

**AGREEMENT**  
**FOR**  
**INTERCONNECTION AND PARALLEL OPERATION**  
**OF**  
**DISTRIBUTED GENERATION (DG)**  
**(FOR RESIDENTIAL DISTRIBUTED GENERATION 10kW OR LESS)**

## TABLE OF CONTENTS

Interconnection and Operating Agreement.....	1
1. Scope of Agreement.....	1
2. Applicability and Definition of DG Systems.....	1
3. Establishment of Point of Interconnection.....	1
4. Establishment of Point of Dedicated Facilities.....	2
5. Responsibilities of Cooperative and DG Owner.....	2
6. Operator in Charge.....	3
7. Stand-by Capacity and Energy Service.....	3
8. Power Sales.....	3
9. Limitation of Liability and Indemnification.....	3
10. Testing and Testing Records.....	4
11. Right of Access, Equipment Installation, Removal & Inspection.....	4
12. Disconnection of Facilities.....	5
13. Metering.....	5
14. Insurance and Protection of System.....	6
15. Effective Term and Termination Rights.....	6
16. Compliance.....	7
17. Dispute Resolution.....	7
18. Severability.....	8
19. Amendment.....	8
20. Entirety.....	8
21. Assignment.....	8
22. Notices.....	9
23. Invoicing and Payments.....	9
24. Limitations (No Third-Party Beneficiaries, Waiver, etc.).....	9
25. Headings.....	10
26. Multiple Counterparts.....	10
Exhibit A – Application for Interconnection and Parallel Operation of Distributed Generation A1	
Exhibit B – List of Facilities Schedules.....	B1
Exhibit C – Power Purchase Agreement for Purchase of Excess Electric Energy.....	C1
Amendment C-1 Distributed Generation Rate DG-1.....	C4
Exhibit D – Interconnection Requirements for Distributed Generation in Residences.....	D1

**AGREEMENT  
FOR  
INTERCONNECTION AND PARALLEL OPERATION OF  
DISTRIBUTED GENERATION (DG)**

**(FOR RESIDENTIAL DISTRIBUTED GENERATION 10kW OR LESS)**

This Interconnection Agreement (“Agreement”) is made and entered into this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, by and between \_\_\_\_\_, (“DG Owner”) and \_\_\_\_\_ Electric Power Association (“Cooperative”) and South Mississippi Electric Power Association (“SMEPA”), Cooperative and SMEPA being Electric Power Associations organized under the laws of the State of Mississippi and DG Owner being a member of Cooperative, and each hereinafter sometimes referred to individually and collectively as “Party” or “Parties.” In consideration of the mutual covenants set forth herein, the Parties agree as follows:

**1. Scope of Agreement** – This Agreement is applicable to conditions under which SMEPA, the Cooperative, and the DG Owner acknowledge that one or more generating facilities, associated protective devices and interconnection equipment, owned and operated by the DG Owner and rated at 10 kW or less, to be interconnected at \_\_\_\_ kV or less, as described in Exhibit B, (‘Facilities’), may be interconnected to the Cooperative’s electric power distribution system and operated in parallel with the systems of Cooperative and SMEPA (“System”).

**2. Applicability and Definition of DG Systems** – The information contained in this Agreement is applicable to Facilities installed in residences and rated at 10kW or less. Facilities may consist of two different types of DG systems. DG systems that are commercially available as pre-packaged DG equipment satisfying the requirements of IEEE Standard 1547 and UL 1741, and are stamped as such, shall hereinafter be referred to as “Pre-packaged DG.” DG systems rated at 10kW or less consisting of individual components that were not factory tested as a complete Pre-packaged DG shall hereinafter be referred to as “Component DG.” Any modifications to Pre-packaged DG or Component DG shall cause the requirements of UL 1741 to no longer be satisfied and the system shall be disconnected. The Cooperative will disconnect a system that no longer satisfies the requirements of UL 1741 in accordance with Section 12, Disconnection of Facilities.

**3. Establishment of Point of Interconnection** – The point where the electric energy first leaves the wires or facilities owned by the Cooperative and enters the wires or facilities provided by DG Owner is the “Point of Interconnection.” Cooperative and DG Owner shall interconnect the Facilities at the Point of Interconnection in accordance with IEEE Standard 1547 as promulgated and amended by the Institute of Electrical and Electronic Engineers (IEEE) and titled: IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems, the rules, regulations, by-laws, rates, and tariffs of SMEPA and Cooperative (the “Rules”) which are incorporated herein by reference. The interconnection equipment installed by the DG Owner (“Interconnection Facilities”) shall be in accordance with the Rules as well as with the South Mississippi Electric Power Association and Member Cooperatives Interconnection

Requirements for Distributed Generation, the current requirements which are included as Exhibit D.

**4. Establishment of Point of Dedicated Facilities** – The point where the electric energy first leaves the facilities owned by the Cooperative that are used to serve its members and enters the electric distribution system constructed, owned, operated, and maintained by the Cooperative that are used exclusively for providing electric service to the DG Owner is the “Point of Dedicated Service.”

