; and

   6.3 Have an earlier queue position (as assigned by ED3 pursuant to Section 4.2 of the Policy) than the Generating Facility.

7. In conjunction with the execution of this Agreement, ED3 shall provide to the Interconnector a written, good faith estimate of the cost of the DSI Study ("Cost Estimate"). Prior to commencement of the DSI Study, the Interconnector shall pay ED3 the Cost Estimate amount in full.

8. Following the conclusion of the DSI Study, ED3 shall prepare a DSI Study report ("Report"). The Report shall (a) state the assumptions upon which the DSI Study was based, (b) set forth the results of the various analyses and reviews, (c) provide the requirement or potential impediments to providing the requested Interconnection service, (d) provide an initial estimate of the cost and time necessary to correct any problems, if any, identified in the Report; and (e) provide a list of facilities that are required to implement the Interconnection of the Generating Facility, along with and a non-binding good faith estimate of cost responsibility and time to construct such facilities.

9. Any Affected System that may be adversely impacted by the proposed Interconnection shall be afforded an opportunity to review and comment on the Report.

10. ED3 shall use commercially reasonable efforts to provide the Report to the Interconnector within thirty (30) days of the later of (a) execution of this Agreement and (b) payment of the Cost Estimate by the Interconnector; provided, however, that such time frame will be extended by up to an additional twenty (20)

Business Days in the event review and comment is required by an Affected System pursuant to Section 9.0 of this Agreement.

11. Within thirty (30) days of the completion of the DSI Study, ED3 shall calculate the actual costs of the DSI Study ("Actual Cost"), and ED3 shall provide an invoice to the Interconnector which shall include the Actual Cost and the basis for the calculation thereof.

12. In the event the Actual Cost exceeds the Cost Estimate, the Interconnector shall pay the difference to ED3 within thirty (30) Calendar Days of the invoice date (without interest). In the event the Cost Estimate exceeds the Actual Cost, ED3 shall pay the excess to the Interconnector within thirty (30) Calendar Days of the invoice date (without interest).

13. Miscellaneous.

    13.1 Accuracy of Information. The Interconnector represents and warrants that, to the best of its knowledge, the information it provides to ED3 in connection with this Agreement and the DSI Study is accurate and complete as of the date such information is provided. The Interconnector shall promptly provide ED3 with any additional information needed to update information previously provided

    13.2 Disclaimer of Warranty. In performing the DSI Study, ED3 may rely on information provided by the Interconnector and third parties and may not have control over the accuracy of such information. ACCORDINGLY, THE EDC HEREBY EXPRESSLY DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, WHETHER ARISING BY OPERATION OF LAW, COURSE OF PERFORMANCE OR DEALING, CUSTOM, USAGE IN THE TRADE OR PROFESSION, OR OTHERWISE, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Interconnector acknowledges that it has not relied on any representations or warranties not specifically set forth herein and that no such representations or warranties have formed the basis of its bargain hereunder.

    13.3 Force Majeure, Liability and Indemnification.

        13.3.1 Force Majeure. If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, such Party shall promptly notify the other Party in writing and shall keep the other Party informed on a continuing basis of the scope and duration of the Force Majeure Event. The affected Party shall specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the affected Party is taking to mitigate the effects of the event on its performance.

The affected Party may suspend or modify its performance of obligations under this Agreement, other than the obligation to make payments then due or becoming due under this Agreement, but only to the extent that the effect of the Force Majeure Event cannot be mitigated by commercially reasonable efforts. The affected Party shall use commercially reasonable efforts to resume its performance as soon as possible. Without limiting this section, the Interconnector shall immediately notify ED3 verbally if the failure to fulfill the Interconnector's obligations under this Agreement may impact the safety or reliability of the ED3 Distribution System.

For purposes of this Agreement, "Force Majeure Event" means any event or circumstance that (a) is beyond the reasonable control of the affected Party and (b) the affected Party is unable to prevent or provide against by exercising commercially reasonable efforts. Force Majeure Events include the following events or circumstances, but only to the extent they satisfy the foregoing requirements: (i) acts of war or terrorism, public disorder, insurrection, or rebellion; (ii) floods, hurricanes, earthquakes, lighting, storms, and other natural calamities; (iii) explosions or fire; (iv) strikes, work stoppages, or labor disputes; (v) embargoes; and (vi) sabotage. In no event shall the lack of funds or the inability to obtain funds constitute a Force Majeure Event.

13.3.2 Liability. Except with respect to a Party's fraud or willful misconduct, and except with respect to damages sought by a third party in connection with a third party claim: (a) neither Party shall be liable to the other Party, for any damages other than direct damages; and (b) each Party agrees that it is not entitled to recover and agrees to waive any claim with respect to, and will not seek, consequential, punitive or any other special damages as to any matter under, relating to, arising from or connected to this Agreement.. Notwithstanding the foregoing, nothing in this Section 13.3.2 shall be deemed to limit Interconnector's obligations under Section 13.3.3.

13.3.3 Indemnification. The Interconnector shall indemnify, defend and hold harmless ED3 and its trustees, directors, officers, employees and agents (including affiliates, contractors and their employees) from and against any liability, damage, loss, claim, demand, complaint, suit, proceeding, action, audit, investigation, obligation, cost, judgment, adjudication, arbitration decision, penalty (including fees and fines), or expense (including court costs and attorneys' fees) relating to, arising from or connected to this Agreement.

13.4 Term and Termination. This Agreement shall be effective from the Effective Date until the earlier of (a) one year from the Effective Date and (b) the withdrawal of the Interconnector's Interconnection Request, unless extended in writing by the Parties. Notwithstanding the foregoing, ED3 may terminate this Agreement fifteen (15) days after providing written notice to the Interconnector that it has breached any of its obligations hereunder, if such breach has not been cured within such fifteen (15) day period.

13.5 Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Arizona applicable to contracts made and performed in such State and without regard to conflicts of law doctrines.

13.6 Severability. If any provision of this Agreement is held to be unenforceable for any reason, such provision shall be adjusted rather than voided, if possible, to achieve the intent of the Parties. If no such adjustment is possible, such provision shall be fully severable and severed, and all other provisions of this Agreement will be deemed valid and enforceable to the extent possible

13.7 Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, and all counterparts so executed shall constitute one agreement binding on all Parties hereto, notwithstanding that all Parties are not signatories to the same counterpart. Facsimile counterparts may be delivered by any Party, with the intention that they shall have the same effect as an original counterpart hereof

13.8 Amendment. No amendment, modification or waiver of any term hereof shall be effective unless set forth in writing and signed by the Parties hereto

13.9 Survival. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of termination.

13.10 Independent Contractor. ED3 shall at all times be deemed to be an independent contractor of the Interconnector, and none of ED3's employees, contractors or the employees of its contractors shall be deemed to be employees of the Interconnector as a result of this Agreement.

13.11 No Implied Waivers. No failure on the part of any Party to exercise or delay in exercising any right hereunder shall be deemed a waiver thereof, nor shall any single or partial exercise of any right hereunder preclude any further or other exercise of such or any other right.

13.12 Successors and Assigns. Neither Party may assign this Agreement, by operation of law or otherwise, without the prior written consent of the other Party, which consent shall not be unreasonably withheld. In the event of an assignment authorized hereunder, all terms and conditions hereof shall be

binding upon and inure to the benefit of the Parties and their respective successors and assigns.

13.13 Due Authorization. Each Party represents and warrants to the other that (a) it has full power and authority to enter into this Agreement and to perform its obligations hereunder, (b) execution of this Agreement will not violate any other agreement with a third party, and (c) the individual signing this Agreement on its behalf has been properly authorized and empowered to enter into this Agreement.

[Signature page follows.]

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.

Interconnector: _____

Signed: _____

Name (Printed): _____

Title: _____

Electrical District No. 3 of Pinal County

Signed: _____

Name (Printed): _____

Title: _____

EXHIBIT A

ASSUMPTIONS

The DSI Study shall be based upon the results of the Feasibility Study, subject to any modifications in accordance with the Policy of which this Agreement is part, and the following assumptions:

Designation of Point of Interconnection (POI) and configuration to be studied (to be completed by the Interconnector).

Other assumptions (listed below) are to be provided by the Interconnector and ED3.

Transmission System Impact Study Agreement

This Agreement shall be substantially the same form as the Distribution System Impact Study Agreement.