**5. Responsibilities of Cooperative and DG Owner for Installation, Operation and Maintenance of Facilities** – DG Owner will, at its own cost and expense, design, install, operate, maintain, repair, and inspect, and shall be fully responsible for, its Facilities, Interconnection Facilities and any other equipment designated by the Cooperative and SMEPA, unless otherwise specified in Exhibit B. DG Owner shall conduct operations of its Facilities and Interconnection Facilities in compliance with all aspects of the Rules and in accordance with industry standard prudent engineering practice and prudent electric utility practice. The Cooperative shall conduct operations of its electric distribution facilities in compliance with Cooperative’s rules, regulations, by-laws, rates, and tariffs. Maintenance of Facilities and Interconnection Facilities shall be performed in accordance with the applicable manufacturers’ recommended maintenance schedule. The DG Owner shall maintain a log of all activities related to maintenance of Interconnection Facilities and make such log available for review of Cooperative upon request. The DG Owner shall cause its Facilities and Interconnection Facilities to be constructed in accordance with the Rules and specifications equal to or greater than those provided by the IEEE Standard 1547 and the National Electrical Safety Code and the National Electrical Code, both codes approved by the American National Standards Institute, in effect at the time of construction.

The DG Owner shall design, install, maintain, repair, inspect and operate its Facilities and Interconnection Facilities so as to reasonably minimize the likelihood of a malfunction or other disturbance, damaging or otherwise affecting or impairing the System. DG Owner shall comply with all applicable national and state laws, local government requirements, regulations, zoning codes, building codes, safety rules and environmental restrictions applicable to the design, installation, operation, repair and maintenance of its Facilities and Interconnection Facilities and electric utility standards for the safety of the public and personnel responsible for utility electric power system operations, maintenance and repair.

Cooperative or SMEPA will use reasonable effort to notify DG Owner if there is evidence that the Facilities’ or Interconnection Facilities’ operation causes disruption or deterioration of service to other members served from the System or if the Facilities’ or Interconnection Facilities’ operation causes damage to the System. DG Owner will notify the Cooperative and SMEPA of any emergency or hazardous condition or occurrence with the DG Owner’s Facilities or Interconnection Facilities, which could affect safe operation of the System. Cooperative shall have the right to disconnect DG Owner’s Facilities and Interconnection Facilities as described in paragraph 12 even if notice is not given.

The Distribution System is a dynamic and changing system. Upgrades to the system are often necessary to prepare for continued load growth. Unless the Cooperative has a policy otherwise, the DG Owner will be responsible for paying for all modifications required for reconnecting to the reconfigured Distribution System.

Cooperative has the right to require the DG Owner to pay a facilities charge to recover the administration cost for the DG and for facilities that are required to provide the Cooperative's members and the DG Owner with reliable service.

**6. Operator in Charge** – The DG Owner shall each identify an individual (by name or title) who will perform as “Operator in Charge” of the Facilities and the DG Owner portion of the Interconnection Facilities. This individual must be familiar with this Agreement, the technical details of the Facilities and Interconnection Facilities, the Rules, and any other agreements or regulations that may apply. This individual is listed in Exhibit B.

**7. Stand-by Capacity and Energy Service** – Stand-by capacity and energy service will not be required for residential DG Owners with on-site generation with a rating of 10kW or less, for the Term of this Agreement.

**8. Power Sales to Cooperative or SMEPA** – The DG Owner, or its agent, is prohibited from selling energy and/or transmitting energy from DG Owner's Facilities to SMEPA or Cooperative without prior written agreement between DG Owner, Cooperative, and SMEPA. Interconnection of the Facilities with the System does not grant the DG Owner the right to export energy across the Point of Dedicated Service to the System nor does it constitute an agreement by the Cooperative or SMEPA to purchase excess energy. Prior to selling excess energy from the facility, a separate power purchase agreement between the Parties must be in place. See Exhibit C for separate agreements between the Parties.

## **9. Limitation of Liability and Indemnification**

- a. Notwithstanding any other provision in this Agreement, with respect to the Cooperative's provision of electric service to DG Owner and the services provided by the Cooperative pursuant to this Agreement, Cooperative's liability to DG Owner shall be limited as set forth in the currently effective Cooperative's tariffs and terms and conditions for electric service, which are incorporated herein by reference.
- b. For the purposes of this Agreement, a Force Majeure event is any event: (a) that is beyond the reasonable control of the affected Party; and (b) that the affected Party is unable to prevent or protect against by exercising reasonable diligence, including the following events or circumstances, but only to the extent that they satisfy the preceding requirements: acts of war, public disorder, rebellion or insurrection; floods, hurricanes, earthquakes, lightning, storms or other natural calamities; explosions or fires; strikes, work stoppages or labor disputes; embargoes; or sabotage. If a Force Majeure event prevents a Party from fulfilling any obligations under this Agreement, such Party will promptly notify the other party in writing and will keep the other Party informed on a continuing basis as to the scope and duration of the Force Majeure event. The affected

Party will specify the circumstances of the Force Majeure event, its expected duration and the steps that the affected Party is taking to mitigate the effect of the event on its performance. The affected Party will be entitled to suspend or modify its performance of obligations under this Agreement but will use reasonable efforts to resume its performance as soon as possible. Lack of funds is not a Force Majeure event.