Facility Study Agreement

This Facility Study Agreement (this "Agreement"), dated as of _____ ("Effective Date") is entered into, by and between Electrical District No. 3 of Pinal County, Arizona, a Political Subdivision of the State of Arizona ("ED3"), and _____, a _____ ("Interconnector"). ED3 and Interconnector are collectively referred to as the "Parties" and individually as a "Party." Any capitalized term used but not defined in this Agreement shall have the meaning ascribed to such term in POL-ED3-004, Small Interconnector Interconnection Policy & Procedures ("Policy"), as may be amended from time to time, and of which this Agreement is part.

RECITALS

WHEREAS, Interconnector is proposing to develop a Generating Facility or increase the generating capacity of an existing Generating Facility consistent with the Interconnection Request completed by Interconnector on_____;

WHEREAS, Interconnector desires to interconnect the Generating Facility with the ED3 Distribution System;

WHEREAS, ED3 has completed a [Distribution/Transmission] System Impact Study with respect to the proposed Interconnection of the Generating Facility and provided the results of such study to Interconnector on _____ ("System Impact Study"); and [If both System Impact Studies are conducted, then this will be appropriately modified and the defined term "System Impact Studies" will be used.]

WHEREAS, Interconnector has requested ED3 perform a Facility Study to specify and estimate the cost of the equipment, engineering, procurement, and construction work required pursuant to the conclusions of the System Impact Study.

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein the Parties agreed as follows:

1. Capitalized terms used herein but not defined herein shall have the meanings ascribed to such terms in the ED3 Small Generator Interconnection Policy & Procedures ("Policy").

2. ED3 shall conduct or cause to be conducted a Facility Study in accordance with the Policy ("Facility Study").

3. The scope of the Facility Study shall be based on the conclusions of the System Impact Study and the data provided by Interconnector in Exhibit A to this

Agreement ("Data"). At the reasonable request of ED3, the Interconnector shall promptly provide additional data.

4. To minimize Interconnector's facilities costs, ED3 may recommend that Interconnector and other third parties wishing to make an Interconnection "group" and share the costs of facilities; provided, however, that Interconnector may, in its sole discretion, require the installation of its own facilities for the Generating Facility if it is willing to pay the entire costs thereof.

5. In conjunction with the execution of this Agreement, ED3 shall provide to the Interconnector a written good faith estimate of the cost of the Facility Study ("Cost Estimate"). Prior to commencement of the Facility Study, the Interconnector shall pay ED3 the Cost Estimate amount in full.

6. Following the conclusion of the Facility Study, ED3 shall prepare a report setting forth the results of the Facility Study ("Report"). The Report may include, but is not limited to: (a) specification and estimation of the equipment, engineering, procurement and construction work (including overheads) needed to implement the conclusions of the System Impact Study; (b) identification of the electrical switching configuration of the equipment (including, without limitation, transformer, switchgear, meters, and other station equipment); and (c) estimation of the nature and estimated cost of ED3's Interconnection Facilities and upgrades necessary to accomplish the Interconnection (including, without limitation, an estimation of the time required to complete the construction and installation of such facilities).

7. ED3 shall use commercially reasonable efforts to provide the Report to the Interconnector within thirty (30) days of the later of (a) execution of this Agreement and (b) payment of the Cost Estimate by the Interconnector; provided, however, that such time frame will be extended by an additional fifteen (15) Business Days in the event upgrades are required.

8. Within thirty (30) days of the completion of the Facility Study, ED3 shall calculate the actual costs of the Facility Study ("Actual Cost"), and provide an invoice to the Interconnector which shall include the Actual Cost and the basis for the calculation thereof.

9. In the event the Actual Cost exceeds the Cost Estimate, the Interconnector shall pay the difference to ED3 within thirty (30) Calendar Days of the invoice date (without interest). In the event the Cost Estimate exceeds the Actual Cost, ED3 shall pay the excess to the Interconnector within thirty (30) Calendar Days of the invoice date (without interest).

10. Miscellaneous.

    10.1 Accuracy of Information. The Interconnector represents and warrants that, to the best of its knowledge, the information it provides to ED3 in

connection with this Agreement and the Facility Study (including without limitation the Data and all information provided on Interconnector's Interconnection Request) shall be accurate and complete as of the date such information is provided. The Interconnector shall promptly provide ED3 with any additional information needed to update information previously provided.

10.2 Disclaimer of Warranty. In performing the Facility Study, ED3 may rely on information provided by the Interconnector and third parties and may not have control over the accuracy of such information. ACCORDINGLY, THE EDC HEREBY EXPRESSLY DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, WHETHER ARISING BY OPERATION OF LAW, COURSE OF PERFORMANCE OR DEALING, CUSTOM, USAGE IN THE TRADE OR PROFESSION, OR OTHERWISE, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Interconnector acknowledges that it has not relied on any representations or warranties not specifically set forth herein and that no such representations or warranties have formed the basis of its bargain hereunder.

10.3 Force Majeure, Liability and Indemnification.

10.3.1 Force Majeure. If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, such Party will promptly notify the other Party in writing and will keep the other Party informed on a continuing basis of the scope and duration of the Force Majeure Event. The affected Party shall specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the affected Party is taking to mitigate the effects of the event on its performance.

The affected Party may suspend or modify its performance of obligations under this Agreement, other than the obligation to make payments then due or becoming due under this Agreement, but only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of commercially reasonable efforts. The affected Party shall use commercially reasonable efforts to resume its performance as soon as possible. Without limiting this section, the Interconnector shall immediately notify ED3 verbally if the failure to fulfill the Interconnector's obligations under this Agreement may impact the safety or reliability of the ED3 Distribution System.

For purposes of this Agreement, "Force Majeure Event" means any event or circumstance that (a) is beyond the reasonable control of

the affected Party and (b) the affected Party is unable to prevent or provide against by exercising commercially reasonable efforts. Force Majeure Events include the following events or circumstances, but only to the extent they satisfy the foregoing requirements: (i) acts of war or terrorism, public disorder, insurrection, or rebellion; (ii) floods, hurricanes, earthquakes, lighting, storms, and other natural calamities; (iii) explosions or fire; (iv) strikes, work stoppages, or labor disputes; (v) embargoes; and (vi) sabotage. In no event shall the lack of funds or the inability to obtain funds constitute a Force Majeure Event.

10.3.2 Liability. Except with respect to a Party's fraud or willful misconduct, and except with respect to damages sought by a third party in connection with a third party claim: (a) neither Party shall be liable to the other Party, for any damages other than direct damages; and (b) each Party agrees that it is not entitled to recover and agrees to waive any claim with respect to, and will not seek, consequential, punitive or any other special damages as to any matter under, relating to, arising from or connected to this Agreement. Notwithstanding the foregoing, nothing in this Section 10.3.2 shall be deemed to limit Interconnector's obligations under Section 10.3.3.

10.3.3 Indemnification. The Interconnector shall indemnify, defend and hold harmless ED3 and its trustees, directors, officers, employees and agents (including affiliates, contractors and their employees) from and against any liability, damage, loss, claim, demand, complaint, suit, proceeding, action, audit, investigation, obligation, cost, judgment, adjudication, arbitration decision, penalty (including fees and fines), or expense (including court costs and attorneys' fees) relating to, arising from or connected to this Agreement.

10.4 Term and Termination. This Agreement shall be effective from the Effective Date until the earlier of (a) one year from the Effective Date and (b) the withdrawal of the Interconnector's Interconnection Request, unless extended in writing by the Parties. Notwithstanding the foregoing, ED3 may terminate this Agreement fifteen (15) days after providing written notice to the Interconnector that it has breached any of its obligations hereunder, if such breach has not been cured within such fifteen (15) day period.

10.5 Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Arizona applicable to contracts made and performed in such State and without regard to conflicts of law doctrines.

10.6 Severability. If any provision of this Agreement is held to be unenforceable for any reason, such provision shall be adjusted rather than voided, if possible, to achieve the intent of the Parties. If no such adjustment is possible, such provision shall be fully severable and severed, and all other provisions of this Agreement will be deemed valid and enforceable to the extent possible.

10.7 Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, and all counterparts so executed shall constitute one agreement binding on all Parties hereto, notwithstanding that all Parties are not signatories to the same counterpart. Facsimile counterparts may be delivered by any Party, with the intention that they shall have the same effect as an original counterpart hereof.

10.8 Amendment. No amendment, modification or waiver of any term hereof shall be effective unless set forth in writing and signed by the Parties hereto.

10.9 Survival. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of termination.

10.10 Independent Contractor. ED3 shall at all times be deemed to be an independent contractor of the Interconnector, and none of ED3's employees, contractors or the employees of its contractors shall be deemed to be employees of the Interconnector as a result of this Agreement.

10.11 No Implied Waivers. No failure on the part of any Party to exercise or delay in exercising any right hereunder shall be deemed a waiver thereof, nor shall any single or partial exercise of any right hereunder preclude any further or other exercise of such or any other right.

10.12 Successors and Assigns. Neither Party may assign this Agreement, by operation of law or otherwise, without the prior written consent of the other Party, which consent shall not be unreasonably withheld. In the event of an assignment authorized hereunder, all terms and conditions hereof shall be binding upon and inure to the benefit of the Parties and their respective successors and assigns.

10.13 Due Authorization. Each Party represents and warrants to the other that (a) it has full power and authority to enter into this Agreement and to perform its obligations hereunder, (b) execution of this Agreement will not violate any other agreement with a third party, and (c) the individual signing this Agreement on its behalf has been properly authorized and empowered to enter into this Agreement.

[Signature page follows.]

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.

Interconnector: _____

Signed: _____

Name (Printed): _____

Title: _____

Electrical District No. 3 of Pinal County

Signed: _____

Name (Printed): _____

Title: _____

EXHIBIT A

DATA

The Facility Study shall be based upon the conclusions of the System Impact Studies, and the following data provided by Interconnector:

[ADDITIONAL DATA GOES HERE]

Interconnection Agreement

This Interconnection Agreement ("Agreement"), dated as of _____ ("Effective Date") is entered into, by and between Electrical District No. 3 of Pinal County, Arizona, a Political Subdivision of the State of Arizona ("ED3"), and _____, a _____ ("Interconnector"). ED3 and Interconnector are collectively referred to as "Parties" and individually as a "Party." Any capitalized term used but not defined in this Agreement shall have the meaning ascribed to such term in POL-ED3-004, *Small Generator Interconnection Policy & Procedures* ("Policy"), as may be amended from time to time, and of which this Agreement is part.

WHEREAS Interconnector is proposing to develop a Generating Facility or increase the generating capacity of an existing Generating Facility consistent with the Interconnection Request completed by Interconnector on _____,

WHEREAS Interconnector desires to interconnect the Generating Facility with the ED3 Distribution System,

WHEREAS, ED3 has completed a [Distribution/Transmission] System Impact Study with respect to the proposed Interconnection of the Generating Facility and provided the results of such study to Interconnector on _____ ("System Impact Study"); and [If both System Impact Studies are conducted, then this will be appropriately modified, and the defined term "System Impact Studies" will be used.]

WHEREAS, ED3 has completed a Facility Study to specify and estimate the cost of the equipment, engineering, procurement, and construction work required pursuant to the conclusions of the System Impact Study.

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein the Parties agreed as follows:

1. Basic Understandings.

   1.1 Capitalized terms used herein but not defined herein shall have the meanings ascribed to such terms in the ED3 Small Generator Interconnection Policy & Procedures ("Policy").

   1.2 The Interconnector owns, operates, or plans to construct a Generating Facility (GF) at [insert address of GF, and end-use customer account number], as depicted in Appendix H, Facility One-Line Diagram (the "Facility"). A description of the Facility as studied and incorporating all

design changes approved in accordance with Section 1.4, is attached hereto as Appendix B (the "Facility Description").

1.3 The subject matter of this Agreement pertains to the Interconnection of the Facility to the ED3 Distribution System. This Agreement does not relate to any other obligation of the Interconnector unrelated to the Interconnection of the Facility. Apart from this Agreement, the Interconnector is responsible for (a) all arrangements to effect any deliveries of electric energy from the Facility in accordance with the appropriate retail or FERC-jurisdictional tariffs and (b) arranging for its purchase of retail power (such as back-up or stand-by power).

1.4 This Agreement does not cover sales of power, capacity, energy, or market products generated at the Facility. If the Interconnector intends to sell energy or ancillary services from the Facility, it must provide written notice to ED3 of such intention at least sixty (60) days prior to the execution of such sale. Furthermore, ED3 may require the Interconnector to enter into a new Interconnection agreement prior to such sale which may or may not require approval from FERC.

1.5 Any changes to the design of the Facility as it is described and specified in the application submitted by the Interconnector to ED3 with respect to such Facility (the "Application") must be approved by ED3 in writing prior to the implementation of such design changes. Only design changes approved in accordance with this Section 1.4 shall be implemented.

1.6 The Interconnector may not operate the Facility in parallel with the ED3 Distribution System until:

- The conditions for initial parallel operation of the Facility set forth in Appendix C, *Conditions for Parallel Operation of Generating Facility, Special Operating Requirements*, have been met,
- Commissioning and testing of the Facility has been completed in accordance with the Policy and to the satisfaction of ED3,
- The Interconnector has paid ED3 all funds due pursuant to paragraphs 5.3.1 and 5.3.2 of this Agreement,
- ED3 has provided formal written authorization in accordance with the Policy stating that operation of the Facility in parallel with the ED3 Distribution System is authorized by ED3 ("Authorization Date"). Such written authorization will not be effective unless accompanied by a description of the Facility that incorporates all design changes to the Facility since the Application was submitted to ED3 (and not specified therein), including all design changes made during construction.

1.7 The Interconnector shall obtain proper authorization from FERC for the Interconnector or any entity that, directly or indirectly, through one or more intermediaries, controls, or is controlled by, or is under common control with the Interconnector (each, an "Affiliate") to sell any power, capacity, energy, or market products from the Facility into the wholesale power market (collectively, "Wholesale Sales") prior to making any such sales.

1.8 If the Interconnector intends to make Wholesale Sales, then the Interconnector shall provide written notice to ED3 at least sixty (60) days prior to making any Wholesale Sales. the Interconnector shall indemnify, defend, and hold harmless ED3, its trustees, directors, officers, employees, agents and affiliates from any costs, damages, fines, or penalties, including reasonable attorneys' fees, directly resulting from Generator's or its Affiliate's non-compliance with any provision of this Section 1.6; provided, however, that such indemnification obligation shall be subject to the limitation of liability set forth in Section 14, *Limitation of Liability*.

2. Entire Agreement.

2.1 This Agreement, including any attachments or appendices, is entered into pursuant to the Policy.

2.2 This Agreement and the Policy represent the entire understanding between the Parties as to the subject matter of this Agreement.

2.3 Each Party hereby represents that in entering into this Agreement, it has not relied on any promise, inducement, representation, warranty, agreement, or other statement not set forth in this Agreement or the Policy.

2.4 In the event of a conflict between this Agreement and the Policy, the Policy shall take precedent.

3. Term.

3.1 This Agreement is effective as of the Effective Date. The Agreement shall continue in full force and effect until terminated pursuant to Section 4, *Termination*.

4. Termination.

4.1 This Agreement may be terminated under the following conditions:

4.1.1 The Parties may mutually terminate this Agreement at any time upon the execution of an agreement to terminate this Agreement.

4.1.2 The Interconnector may terminate this Agreement at any time by providing sixty (60) days written notice to ED3.

4.1.3 Either Party may terminate this Agreement immediately upon the occurrence of an Event of Default as defined in Section 20.1,

Defaults, by the other Party, subject to the notice requirements set forth in this Agreement.

4.1.4 ED3 may terminate this Agreement if the Interconnector: (a) operates the Facility in parallel with the ED3 Distribution System prior to the Authorization Date; (b) fails within six months of testing to receive authorization from ED3 to operate in parallel with the ED3 Distribution System; (c) does not construct the Facility in accordance with the Facility Description; (d) modifies the Facility without the written approval of ED3; (e) fails to energize the Facility within twelve months of the Authorization Date; or (f) permanently abandons the Facility. For the purposes of this Agreement, the Interconnector's failure to operate the Facility for any consecutive twelve-month period after the Authorization Date shall be deemed a permanent abandonment.

4.1.5 ED3 may terminate this Agreement if the Interconnector fails to correct an Emergency Condition as defined in Section 7.1.1, *Emergency Conditions*, or a Non-Emergency Adverse Operating Effect as defined in Section 7.1.4, *Non-Emergency Adverse Operating Effects*, within ninety (90) days from the date on which ED3 disconnected the Facility due to such event.

4.2 Survival of Obligations. The termination of this Agreement shall not relieve either Party of its liabilities and obligations owed or continuing at the time of termination.

4.3 Related Agreements. Any agreement attached to and incorporated into this Agreement shall terminate concurrently with this Agreement unless the Parties have agreed otherwise in writing.