- c. Notwithstanding Paragraph 9.b of this Agreement, the DG Owner shall assume all liability for and shall indemnify the Cooperative and SMEPA and their respective members, trustees, directors, officers, managers, employees, agents, representatives, affiliates, successors and assigns for and shall hold them harmless from and against any claims, losses, costs, and expenses of any kind or character to the extent that they result, in whole or in part, from DG Owner's negligent or reckless acts or omissions or other wrongful conduct in connection with the design, construction, installation, operation, repair or maintenance of the Facilities or Interconnection Facilities. Such indemnity shall include, but is not limited to, financial responsibility for (i) monetary losses; (ii) reasonable attorney fees and costs and expenses of defending an action or claim; (iii) damages related to death or injury; (iv) damages to property; and (v) damages for the disruption of business.
- d. Cooperative and DG Owner shall each be responsible for the safe installation, maintenance, repair and condition of their respective lines, wires, switches, or other equipment or property on their respective sides of the Point of Interconnection. The Cooperative and SMEPA do not assume any duty of inspecting the DG Owner's lines, wires, switches, or other equipment or property and will not be responsible therefor. DG Owner assumes all responsibility for the DG Owner's electric energy produced, the energy production facilities and Interconnection Facilities used in connection therewith at or beyond the Point of Interconnection.
- e. The connections between the service wires of the Cooperative and the service entrance conductors of the DG Owner shall be energized only upon prior written authorization from the Cooperative and SMEPA.

**10. Testing and Testing Records** – The DG Owner shall provide to the Cooperative all records of testing as required by UL 1741 and IEEE 1547. These records shall include testing at the start of commercial operation and a minimum of the first anniversary and every five years thereafter. Factory testing of Pre-packaged DG shall be acceptable for initial commercial operation tests. In the case of a factory test, the DG Owner shall provide a written description and certification by the factory of the test, the test results, and the qualification of any independent testing laboratory. In addition, the settings of the equipment being installed shall be approved by the Cooperative prior to operation of the Facilities and Interconnection Facilities by the DG Owner.

**11. Right of Access, Equipment Installation, Removal & Inspection** – The Cooperative and/or SMEPA may send an employee, agent or contractor to the premises of the DG Owner at any time whether before, during or after the time the Facilities first produce energy to inspect the Facilities and Interconnection Facilities, and observe the Facility's installation, commissioning

(including any testing), startup, operation, repair and maintenance. The Cooperative and SMEPA have the right, but have no responsibility either actual or implied, to impose any additional requirements necessary and to make final inspection before operation of the DG to verify that all requirements have been satisfied.

At any time, Cooperative and SMEPA shall have access to DG Owner's premises for any reasonable purpose in connection with the interconnection described in this Agreement, the Rules, or to provide service to its DG Owners. Neither the Cooperative nor SMEPA are required to inspect the Facilities or Interconnection Facilities and are not in any way responsible for inspection of the Facilities or Interconnection Facilities.

**12. Disconnection of Facilities** – DG Owner retains the option to disconnect its Facilities from the System, provided that DG Owner notifies the Cooperative of its intent to disconnect by giving the Cooperative at least thirty (30) days' prior written notice. Such disconnection shall not be a termination of this Agreement unless DG Owner exercises rights under Section 15 that do not lead to a resolution of the issue.

DG Owner shall disconnect Facilities from the System upon the effective date of any termination resulting from and required by actions under Section 15.

Cooperative, in its sole discretion, shall have the right to disconnect or cause the DG Owner to disconnect the Facilities from the System and suspend service in cases where: (a) continuance of service to DG Owner will endanger persons or property, or (b) if the operation of the DG Owner's Facilities or Interconnection Facilities causes a disruption or deterioration of service to other members served from the System or (c) causes damage to the System or (d) the Pre-packaged DG or Component DG no longer satisfies the requirements of UL 1741. During the forced outage of the System serving DG Owner, Cooperative shall have the right to suspend service and disconnect or cause the DG Owner to disconnect the Facilities from the System to effect repairs on the System, but the Cooperative will use its reasonable efforts to provide the DG Owner with reasonable prior notice. Cooperative shall also have the right to suspend service and disconnect the DG Owner Facilities from the System to allow Cooperative to perform System maintenance, switching operations, and emergency restoration.

DG Owner shall be responsible for the cost to install a disconnect facility as specified in Exhibit D. which shall include a Cooperative approved lockable, load break isolation disconnect with a visible open that shall be readily accessible to and operable by authorized personnel at all times.

**13. Metering** – The DG Owner shall be responsible for all costs associated with, and Cooperative shall provide, own, install and maintain, such metering equipment as may be necessary to meter the electrical output of the Facilities in accordance with the Interconnection Requirements for Distributed Generation as shown in Exhibit D. The type metering required will vary with the Facilities application. Metering in general shall track the kW and kWh production of the Facilities. Any special metering will be specified in Exhibit B. Metering shall meet accuracy standards required for equivalent electrical services and can be done with standard meters or any devices that meet data collection and accuracy requirements. If required, telemetry data

shall be provided to the Cooperative and/or SMEPA and the communication of such data shall be compatible with the Cooperative's and/or SMEPA's standard communication methods.

**14. Insurance and Protection of System** – If the Facilities or Interconnection Facilities of the DG Owner cause damage to the System, the DG Owner shall be responsible for all costs associated with the repair and/or replacement of such damaged System. If DG Owner's Facilities or Interconnection Facilities in any way cause a loss or damage to the wholesale or retail members of SMEPA or Cooperative, DG Owner shall be responsible for such damages, claims and losses. SMEPA or Cooperative shall be entitled to credit or offset any such loss or damage against amounts owed, or which are subsequently owed, to DG Owner. This credit will not limit or prevent claims above the amount credited.