5. General Payment Terms.

5.1 Interconnection Costs. The Interconnector is responsible for paying all costs associated with Interconnection of the Facility, including (a) testing costs, (b) costs associated with installing, testing and maintaining the communications infrastructure necessary to provide protection and/or monitoring of the GF (collectively, "Communications Costs"), (c) construction, modification or upgrade costs necessary to accommodate the Interconnection (collectively, "Construction Costs"), and (d) any ongoing maintenance costs and other charges deemed necessary by ED3 to maintain the Interconnection (all such costs described in this sentence, "Interconnection Costs").

ED3 shall notify the Interconnector if the Construction Costs exceed 110% of the estimate of such costs provided by ED3 to the Interconnector in the

Construction Agreement (as such term is defined below), facility study report, or other written understanding of the Parties.

5.2 Initial Cost Estimate. Attached hereto as Appendix D is a good faith estimate of the initial Interconnection Costs ("Initial Cost Estimate").

5.3 Billing and Payment Procedures for Initial Interconnection Costs.

5.3.1 The Interconnector shall pay ED3 the amount set forth in the Initial Cost Estimate (the "Initial Payment") within thirty (30) days of the Effective Date.

5.3.2 Within thirty (30) days following the date on which the Facility is first connected to the ED3 Distribution System (the "Initial Interconnection"), ED3 shall provide the Interconnector with a final accounting report detailing all payments made and costs accrued by the Parties. To the extent that the actual Interconnection Costs accrued up to the date of the Initial Interconnection exceed the Initial Payment ("Underpayment"), ED3 shall invoice the Interconnector for an amount equal to the Underpayment and the Interconnector shall pay such amount to ED3 within thirty (30) days of such invoice. To the extent that the Initial Payment exceeds the actual Interconnection Costs accrued up to the date of the Initial Interconnection (an "Overpayment"), ED3 shall refund to the Interconnector an amount equal to the Overpayment within thirty (30) days of the provision of such final accounting report.

5.4 Billing and Payment Procedures for Ongoing Interconnection Costs. All Interconnection Costs incurred following the Initial Interconnection shall hereinafter be referred to as the "Ongoing Costs," and shall include maintenance, testing, and Communications Costs, as well as any Construction Costs not included in either (a) the Construction Agreement between the Interconnector and ED3, dated as of [DATE], a copy of which is attached hereto as Appendix E (the "Construction Agreement"), or (b) the Initial Cost Estimate. ED3 shall invoice the Interconnector for all Ongoing Costs as such costs are incurred, and the Interconnector shall pay each such invoice within thirty (30) days of receipt, or as otherwise agreed to by the Parties.

5.5 Milestones. The Parties shall agree on milestones for which each Party is responsible and list them in Appendix F of this Agreement. A Party's obligations under this provision may be extended by agreement. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Force Majeure Event as defined in Section 18.1, *Force Majeure*, it shall immediately notify the other Party of the reasons for not meeting the milestone and (a) propose the earliest reasonable alternate date by which it

can attain this and future milestones, and (b) requesting appropriate amendments to Appendix F.

The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment unless (i) it will suffer significant uncompensated economic or operational harm from the delay, (ii) attainment of the same milestone has previously been delayed, or (iii) it has reason to believe that the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstances explained by the Party proposing the amendment.

5.6 Distribution Upgrades. ED3 shall design, procure, construct, install, and own the upgrades described in Appendix G of this Agreement (the "Upgrades"). If ED3 and the Interconnector agree, the Interconnector may construct Upgrades that are located on land owned by the Interconnector. The actual cost of the Upgrades, including overheads, shall be directly assigned to the Interconnector. The Interconnector shall be responsible for its share of all reasonable expenses, associated with operating, maintaining, repairing, and replacing such Upgrades, except to the extent that a retail tariff of, or an agreement with, ED3 provides otherwise.

5.7 Taxes. The Parties shall comply with all applicable federal and state tax laws.

6. Operating Requirements.

6.1 General Operating Requirements. The Interconnector shall construct, interconnect, operate, and maintain the Facility and all appurtenant facilities in accordance with the following:

- All applicable laws and requirements,
- Good Utility Practice,
- The Policy, Tariffs, and the Terms and Conditions,
- Applicable specifications provided by the National Electrical Safety Code, the American National Standards Institute, IEEE, Underwriter's Laboratory and AEPCO/WECC operating requirements in effect at the time of construction and other applicable national and state codes and standards.

Following the initial Interconnection of the Facility, the Interconnector shall comply with all special operating requirements set forth in Appendix C, *Conditions for Parallel Operation of Generating Facility, Special Operating Requirements*.

If ED3 believes that the cause of any problem to the ED3 Distribution System originates from the Facility, ED3 has the right to install monitoring equipment at a mutually agreed upon location to determine the exact cause of the problem. The cost of such monitoring equipment shall be borne by ED3, unless such problem or problems are demonstrated to be caused by

the Facility or if the test was performed at the request of the Interconnector in which case the costs of the monitoring equipment shall be borne by the Interconnector.

If the operation of the Facility interferes with ED3's or its customers' operations, the Interconnector must immediately take corrective action to stop such interference and shall not operate the Facility until such time as such interference is stopped. If the Interconnector fails to take immediate corrective action pursuant to the preceding sentence, ED3 may disconnect the Facility as set forth in the Policy.

6.2 No Adverse Effects; Non-interference.

6.2.1 ED3 shall notify the Interconnector if ED3 has evidence that the operation of the Facility could cause disruption or deterioration of service to other customers served from the ED3 Distribution System or if operation of the Facility could cause damage to the ED3 Distribution System or other affected systems. (For example, deterioration of service could be caused by, among other things, harmonic injection more than IEEE STD 519 limits, as well as voltage fluctuations caused by large step changes in loading at the Facility.) The Interconnector shall cease operation of the Facility until such time as the Facility can operate without causing disruption or deterioration of service to other customers served from the ED3 Distribution System or causing damage to the ED3 Distribution System or other affected systems. Each Party shall promptly notify the other Party in writing, per the Policy requirements, of any condition or occurrence relating to such Party's equipment or facilities which, in such Party's reasonable judgment, could adversely affect the operation of the other Party's equipment or facilities.

6.2.2 ED3 shall operate the ED3 Distribution System in such a manner as to not unreasonably interfere with the operation of the Facility. The Interconnector shall protect itself from normal disturbances propagating through the ED3 Distribution System in accordance with Good Utility Practice. Examples of such disturbances include single-phasing events, voltage sags from remote faults on the ED3 Distribution System, and outages on the ED3 Distribution System.

6.3 Safe Operations and Maintenance.

6.3.1 General. the Interconnector shall operate, maintain, repair, and inspect, and shall be fully responsible for, the Facility or facilities that it now or hereafter may own unless otherwise specified in this Agreement. Each Party shall be responsible for the maintenance, repair and condition of its respective lines and appurtenances on such Party's respective side of the Point of Interconnection (POI). ED3 and

the Interconnector shall each provide equipment on its respective side of the POI that adequately protects the ED3 Distribution System, personnel, and other persons from damage and injury. If ED3 has constructed or owns facilities that are identified at the time of Interconnection as specifically required by such Interconnection, then the Interconnector shall reimburse ED3 for the costs of maintaining and repairing such facilities.

6.3.2 Ongoing Maintenance & Testing of the Facility. The Parties hereby acknowledge and agree that maintenance testing of the Facility's protective relaying is imperative for safe, reliable operation of the Facility. The test cycle for such protective relaying shall not be less frequent than once every sixty (60) calendar months or the manufacturer's recommended test cycle, whichever is more frequent. The Interconnector shall provide copies of these test records to ED3 within thirty (30) days of the completion of such maintenance testing. ED3 may disconnect the Facility from the ED3 Distribution System if the Interconnector fails to adhere to this Section 6.3.2. The Interconnector is responsible for all ongoing maintenance costs associated with the Facility.

6.4 Access.

6.4.1 Emergency Contact Information. Each Party shall provide to the other Party and shall update as necessary a telephone number that is monitored 24/7 to allow the other Party to report an emergency.

6.4.2 ED3 Right to Access ED3-Owned Facilities and Equipment. the Interconnector shall allow ED3 access to ED3's equipment and ED3's facilities located on the Facility's premises (the "ED3 Property"). To the extent that the Interconnector does not own all or part of the real property on which ED3 is required to locate ED3 Property to serve the Facility, the Interconnector shall procure and provide to ED3 all necessary rights, including easements, for access to ED3 Property.