DG Owner shall save, defend, and hold harmless SMEPA and Cooperative and their officers, employees, and agents from any and all claims for injury to person or persons or damage to property or the environment occurring at the Facilities or Interconnection Facilities of DG Owner and to the extent caused by negligent or reckless acts or omissions of DG Owner. DG Owner is solely responsible for the risk of loss of, or damage to, Facilities or Interconnection Facilities of DG Owner, except to the extent that the loss or damage results from the negligent or reckless acts or omissions of SMEPA or Cooperative and their officers, employees or agents.

Without limiting any obligations or liabilities under this Agreement, DG Owner shall, at its expense, provide and maintain in effect for the life of this Agreement, minimum insurance coverage as follows:

- a. Workers' Compensation Insurance, with statutory limits as required by the laws and regulations applicable to employees.
- b. Liability Insurance in the amount of \$300,000 per occurrence for bodily injury and property damage including contractual liability coverage for liabilities assumed under this Agreement.

The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to SMEPA and Cooperative. DG Owner shall furnish SMEPA and Cooperative a certificate evidencing compliance with the foregoing requirements, which shall provide not less than (30) days prior written notice to SMEPA and Cooperative of any cancellation or material change in the insurance coverages.

**15. Effective Term and Termination Rights** – This Agreement becomes effective when executed by the Parties ("Effective Date") and shall continue in effect for an initial term ending on December 31 in the same year as the Effective Date unless otherwise terminated in accordance with the provisions of this Agreement. This Agreement shall be automatically renewed and the term extended for additional one year periods unless terminated in accordance with this Agreement. This Agreement may be terminated as follows: (a) Any Party may terminate this Agreement at any time by giving the other Parties at least sixty (60) days' written notice; (b) Cooperative and/or SMEPA may terminate upon failure by the DG Owner to energize DG equipment within six (6) months after completion of the interconnection; (c) any Party may terminate by giving the other Parties at least thirty (30) days prior written notice that the defaulting Party is in default of any of the terms and conditions of the Agreement or the Rules or

any rate schedule, tariff, regulation, contract, or policy of the Cooperative and/or SMEPA, so long as the notice specifies the basis for termination and there is opportunity to cure the default; (d) Cooperative and/or SMEPA may terminate by giving DG Owner at least sixty (60) days notice in the event that there is a material change in an applicable law, or any requirement of SMEPA or of any transmission utility, independent system operator or regional transmission organization having responsibility for the operation of any part of the System.

**16. Compliance** – The interconnection and services provided under this Agreement shall at all times be subject to the terms and conditions set forth in this Agreement. The Cooperative and/or SMEPA shall have the right to amend any of its rules, bylaws, rates and tariffs at any time and the amendments shall become part of this Agreement.

**17. Dispute Resolution** – In the event any dispute arises under this Agreement, the following process will be used to resolve such dispute:

a. Informal Dispute Resolution

Each Party shall designate in writing to the other Parties or representatives who shall be authorized to resolve any dispute arising under this Agreement in an equitable manner and, unless expressly provided herein, to exercise the authority of such party to make decisions by mutual agreement. If such designated representatives are unable to resolve a dispute under this Agreement, such dispute shall be referred by each party's representative to a senior officer designated by each party for resolution upon five (5) days' written notice from any party. Any dispute that may arise in connection with this Agreement which cannot be resolved within thirty (30) days following submission to a senior officer shall be settled by arbitration in accordance with Paragraph 17 B.

The parties shall:

- i. Attempt to resolve any dispute arising hereunder promptly, equitably, and in a good faith manner;
- ii. Provide each Party with reasonable access during normal business hours to any and all non-privileged records, information and data pertaining to any such dispute.

b. Binding Dispute Resolution

The Parties may initiate binding dispute resolution procedures by one Party notifying all other Parties stating the names of ten (10) eligible arbitrators experienced in the industry with no financial interest in any party. Within ten (10) days of receiving the list, the other Parties shall agree on a single arbitrator from the list to conduct the arbitration, or notify the originating Party of an additional ten (10) eligible arbitrators and the process will continue until one (1) arbitrator has been selected. The arbitrator shall not possess a direct or indirect interest in any Party or the subject matter of the arbitration. The procedures to be used for this arbitration will be generally consistent with the commercial arbitration rules of the American Arbitration Association though not involving the Association.

Each Party shall be responsible for its own costs and those of its counsel and representatives. The Parties shall equally divide the costs of the arbitrator and the hearing.

Any arbitration shall be conducted on a confidential basis and not disclosed, including any documents or results which shall be considered confidential, unless the parties otherwise agree or such disclosure is required by law.

THE PARTIES UNDERSTAND THAT BY SIGNING THIS ARBITRATION AGREEMENT THAT THEY WILL NOT BE ABLE TO BRING A LAWSUIT CONCERNING ANY DISPUTE THAT MAY ARISE UNDER THIS AGREEMENT AND THEY ARE GIVING UP THE RIGHT TO A TRIAL IN COURT, BOTH WITH AND WITHOUT A JURY.

**18. Severability** – If any portion or provision of this Agreement is held or adjudged for any reason to be invalid or illegal or unenforceable by any court of competent jurisdiction, such portion shall be deemed separate and independent, and the remainder of this Agreement shall remain in full force and effect.

**19. Amendment** – This Agreement may be amended only upon mutual agreement of the Parties, which amendment will not be effective until reduced to writing and executed by the Parties.

**20. Entirety of Agreement and Prior Agreements Superseded** – This Agreement, including the Rules and all attached Exhibits and Facilities Schedules, which are expressly made a part hereof for all purposes, constitutes the entire agreement and understanding between the Parties with regard to the interconnection of the facilities of the Parties at the Points of Interconnection expressly provided for in this Agreement. The Parties are not bound by or liable for any statement, representation, promise, inducement, understanding, or undertaking of any kind or nature (whether written or oral) with regard to the subject matter hereof not set forth or provided for herein or in the DG Owner application, or other written information provided by the DG Owner in compliance with the Rules. It is expressly acknowledged that the Parties may have other agreements covering other services not expressly provided for herein, which agreements are unaffected by this Agreement.

**21. Assignment** – At any time during the term of this Agreement, the DG Owner may assign this Agreement to a corporation, an entity with limited liability or an individual (the “Assignee”) to whom the DG Owner transfers ownership of the Facilities; provided that the DG Owner obtains the written consent of the Cooperative and SMEPA in advance of the assignment. The written consent of Cooperative and SMEPA will be based on a determination that the Assignee is financially and technically capable to assume ownership and/or operation of the Facilities. The company or individual to which this Agreement is assigned will be responsible for the proper operation and maintenance of the Facilities, and must agree in writing to be subject to all provisions of this Agreement. Cooperative and SMEPA may assign the Agreement to another entity without the written approval of the DG Owner.

**22. Notices** – Notices given under this Agreement are deemed to have been duly delivered if hand delivered or sent by United States certified mail, return receipt requested, postage prepaid, to:

If to DG Owner:

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If to Cooperative:

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If to SMEPA:

South Mississippi Electric Power Association  
Attn: Director Wholesale Services  
P.O. Box 15849  
Hattiesburg, MS 39404-5849

The above-listed names, titles, and addresses of any Party may be changed by written notification to the other Parties, notwithstanding Section 18.

**23. Invoicing and Payment** – Invoicing and payment terms for services associated with this Agreement shall be consistent with applicable Rules.

**24. Limitations (No Third-Party Beneficiaries, Waiver, etc.)** – This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties. This Agreement may not be assigned by the DG Owner without the prior written consent of the Cooperative and SMEPA as specified in Section 21. The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered to waive the obligations, rights, or duties imposed upon the Parties.

**25. Headings** – The descriptive headings of the various articles and sections of this Agreement have been inserted for convenience of reference only and are to be afforded no significance in the interpretation or construction of this Agreement.

**26. Multiple Counterparts** – This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

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**IN WITNESS WHEREOF**, the Parties have caused this Agreement for Interconnection and Parallel of Operation of Distributed Generation (DG) (For Residential Distributed Generation 10kW or Less) to be signed by their respective duly authorized representatives.

\_\_\_\_\_ (DG Owner)

By: \_\_\_\_\_

Title \_\_\_\_\_

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

\_\_\_\_\_ Electric Power Association (Cooperative)

By: \_\_\_\_\_

Title \_\_\_\_\_

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

South Mississippi Electric Power Association (SMEPA)

By: \_\_\_\_\_

Title \_\_\_\_\_

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

## EXHIBIT A

### Application for Interconnection and Parallel Operation of Distributed Generation

Return completed application to your local Cooperative contact or to:

South Mississippi Electric Power Association  
Attn: Director Wholesale Services  
P.O. Box 15849  
Hattiesburg, MS 39404-5849  
Fax: (601) 261-2375

DG Owner's Name: \_\_\_\_\_

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

Contact Person: \_\_\_\_\_

Telephone Number: \_\_\_\_\_ e-mail: \_\_\_\_\_ Fax: \_\_\_\_\_

Service Point Address: \_\_\_\_\_

Information Prepared and Submitted By: \_\_\_\_\_  
(Name and Address) \_\_\_\_\_

Signature \_\_\_\_\_

The DG Owner or DG Owner's designated representative shall supply the following information. All applicable items must be accurately completed in order for Cooperative or SMEPA to effectively evaluate the DG Owner's DG for interconnection with the distribution system.

#### GENERATOR

Number of Units<sup>1</sup> \_\_\_\_\_

Manufacturer & model number: \_\_\_\_\_

Type (Induction or Inverter): \_\_\_\_\_

Fuel Source Type (Solar, Natural Gas, Wind, etc.): \_\_\_\_\_

Kilowatt Rating (nameplate and at 95 degree F at location) \_\_\_\_\_

Kilovolt-Ampere Rating (nameplate and at 95 degree F at location): \_\_\_\_\_

<sup>1</sup> If multiple units are installed and they are not identical, one application must be prepared for each dissimilar unit.