6.4.3 ED3 Right to Access Isolation Device. ED3 shall always have access to the Facility Isolation Device. The Interconnector is responsible for obtaining all property rights, including easements, which will permit ED3 access to such Isolation Device.

6.4.4 Right to Review Information. ED3 shall have the right to review and obtain copies of the Interconnector's operations and maintenance records, logs, or other information such as unit availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets, and unusual events pertaining to the Facility or its Interconnection with the ED3 Distribution System. ED3 shall treat

such information as confidential and shall use such information solely for the purposes of determining compliance with the operating requirements set forth in this Section 6.

7. Disconnection.

7.1 Temporary Disconnection.

7.1.1 Emergency Conditions. ED3 may immediately and temporarily disconnect the Facility from the ED3 Distribution System without prior notification in cases where, in the reasonable judgment of ED3, the continued connection of the Facility is imminently likely to (a) endanger persons or damage property or (b) cause an adverse effect on the integrity or security of, or damage to, the ED3 Distribution System or to other electric power systems to which the ED3 Distribution System is directly connected (each, an "Emergency Condition").

Upon becoming aware of an Emergency Condition, the Interconnector shall (i) immediately suspend operation of the Facility and (ii) promptly provide written notice to ED3 of such Emergency Condition and suspension (an "Emergency Condition Notice"). The Emergency Condition Notice shall describe:

- The Emergency Condition,
- The extent of any damage or deficiency,
- The expected effect on the operation of each Party's facilities and operations,
- The anticipated duration of such Emergency Condition,
- The necessary corrective actions.

After temporary disconnection or suspension pursuant to this Section 7.1.1, the Facility may not be reconnected or resume operation until ED3 and the Interconnector are both satisfied that the cause of such Emergency Condition has been corrected. If the Interconnector fails to correct the Emergency Condition within ninety (90) days from the time that the ED3 has temporarily disconnected the Facility due to such an event, ED3 may elect to terminate this Agreement in accordance with Section 4.1.5 or permanently disconnect the Facility in accordance with Section 7.2.2.

7.1.2 Routine Maintenance, Construction, and Repair. ED3 shall have the right to disconnect the Facility from the ED3 Distribution System, when necessary, for routine maintenance, construction, and repairs to the ED3 Distribution System. ED3 shall provide the Interconnector with a minimum of seven (7) days prior written notice of such disconnection, consistent with the ED3's planned outage notification protocols.

If the Interconnector requests disconnection by ED3 at the Point of Common Interconnection, the Interconnector shall provide a minimum of seven (7) days prior written notice to ED3. ED3 shall make reasonable efforts to work with the Interconnector to schedule mutually convenient times to temporarily disconnect the Facility pursuant to this Section 7.1.2.

7.1.3 Forced Outages. During any forced outage, ED3 shall have the right to temporarily disconnect the Facility from the ED3 Distribution System to effect immediate repairs to the ED3 Distribution System. ED3 shall use reasonable efforts to provide the Interconnector with prior notice of such temporary disconnection. Notwithstanding the above, ED3 may temporarily disconnect the Facility from the ED3 Distribution System without such notice pursuant to Section 7.1.1, *Emergency Conditions*, in the event circumstances do not permit such prior notice to the Interconnector.

7.1.4 Non-Emergency Adverse Operating Effects. ED3 may temporarily disconnect the Facility if it is having a non-emergency adverse operating effect on the ED3 Distribution System or on other customers (a "Non-Emergency Adverse Operating Effect") if the Interconnector fails to correct such Non-Emergency Adverse Operating Effect within thirty (30) days of ED3's written notice to the Interconnector requesting correction of such Non-Emergency Adverse Operating Effect. If the Interconnector fails to correct a Non-Emergency Adverse Operating Effect within ninety (90) days from the time that ED3 has temporarily disconnected the Facility due to such an event, ED3 may elect to terminate this Agreement in accordance with Section 4.1.5 or permanently disconnect the Facility in accordance with Section 7.2.2.

7.1.5 Modification of the Facility. ED3 has the right to immediately suspend Interconnection service and temporarily disconnect the Facility in the event any material modification to the Facility or the Interconnector's Interconnection facilities is made without prior written authorization from ED3.

7.1.6 Re-connection. Any temporary disconnection pursuant this Section 7.1 shall continue only for so long as is reasonably necessary. The Interconnector and ED3 shall cooperate with each other to restore the Facility and the ED3 Distribution System, respectively, to their normal operating states as soon as reasonably practicable following the correction of the event that led to the temporary disconnection.

7.2 Permanent Disconnection.

7.2.1 The Interconnector may permanently disconnect the Facility at any time upon thirty (30) days prior written notice to ED3.

7.2.2 ED3 may permanently disconnect the Facility upon termination of this Agreement in accordance with Section 4, *Termination*.

7.2.3 ED3 may permanently disconnect the Facility in the event the Interconnector is unable to correct an Emergency Condition or a Non-Emergency Adverse Operating Effect in accordance with Section 7.1.1 or Section 7.1.4, respectively.

8. Metering.

8.1 Metering of the output from the Facility shall be conducted pursuant to the terms of the Policy.

9. Assignments.

9.1 Except as provided herein, the Interconnector shall not voluntarily assign its rights or obligations, in whole or in part, under this Agreement without ED3's prior written consent, which consent shall not be unreasonably withheld or delayed. Any assignment attempted without ED3's prior written consent shall not be valid. Notwithstanding the foregoing, ED3's consent shall not be required for any assignment made by the Interconnector to an Affiliate with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the Interconnector under this Agreement, provided that that the Interconnector promptly notifies ED3 of any such assignment. In all events, the Interconnector shall not be relieved of its obligations under this Agreement unless, and until, the permitted assignee assumes in writing all obligations of this Agreement and notifies ED3 of such assumption.

10. Confidentiality.

10.1 ED3 shall maintain the confidentiality of information provided from the Interconnector to ED3 if such information is clearly marked and labeled "Confidential" (the "Confidential Information"). Confidential Information shall not include information that (a) is or hereafter becomes part of the public domain, (b) previously was in the possession of ED3, or (c) ED3 is required to disclose pursuant to a valid order of a court or other governmental body or any political subdivision thereof; provided, however, that to the extent that it may lawfully do so, ED3 shall first have given notice to the Interconnector and given the Interconnector a reasonable opportunity to interpose an objection or obtain a protective order requiring that the Confidential Information or documents so disclosed be used only for the purpose for which the order was issued.

11. Insurance Requirements.

11.1 In connection with the Interconnector's performance of its duties and obligations under this Agreement, the Interconnector shall maintain, during the term of this Agreement, maintain insurance per Section 4.3, *Insurance Requirements*, of the Policy, of which this Agreement is part.

12. Performance Assurance.

12.1 If ED3 reasonably expects that any Interconnection Costs necessary to accommodate the Facility will be more than fifty thousand dollars ($50,000) in the aggregate in any calendar year, ED3 may require that the Interconnector provide to ED3 a guarantee, a surety bond, letter of credit, or other form of security that is reasonably acceptable to ED3 at least twenty (20) Business Days prior to the commencement of the related work. Such security for payment shall be in an amount sufficient to cover such Interconnection Costs. In addition:

12.1.1 Any guarantee provided by the Interconnector pursuant to this Section 12 shall be made by an entity that meets the creditworthiness requirements of ED3, and contain terms and conditions that guarantee payment of any amount that may be due from the Interconnector, up to an agreed-to maximum amount; and

12.1.2 Any letter of credit or surety bond provided by the Interconnector pursuant to this Section 12.1.2 shall be issued by a financial institution or insurer reasonably acceptable to ED3 and must specify an expiration date reasonably acceptable to ED3.

13. Indemnification.

13.1 Indemnification of ED3. Subject to the limitation of liability set forth in Section 14, *Limitation of Liability*, the Interconnector shall indemnify, defend, and hold harmless ED3 and its trustees, directors, officers, employees, and agents (including affiliates, contractors, and their employees) from and against any liability, damage, loss, claim, demand, complaint, suit, proceeding, action, audit, investigation, obligation, cost, judgment, adjudication, arbitration decision, penalty (including fees and fines), or expense (including court costs and attorneys' fees) relating to, arising from or connected to this Agreement.