Power Factor: \_\_\_\_\_

Voltage Rating: \_\_\_\_\_

Ampere Rating: \_\_\_\_\_

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

Will you supply the necessary Var requirements? \_\_\_\_\_ Yes / \_\_\_\_\_ No

Expected energizing and start-up date: \_\_\_\_\_

Normal operation of interconnection: (examples: provide power to meet base load, demand management, emergency, back-up, other (please describe) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

One-line diagram attached? \_\_\_\_\_ Yes

List of specifications on protective devices attached? \_\_\_\_\_ Yes

Has the generator manufacturer supplied its dynamic modeling values to SMEPA? \_\_\_\_\_ Yes

Layout sketch showing lockable, "visible" disconnect device? \_\_\_\_\_ Yes

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

**EXHIBIT B**  
**LIST OF FACILITIES SCHEDULES**

*DG Owner will, at its own cost and expense, operate, maintain, repair, and inspect, and shall be fully responsible for its Facilities, unless otherwise specified herein Exhibit B.*

Cooperative will obtain and record generator meter reading monthly.

Facility Schedule No.

Name of Facility

Operator in Charge:

**FACILITIES SCHEDULE NO. \_\_\_\_\_**

1. Name:
2. Facilities location:
3. Delivery voltage:
4. Metering (voltage, location, losses adjustment due to metering location, and other):
5. Normal Operation of Interconnection:
6. One line diagram attached (check one): \_\_\_\_\_ Yes \_\_\_\_\_ No
7. Facilities to be furnished/installed by Cooperative:
8. Facilities to be furnished/installed by DG Owner:
9. Cost Responsibility:
10. Control area interchange point (check one): \_\_\_\_\_ Yes \_\_\_\_\_ No
11. Supplemental terms and conditions attached (check one): \_\_\_\_\_ Yes \_\_\_\_\_ No
12. Cooperative requirements for DG interconnection attached (check one): \_\_\_\_\_ Yes \_\_\_\_\_ No

## EXHIBIT C

### POWER PURCHASE AGREEMENT FOR PURCHASE OF EXCESS ELECTRIC ENERGY FROM RESIDENTIAL DISTRIBUTED GENERATION (DG) RATED 10KW OR LESS

This Purchase Agreement ("Purchase Agreement") is made and entered into this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, by and between \_\_\_\_\_, herein after referred to as "DG Owner" and \_\_\_\_\_ Electric Power Association, hereinafter referred to as "Cooperative" and South Mississippi Electric Power Association, hereinafter referred to as "SMEPA," both being Electric Power Associations organized under the laws of the state of Mississippi, and each hereinafter sometimes referred to individually and collectively as "Party" or "Parties." In consideration of the mutual covenants set forth herein, the Parties agree as follows:

- 1. Interconnection of Facilities:** Prior to purchase of excess electric energy from DG Owner, an Agreement for Interconnection and Parallel Operation of Distributed Generation ("Agreement") shall be executed between the Parties. DG Owner shall satisfy all terms and conditions of the Agreement as determined by SMEPA and Cooperative.
- 2. Monthly DG Connection Fee:** DG Owner shall pay a monthly DG Connection Fee to Cooperative. Cooperative shall add to the monthly bill of DG Owner for residential service a DG Connection Fee in the amount of \$\_\_\_\_\_ per month to cover administrative, metering and other SMEPA and Cooperative expenses related to serving interconnected distributed generation. Cooperative may revise the amount charged for the monthly DG Connection Fee upon giving thirty (30) day advance written notice of such change.
- 3. DG Energy Rate:** SMEPA shall pay DG Owner for all metered excess electric energy, as adjusted for losses to the high side of the distribution transformer, delivered into the electric facilities of Cooperative from the DG facilities of DG Owner in accordance with Distributed Generation Rate DG-1 attached hereto as Attachment 1.
- 4. Metering:** Metering suitable to Cooperative and SMEPA for measuring excess electric energy delivered into the electric facilities of Cooperative shall be provided in accordance with the Agreement.
- 5. Reading of Meter:** Cooperative shall read the meter monthly and report to SMEPA by the first day of the succeeding month, or the next business day thereafter, the excess electric energy delivered to the electric facilities of Cooperative from the DG facilities of DG Owner (Delivered Energy).
- 6. Determination of Delivered Energy:** The Delivered Energy (kWh) shall be measured energy at the high side of the transformer or adjusted to the high side of the transformer.

7. **Payment for Excess Electric Energy:** Statements covering credits for Delivered Energy shall be rendered by SMEPA by the twentieth day of the month, or the next business day thereafter, subsequent to having received meter readings from Cooperative. The Statement will be accompanied by a check for the amount due if the DG Owner credit for energy delivered exceeds \$25.00. A monthly credit of \$25.00 or less will be accumulated and paid when the total amount due DG Owner exceeds \$25.00. Regardless of the accumulated amount due DG Owner for sale of excess electric energy to SMEPA by December 31 of each year this agreement is in effect, SMEPA shall pay the amount due DG Owner for sale of such excess electric energy by the twentieth (20<sup>th</sup>) day of February in the subsequent year.
8. **Severability:** If any portion or provision of this Purchase Agreement is held or adjudged for any reason to be invalid or illegal or unenforceable by any court of competent jurisdiction, such portion shall be deemed separate and independent, and the remainder of this Agreement shall remain in full force and effect.
9. **Amendment:** This Purchase Agreement may be amended only upon mutual agreement of the Parties, which amendment will not be effective until reduced to writing and executed by the Parties.
10. **Assignment:** At any time during the term of this Purchase Agreement, the DG Owner may assign this Purchase Agreement to a corporation, an entity with limited liability or an individual (the "Assignee") to whom the DG Owner transfers ownership of the Facilities; provided that the DG Owner obtains the written consent of the Cooperative and SMEPA in advance of the assignment. Consent of Cooperative and SMEPA consent will be based on a determination that the Assignee is financially and technically capable to assume ownership and/or operation of the Facilities. The company or individual to which this Purchase Agreement is assigned will be responsible for the proper operation and maintenance of the Facilities, and must agree in writing to be subject to all provisions of this Purchase Agreement. Cooperative and SMEPA may also assign the Purchase Agreement to another entity with the written approval of the DG Owner.
11. **Headings:** Headings used in this Purchase Agreement are inserted for convenience of reference only and shall not be deemed to be a part of this Purchase Agreement for any purpose.
12. **Governing Law:** This Purchase Agreement shall be governed and construed in accordance with the laws of the State of Mississippi.
13. **Effective Term and Termination Rights:** This Purchase Agreement shall become effective when executed by the Parties and shall continue in effect until terminated in accordance with Article 15, Effective Term and Termination Rights, in the Agreement for Interconnection and Parallel Operation of Distributed Generation executed by the Parties.

**REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK**

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

\_\_\_\_\_ (DG Owner)

By: \_\_\_\_\_

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

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

\_\_\_\_\_ Electric Power Association (Cooperative)

By: \_\_\_\_\_

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

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

South Mississippi Electric Power Association (SMEPA)

By: \_\_\_\_\_

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

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

**AVAILABILITY OF SERVICE**

This rate and the terms and conditions set out herein are available for and applicable to purchases of energy only by SMEPA from the owner of distributed generation with a rated output no greater than 1000 kW (such owner being hereafter called "Customer"). Such distributed generation shall be installed on the property of Customer and interconnected with the distribution system of a SMEPA Member Cooperative (such SMEPA Member Cooperative being hereafter called "Cooperative") to provide all or part of Customer requirements of electrical energy, or from which facilities Customer may elect to sell to SMEPA such output of electrical energy delivered into the distribution system of Cooperative.

SMEPA and Cooperative will permit generating facilities of Customer to operate in parallel with the systems of Cooperative and SMEPA under conditions as outlined below under Parallel Operation.

SMEPA will purchase such energy from Customer at the Rate as defined below and under the terms and conditions stated herein. SMEPA reserves the right to change the said Rate at its discretion, effective upon renewal of the term for the Agreement for Interconnection and Parallel Operation of Distributed Generation between Customer, Cooperative and SMEPA (such agreement being hereafter called "Agreement") provided SMEPA has notified Customer of such change in writing at least thirty (30) days prior to the expiration of the term of the then current Agreement.

**RATE**

For all KWH purchased by SMEPA

43.87 Mills per KWH

**METERING**

The Customer shall be responsible for the cost of installing and maintaining acceptable metering and telemetry equipment that satisfies the metering and telemetry equipment requirements as detailed in the Agreement.

SMEPA and Cooperative shall have access to all such meters at reasonable times during normal business hours of Customer, and shall regularly provide to Customer copies of all information provided by such meters.

**DUE DATE OF BILL**

SMEPA or Cooperative shall read monthly, the meter used for measuring electric energy purchases from Customer. Any payment due from SMEPA to Customer will be due no later than the twentieth day, or the first business day thereafter, of the subsequent month from date of SMEPA or Cooperative reading the meter.

**PARALLEL OPERATION**

Distributed generation facilities desiring to interconnect with the distribution system of the Cooperative must meet the specifications, terms and conditions contained in the Agreement. Upon

approval and completion of the Agreement, SMEPA and Cooperative will, in accordance with the terms and conditions of said Agreement, permit Customer to operate its generating facilities in parallel with the systems of Cooperative and SMEPA.

**CURTAILMENT**

In addition to the terms of the Agreement, SMEPA and/or Cooperative reserve the right to curtail a purchase from Customer when:

1. SMEPA or Cooperative has a system emergency and purchases would (or could) contribute to such emergency, or
2. SMEPA has been directed by the regional Reliability Coordinator that the purchase of energy from Customer must be curtailed because of a system emergency or for other reliability related reasons.

Customer will be notified of each curtailment.