13.2 Indemnification of the Interconnector. Subject to the limitation of liability set forth in Section 14, *Limitation of Liability*, ED3 agrees to indemnify, defend and hold harmless the Interconnector, its trustees, directors, officers, employees, and agents (including Affiliates, contractors, and their employees), from and against any and all damages for personal injury (including death) or property damage to unaffiliated third parties arising

from any and all actions relating to or arising out of any material failure by ED3 to perform any of its obligations pursuant to Section 6.2.2 of this Agreement.

13.3 Survival of Indemnification. The indemnification obligations of each Party set forth in this Section 13 shall continue in full force and effect regardless of whether this Agreement has expired, been terminated, defaulted, or cancelled and shall not be limited in any way by any limitation on insurance.

14. Limitation of Liability.

14.1 Except with respect to a Party's fraud or willful misconduct, and except with respect to damages sought by a third party in connection with a third party claim: (a) neither Party shall be liable to the other Party, for any damages other than direct damages; and (b) each Party agrees that it is not entitled to recover and agrees to waive any claim with respect to, and will not seek, consequential, punitive, or any other special damages as to any matter under, relating to, arising from or connected to this Agreement.

15. Amendments and Modifications.

15.1 No amendment or modification of this Agreement shall be binding unless in writing and duly executed by both Parties.

16. Permits and Approvals.

16.1 The Interconnector is responsible for obtaining all environmental and other permits required by governmental authorities for the construction and operation of the Facility (each, a "Required Permit"). ED3 assumes no responsibility for obtaining any Required Permit, advising the Interconnector with respect to Required Permits, or assuring that all Required Permits have been obtained by the Interconnector. Upon written request of ED3, the Interconnector shall promptly provide to ED3 a copy of any Required Permit.

17. Environmental Releases.

17.1 Each Party shall immediately notify the other Party, first orally and then in writing, of any of the following events related to the Facility upon becoming aware of such event:

a. The release of any hazardous substances

b. Any asbestos, PCB, or lead abatement activities

c. Any type of remediation activities

17.2 The Party having the responsibility for reporting such an event to appropriate governmental authorities shall promptly furnish to the other Party copies of any publicly available reports filed with such authorities.

18. Force Majeure.

18.1 For purposes of this Agreement, "Force Majeure Event" means any event or circumstance that (a) is beyond the reasonable control of the affected Party and (b) the affected Party is unable to prevent or provide against by exercising commercially reasonable efforts.

Force Majeure Events include the following events or circumstances, but only to the extent they satisfy the foregoing requirements:

i. Acts of war or terrorism, public disorder, insurrection, or rebellion
ii. Floods, hurricanes, earthquakes, lighting, storms, and other natural calamities
iii. Explosions or fire
iv. Strikes, work stoppages, or labor disputes
v. Embargoes
vi. Sabotage

In no event shall the lack of funds or the inability to obtain funds constitute a Force Majeure Event.

18.2 If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, such Party will promptly notify the other Party, in writing, and will keep the other Party informed on a continuing basis of the scope and duration of the Force Majeure Event.

The affected Party shall specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the affected Party is taking to mitigate the effects of the event on its performance.

The affected Party may suspend or modify its performance of obligations under this Agreement, other than the obligation to make payments then due or becoming due under this Agreement, but only to the extent that the effect of the Force Majeure Event cannot be mitigated by commercially reasonable efforts. The affected Party shall use commercially reasonable efforts to resume its performance as soon as possible.

Without limiting this section, the Interconnector shall immediately notify ED3 verbally if the failure to fulfill the Interconnector's obligations under this Agreement may impact the safety or reliability of the ED3 Distribution System.

19. Notices.

19.1 All notices, demands and other communications to be given or delivered under or by reason of the provisions of this Agreement shall be in writing and shall be deemed to have been given: (a) immediately when personally delivered; (b) when received by first class mail, return receipt requested;

(c) one day after being sent for overnight delivery by Federal Express or other overnight delivery service; or (d) when receipt is acknowledged, either electronically or otherwise, if sent by email or other electronic transmission mode. Notices, demands, and communications with the other Parties shall, unless another address is specified by such Parties in writing, be handled per Section 9.0, *Notifications*, of the Policy of which this Agreement is part.

19.2 Each Party may designate operating representatives to conduct daily communications between the Parties, which may be necessary or convenient for the administration of this Agreement. The names, addresses, and phone numbers of each Party's representatives shall be provided in writing by such Party to the other Party.

20. Default and Remedies.

20.1 Defaults. Each of the following shall constitute an "Event of Default;"

20.1.1 A Party fails to pay any bill or invoice for charges incurred pursuant to this Agreement or any other amount due from such Party to the other Party, and such failure shall continue for a period of thirty (30) days after written notice of nonpayment from the affected Party to the defaulting Party; provided, however, if such Party disputes such bill, invoice or other amount due in good faith, then such failure to pay shall not constitute an Event of Default and the Parties shall resolve such dispute in accordance with Section 21, *Dispute Resolution Procedures*.

20.1.2 A Party (a) fails to comply with any other provision of this Agreement or breaches any representation or warranty in any material respect and (b) fails to cure or remedy such failure or breach within sixty (60) days after notice and written demand by the other Party to cure the same or such longer period reasonably required to cure the same (not to exceed an additional ninety (90) days unless otherwise mutually agreed upon, provided that the failing or breaching Party diligently continues to cure until such failure or breach is fully cured). This provision pertains only to cure periods not specifically addressed elsewhere in this Agreement.

20.1.3 An Interconnector modifies the Facility or any part of the Interconnection without the prior written approval of ED3; or

20.1.4 A Party fails to perform any obligation hereunder in accordance with (a) applicable laws and regulations, (b) AEPCO/WECC operating documents, procedures, and reliability standards, and (c) Good Utility Practice.

20.2 Remedies. Upon the occurrence of an Event of Default, the non-defaulting Party may, at its option, in addition to any remedies available under any other provision herein, do any, or any combination, as appropriate, of the following:

a. Continue to perform and enforce this Agreement,
b. Recover damages from the defaulting Party except as limited by this Agreement,
c. By written notice to the defaulting Party terminate this Agreement,
d. Pursue any other remedies it may have under this Agreement or under applicable law or in equity.

21. Dispute Resolution Procedures.

21.1 Each Party shall agree to attempt to resolve all disputes promptly, equitably and in good faith. If the Parties are unable to informally resolve any dispute, the Parties shall follow the dispute resolution process set forth in the Policy of which this Agreement is part.

22. Subcontractors.

22.1 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 the hiring Party shall require such subcontractor to comply with all applicable terms and conditions of this Agreement in providing such subcontracting services and the hiring Party shall remain primarily liable to the other Party for the performance of such subcontractor.

22.2 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 hired by the hiring Party to perform its obligations 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.

22.3 The obligations under this Section 22 will not be limited in any way by any limitation of subcontractor's insurance.

23. Miscellaneous.

23.1 Governing Law. This Agreement and the legal relations between the Parties will be governed by and construed in accordance with the laws of the State of Connecticut applicable to contracts made and performed in such State and without regard to conflicts of law doctrines.

23.2 Non-Waiver. No failure on the part of any Party to exercise or delay in exercising any right hereunder shall be deemed a waiver thereof, nor shall any single or partial exercise of any right hereunder preclude any further or other exercise of such or any other right.

23.3 No Third-Party Beneficiaries. This Agreement is made solely for the benefit of the Parties. Nothing in the Agreement shall be construed to create any rights in or duty to, or standard of care with respect to, or any liability to, any person not a party to or otherwise bound by this Agreement.

23.4 Severability. If any provision of this Agreement is held to be unenforceable for any reason, such provision shall be adjusted rather than voided, if possible, to achieve the intent of the Parties. If no such adjustment is possible, such provision shall be fully severable and severed, and all other provisions of this Agreement will be deemed valid and enforceable to the extent possible.

23.5 No Partnership. Nothing in this Agreement shall constitute or be construed to be or create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. No 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 Parties.

23.6 Headings. All headings in this Agreement are included solely for convenient reference, are not intended to be full and accurate descriptions of the contents of this Agreement, will not be deemed a part of this Agreement, and will not affect the meaning or interpretation of this Agreement.

23.7 Changes in State Regulations or Law. Upon thirty (30) days prior written notice, ED3 may terminate this Agreement if there are any changes in regulations or law that affects ED3's ability to perform its obligations under this Agreement.

23.8 General Rules of Construction. For all purposes of this Agreement:

a. All terms defined herein or in the Guidelines shall have the meanings assigned to them herein or in the Policy, and shall include the plural as well as the singular,

b. All references in this Agreement to designated "Sections" and other subdivisions are to the designated Sections and other subdivisions of the body of this Agreement unless otherwise specified,

c. Pronouns of either gender or neuter will include, as appropriate, the other pronoun forms,

d. The words "herein," "hereof" and "hereunder" and other words of similar import refer to this Agreement as a whole and not to any Section or other subdivision,

e. The term "or" is not exclusive,

f. The terms "including" and "includes" shall be deemed to be followed by "but not limited to" and "but is not limited to," respectively,

g. Any definition of or reference to any law, agreement, instrument, or other document herein will be construed as referring to such law, agreement, instrument, or other document as from time to time amended, supplemented, or otherwise modified,

h. Any definition of or reference to any law or statute will be construed as referring also to any rules and regulations promulgated thereunder,

i. As used herein, "days" shall mean "calendar days."

23.9 Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, and all counterparts so executed shall constitute one agreement binding on all Parties hereto, notwithstanding that all Parties are not signatories to the same counterpart. Facsimile counterparts may be delivered by any Party, with the intention that they shall have the same effect as an original counterpart hereof.

23.10 Signatures. Each Party hereby signifies its agreement to of the terms of this Agreement by its signatures hereto. Each Party represents that it has carefully reviewed this Agreement individually and with counsel and that it has knowingly and willingly executed this Agreement.

[Signature Page Follows]

IN WITNESS HEREOF, the Parties have caused this INTERCONNECTION AGREEMENT to be executed on the day and year first written above.

ED3

By: _____

Name: _____

Title: _____

Duly Authorized

THE INTERCONNECTOR

By: _____

Name: _____

Title: _____

Duly Authorized

Appendix A - REMOVED

Appendix B – Facility Description

Description of the Facility, as studied, and incorporating all approved design changes.

Appendix C - Conditions for Parallel Operation of GF, Special Operating Requirements

ED3 shall describe requirements that must be met by the Interconnector prior to parallel operation of the Facility with the ED3 Distribution System. Also, ED3 shall describe requirements that must be met by the Interconnector for continuous parallel operation of the Facility with the ED3 Distribution System, including Periodic Interconnection Tests.

Appendix D - Initial Cost Estimate

Appendix E - Construction Agreement

Appendix F - Milestones

In-Service Date: _____

Critical milestones and responsibility as agreed to by the Parties		
Milestone	Date	Responsible Party

Agreed to by:

For the Interconnector:

_____

Date: _____

For ED3:

_____

Date: _____

Appendix G - ED3's Description of its Upgrades and Best Estimate of Upgrade Costs

ED3 shall describe Upgrades and provide an itemized best estimate of the cost, including overheads, of the Upgrades and annual operation and maintenance expenses associated with such Upgrades. ED3 shall functionalize Upgrade costs and annual expenses as either transmission or distribution related.

Appendix H – One-Line Diagram

One line diagram depicting the GF, Interconnection, Metering Equipment, and Upgrades.

Approval to Energize the GF

Date:		Interconnector:	
Job #:		Application #:	
Energizing the GF named below is approved contingent upon ongoing compliance with the Interconnection Agreement and Final Approval:			
Signature		Date	
Name (Print)		Title General Manager	

Certification of Small Generator Equipment Packages

1. Small GF equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if:
   a) It has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in Attachment 12, *Codes and Standards*.
   b) It has been labeled and is publicly listed by such NRTL at the time of the interconnection application, and
   c) The NRTL makes all test standards and procedures it utilized in performing such equipment certification readily available for verification. The NRTL may publish such information on its website to make it more accessible and should consider encouraging manufacturers to include such information in the literature that accompanies the equipment.
2. The Interconnector must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.
3. Certified equipment shall not require further type-test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an onsite commissioning test by the Parties nor follow-up production testing by the NRTL.
4. If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then the Interconnector must show that the generator or other electric source being utilized is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.
5. Provided that the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, does not violate the interface components' labeling, and is in conformance with the NRTL listing, no further design review or testing is required. Nor is additional equipment required on the customer side of the point of common coupling.
6. Equipment provided by the utility is not considered part of the equipment package discussed here.

Codes and Standards

The following codes and standards (latest revision) shall be applied as appropriate:

- ANSI C12.1, *Code for Electricity Metering*
- ANSI C12.11, *Instrument Transformers for Metering 15 kV and Below*
- ANSI C84.1, *Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)*
- ANSI/IEEE C37.90, *IEEE Standard for Relays and Relay Systems Associated with Electric Power Apparatus*
- ANSI/IEEE C37.90.1, *IEEE Standard for Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus*
- ANSI/IEEE C37.90.2, IEEE Standard *Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers*
- ANSI/IEEE C37.90.3, *IEEE Standard Electrostatic Discharge Tests for Protective Relays*
- ANSI/IEEE C57.13, *IEEE Standard Requirements for Instrument Transformers*
- ANSI/IEEE PC62.41.1, *IEEE Guide on the Surge Environment in Low-Voltage (1000 V and less) AC Power Circuits*
- ANSI/IEEE PC62.41.2, *IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits*
- ANSI/IEEE PC62.41.4, *Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000 V and less) AC Power Circuits*
- IEC 61000-4-15 *Electromagnetic compatibility (EMC) - Part 4-15: Testing and Measurement Techniques - Flickermeter - Functional and Design Specification*
- IEC 61400-21 *Wind Turbine Generator Systems*
- IEC 61400-21 Part 21 *Measurement and Assessment of Power Quality Characteristics of Grid Connected Wind Turbines*
- IEEE 1453, *Recommended Practice for the Analysis of Fluctuating Installations on Power Systems*
- IEEE 1547, *IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces*

- IEEE 1547.1, *Standard Conformance Test Procedures for Equipment Interconnecting Distributed Energy Resources with Electric Power Systems and Associated Interfaces*
- IEEE P1547.2, *Application Guide for IEEE Std 1547(TM), IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems*
- IEEE P1547.3, *Guide for Cybersecurity of Distributed Energy Resources Interconnected with Electric Power Systems*
- IEEE 519, *IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems*
- NFPA/ANSI 70-2017, *National Electric Code*
- NEMA MG 1, *Motors and Generators, 16th Edition*
- PC37.2, *Standard Electrical Power System Device Function Numbers, Acronyms, and Contact Designations*
- IEC 255-21-1, *Relay and Protection Equipment Vibration Tests*
- IEC 255-22-2, *Relay and Protection Equipment Shock and Bump Test*
- IEC 255-5, *Electrical Relays Insulation Tests (Impulse Voltage Withstand)*
- UL 1741, *Standard for Inverters, Converters, Controllers, and Interconnection System Equipment for Use with Distributed Energy Resources*
- UL 1741 SA, Supplement A to UL 1741

Protective Relay Setting Guidelines

Protective Element	Typical Settings	Comments[1234]
The following protection elements and settings are required for all Interconnections.[5]		
27 Under-Voltage	27-1 0.88 V p.u. 2.00 sec TRIP 27-2 0.50 V p.u. 0.16 sec TRIP	Primary Function: Anti-Islanding Operates when its input voltage is less than a predetermined value. Set per IEEE 1547, *Standard for Interconnecting Distributed Resources with Electric Power Systems.* Note: Voltage sensing on all three phases shall be used for maximum sensitivity for phase disturbances.
59 Over-Voltage	59-1 1.10 V p.u. 1.00 sec TRIP 59-2 1.20 V p.u. 0.16 sec TRIP	Primary Function: Anti-Islanding Operates when its input voltage exceeds a predetermined value. Set per IEEE 1547, Standard for Interconnecting Distributed Resources with Electric Power Systems. Note: Voltage sensing on all three phases shall be used for maximum sensitivity for phase disturbances.
81O Over-Frequency	81O-1 60.5Hz 0.16 sec TRIP	Primary Function: Anti-Islanding Responds to the frequency of the system voltage and operates when the frequency exceeds a predetermined value. Set per IEEE 1547, Standard for Interconnecting Distributed Resources with Electric Power Systems.
81U Under-Frequency IEEE Settings	81U-1 59.8-57.0 Hz TRIP in 0.16-300 sec 81U-2 57.0 Hz TRIP in 0.16sec	Primary Function: Anti-Islanding Responds to the frequency of the system voltage and operates when the frequency is less than a predetermined value. Refer to Section 8.7.10 for guidance on underfrequency tripping. Set per IEEE 1547, IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems,
81U Under-Frequency WECC Settings	81U-1 58.0 Hz TRIP in 32.0 sec 81U-2 57.5 Hz TRIP in 11.0 sec 81U-3 57.0 Hz TRIP in 0.16 sec	Primary Function: Anti-Islanding Responds to the frequency of the system voltage and operates when the frequency is less than a predetermined value. Refer to Section 8.7.10 for guidance on underfrequency tripping. Set per WECC Southern Island Load Tripping Plan (SILTP).

Protective Element	Typical Settings	Comments[1234]
Additional Protection Requirements[6]		
25 Synch-Check	25-1 Set per study[7]	Primary Function: Permissive Close Supervises the operation of the generator automatic or manual synchronizing system by ensuring proper voltage, phase angle matching, and where appropriate, slip frequency between the Distribution System and the generator before the breaker is allowed to close. It is important that the appropriate Live/Dead, Line and Bus options be selected to permit breaker closing under other conditions.
32 Directional Power	32U Set to target import level Max TRIP time: 5-10 sec.	Primary Function: Anti-Islanding Performs a similar function to the 32R element except it ensures the GF is always importing some preset level of power. If the import level drops below the "underpower" threshold then the element will operate. This element should be used in cases where a reliable 32R (export trip) cannot be guaranteed. For example, if an upstream Distribution System recloser opens and the GF back-feeds or islands a small pocket of distribution load there may be insufficient reverse power to ensure a reliable 32R trip. In contrast, if the 32U element is applied to this same case, the GF would trip after the Distribution System source is lost since the import power will drop to zero or a negative value which is below the 32U trip threshold. Note: These Import-Only systems typically have less-complex interconnections since they have limited adverse effects on Distribution System voltages and are less likely to have the ability to sustain a Distribution System island.
46 Negative Sequence Current	Set per study[7]	Primary Function: Unbalance Detection This element serves to protect both the ED3 Distribution System and the Interconnector's system from system unbalances including single phasing. Generators may become damaged quickly from high negative sequence currents. This setting is typically based on generator capabilities and may be reviewed by ED3.
51P Overcurrent	Set per study[7]	Primary Function: Fault Detection This element provides phase overcurrent protection and operates with an inverse time-current characteristic when its input current exceeds a predetermined value.
51N Overcurrent	Set per study[7]	Primary Function: Fault Detection This element provides ground overcurrent protection and operates with an inverse time-current characteristic when its input current exceeds a predetermined value.

Protective Element	Typical Settings	Comments[1234]
Additional Protection Requirements[6]		
51V Overcurrent (Voltage Control or Restrained)	Set per study[7]	Primary Function: Fault Detection This element provides backup phase overcurrent protection for system faults under a collapsed voltage condition. Many DG units cannot sustain fault current especially above 300% FLA. This element would allow setting the pickup below load current when voltage is depressed. Typically, the pickup level is set to 50% of load current when the voltage is reduced below 80% of nominal.
59G Overvoltage (Ground)	Set per study[7]	Primary Function: Anti-Islanding This element is intended to detect ground faults if a ground source is lost. This could occur if a GF has a delta winding on the Distribution System side. This type of transformer connection could result in the classic 173% overvoltage on the unfaulted phases after the ED3 station breaker is open. Even if this relay is set very fast there is still a risk of distribution system equipment damage (Reference ITIC Curve in IEEE 1547.2).
67 Directional Phase Overcurrent	Set per study[7]	Primary Function: Fault Detection May be required depending on feeder configuration. This element provides directional phase overcurrent protection and operates with an inverse time-current characteristic when its input current exceeds a predetermined value in the specified direction.
67N Directional Ground Overcurrent	Set per study[7]	Primary Function: Fault Detection May be required depending on feeder configuration. This element provides directional ground overcurrent protection and operates with an inverse time-current characteristic when its input current exceeds a predetermined value in the specified direction.
86 Lockout	None	Primary Function: Manual Reset Lockout Relay All relay trip elements must operate a manual-reset lockout relay which in turn trips all isolating circuit breakers, preventing reclosing by any means. In special circumstances, such as automatic schemes, ED3 may approve certain relay elements to directly trip a breaker, bypassing the lockout relay.

NOTES:

1. General: This reference is considered a "guide". Engineering judgement must be applied when evaluating each application.
2. Intent: These are considered necessary requirements to protect the ED3 Distribution System from the GF. The Interconnector is responsible for considering additional protection for its internal system.
3. Parallel Operation: These guidelines apply to GFs operating in parallel with the ED3 Distribution System for 100 msec or more. The requirements are reduced for applications where paralleling times are less than 100msec.
4. Equipment Requirements: Relays shall meet all applicable requirements of Section 8.7.2, *General Requirements*.
5. Always Required Protection: All generators must provide these protective relay elements.
6. Additional Protection Requirements: Certain GFs may be required to provide these additional requirements as will be determined by the utility interconnection study or as described in Section 7.
7. Set per Study: The settings for these elements shall be submitted by the Interconnector to ED3 for review. At the Interconnector's request, ED3 shall provide system protection information directly-related to the Point of Interconnection.

TRIP Function	**Required Settings**	
	Voltage (p.u.)	Clearing Time (sec)
59-2	1.2	0.16
59-1	1.1	2.0
27-1	0.88	2.0
27-2	0.50	1.1

Inverter Frequency Trip Settings Summary

TRIP Function	**Required Settings**	
	Frequency (Hz)	Clearing Time (sec)
81O-2	62.0	0.16
81O-1	61.2	300.0
UF1	58.5	300.0
UF2	56.5	0.16

Inverter Voltage Ride-through Capability and Operational Requirements

Voltage Range (p.u.)	Operating Mode/Response	Minimum Ride-Through Time	Maximum Response Time (sec)
V>1.20	Deeneregize	N/A	0.16
1.175<V<=1.20	Permissive Operation	0.2	N/A
1.15<V<=1.175	Permissive Operation	0.5	N/A
1.10<V<=1.15	Permissive Operation	1.0	N/A
0.88<V<=1.10	Continuous Operation	Infinite	N/A
0.65<V<=0.88	Mandatory Operation	Linear slope of 8.7 s/1 p.u. voltage starting at 3 s @ 0.65 p.u.: $T_{VRT} = 3s + \frac{8.7}{1\ p.u.}(V-0.65\ p.u.)$	N/A
0.45<V<=0.65	Permissive Operation	0.32	N/A
0.30<V<=0.45	Permissive Operation	0.16	N/A
V<0.30	Deenergize	N/A	0.16

Inverter Frequency Ride-Through Capability

Frequency Range (Hz)	Operating Mode	Minimum Time
f>62.0	Ride-Through Requirements do not apply to this range	
61.2<f<=61.8	Mandatory Operation	299
58.8<f<=61.2	Continuous Operation	Infinite
57.0<f<=58.8	Mandatory Operation	299
f<57.0	Ride-Through Requirements do not apply to this range	

Grid Support Utility Interactive Inverter Function Status

Function	Default Activation State
Specified Power Factor (SPF)	OFF
Q(V), Volt-VAR Function with Watt or VAR Priority	OFF, Default Value 2% of maximum current output per second
SS, Soft Start Ramp Rate	ON
FW, Frequency-Watt Function OFF	OFF

ED3 Metering and Data Acquisition Design Standards

To ensure reliable data communications, the telemetry equipment (RTU, Metering, communication equipment, communications media, etc.) shall meet the following requirements:

1. The equipment shall be equipped with backup power capable of supporting the anticipated load for a minimum of eight (8) hours.
2. The Communication Network shall be owned and operated by ED3, including all components of the network, terminal and intermediate equipment, and communication media.
3. The equipment shall be capable of operating in a temperature range of -20°C to +50 °C.
4. Critical communications equipment shall be monitored via SCADA. Alarms shall be provided if abnormal conditions occur on the systems.
5. At the minimum, all GFs with a capacity of more than 2 MW shall provide telemetry data from each generator/inverter at thirty (30) second intervals for the following parameters with precision to the tenths:
    a. Phase Voltages
    b. Line Current
    c. Real Power (kW)
    d. Reactive power (kVAR)
    e. POI Breaker status
    f. Generator Breaker status

Approval to Operate an Open-Transition Interconnection

Date:		ED3 Job #:	
Interconnector Company		Interconnection Application #:	
Clearance Date:		Interconnection Agreement	
ED3 Witness of Commissioning:		Commissioning Date:	
Interconnection of the GF with the ED3 Distribution System is approved contingent on continued open-transition operation. Should equipment changes occur after this Approval is granted, the installation shall be re-certified per this Policy.			
Signature		Date	
Name (Print)		Title	