**Exhibit D**

South Mississippi Electric Power Association  
And  
Member Cooperatives

**Interconnection Requirements for Residential  
Distributed Generation (Output 10kW or Less)**

# Contents

- 1. INTRODUCTION.....3
  - 1.1 PURPOSE .....3
  - 1.2 TYPES OF DG INTERCONNECTION.....3
  - 1.3 STANDARD OF SAFETY.....3
  - 1.4 STANDARD OF SERVICE.....3
  - 1.5 STANDARD OF INTERCONNECTION FACILITIES.....3
  - 1.6 LIMITATIONS.....4
- 2. ACRONYMS, DEFINITIONS AND REFERENCES .....4
  - 2.1 ACRONYMS .....4
  - 2.2 DEFINITIONS.....4
  - 2.3 REFERENCES .....5
- 3. OTHER DG INTERCONNECTION CONSIDERATIONS.....5
  - 3.1 LIABILITY.....5
  - 3.2 ECONOMIC REQUIREMENTS .....6
  - 3.3 SPECIFIC TECHNICAL INTERCONNECTION REQUIREMENTS (NON – IEEE STD.) .....6
- 4. INTERCONNECTION TECHNICAL SPECIFICATIONS AND REQUIREMENTS (IEEE 1547 SCHEME).....8
  - 4.1 GENERAL REQUIREMENTS.....8
  - 4.2 RESPONSE TO AREA ELECTRIC POWER SYSTEM ABNORMAL CONDITIONS.....9
  - 4.3 POWER QUALITY.....10
  - 4.4 ISLANDING .....10
- 5. INTERCONNECTION TEST SPECIFICATIONS AND REQUIREMENTS.....11
  - 5.1 DESIGN TEST.....11
  - 5.2 PRODUCTION TEST .....11
  - 5.3 INTERCONNECTION INSTALLATION EVALUATION .....11
  - 5.4 COMMISSIONING TESTS .....12
  - 5.5 PERIODIC INTERCONNECTION TESTS.....12
- ANNEX A .....13

## **1. Introduction**

### **1.1 Purpose**

The purpose of these interconnection requirements is to prescribe the requirements and procedures for the safe and effective parallel interconnection of distributed generation (DG) for a single-phase residential application of 10kW or less.

### **1.2 Types of DG interconnection**

#### **1.2.1 DG never connected to the electric grid – DG Owner does not sell energy**

The DG Owner may build DG that is mechanically prevented from interconnecting with the distribution system. All loads become displaced. Interconnection contracts are not required.

#### **1.2.2 DG normally connected to the electric grid – DG Owner does not sell energy**

The DG Owner may build DG that is normally connected to the distribution system. Some or the entire load becomes displaced. A contract is executed between DG Owner, Cooperative and SMEPA to allow interconnection and parallel operation of DG owned and operated by DG Owner. No contract is executed between DG Owner, Cooperative and SMEPA for selling energy to SMEPA.

#### **1.2.3 DG normally connected to the electric grid – DG Owner may sell energy**

The DG Owner may build DG that is normally connected to the distribution system. Some or the entire load becomes displaced. A contract is executed between DG Owner, Cooperative and SMEPA to allow interconnection and parallel operation of DG owned and operated by DG Owner. A contract is executed between DG Owner, Cooperative and SMEPA for selling energy to SMEPA.

### **1.3 Standard of safety**

The DG Owner shall be held to the same standard of safety that the Cooperative is required to maintain. The safety of the general public and the personnel and equipment of Cooperative shall in no way be reduced or impaired as a result of the interconnection. Under no condition will the DG Owner be permitted to energize a non-energized Cooperative distribution circuit.

### **1.4 Standard of service**

The quality, reliability and the availability of delivery service to the other members of Cooperative shall not be diminished or impaired as a result of the DG interconnection.

### **1.5 Standard of interconnection facilities**

The DG Owner shall be responsible for the design, installation, operation and maintenance of the DG interconnection according to the latest standards of the Underwriters Laboratory, including but not limited to UL1703 and UL 1741, Institute of Electrical and Electronics Engineers (IEEE), including but not limited to IEEE 929 and IEEE 1547, National Electrical Manufacturers Association (NEMA), American National Standards Institute (ANSI), National Electric Code (NEC), other national codes and any local codes pertaining to the design and construction of electrical facilities.

## **1.6 Limitations**

### **1.6.1 National standard and code requirement details not included in this document**

The specific details from the related national standards and codes have not been included in this interconnection document; therefore, a particular standard or code may have to be referenced for additional information.

### **1.6.2 Jurisdictional authority requirement details not included in this document**

The DG shall be subject to the requirements of all authorities having jurisdiction and shall comply with all applicable codes and ordinances.

## **2. Acronyms, definitions and references**

### **2.1 Acronyms**

DG	distributed generation
DR	distributed resources
EPS	electric power systems
PCC	point of common connection

### **2.2 Definitions**

**2.2.1 abnormal operating conditions:** A situation in which the distribution system is operating in other than normal configuration or under conditions that do not normally exist.

**2.2.2 Certifying Agent:** A State Registered Professional Engineer (PE), a technician certified by the North American Board of Certified Energy Practitioners (NABCEP) or a factory-certified technician qualified in the installation and testing of his company's Pre-packaged DG system all of whom are familiar with the associated standards and code requirements.

**2.2.3 consumer/member:** Equally defined as an entity that is a member of the distribution cooperative.

**2.2.4 Cooperative/distribution cooperative:** The electric distribution utility that is owned by the members to whom it provides electric service.

**2.2.5 DG Owner:** A member of an electric distribution cooperative that has distributed generation.

**2.2.6 distributed generation (DG):** Sources of electric power connected in parallel operation with an area electric power system. DG is defined in this document to include all distributed energy resources (DR).

**2.2.7 distributed resources (DR):** The term DR is used interchangeably with DG in this document.

**2.2.8 Pre-packaged DG:** DG systems that are factory tested as a complete unit and commercially available as a pre-packaged DG system satisfying the requirements of IEEE Standard 1547 and inverter requirements contained in UL1741 and are stamped as such shall hereinafter be referred to as "Pre-packaged DG".

**2.2.9 Component DG:** DG systems rated at 10kW or less consisting of individual components that were not factory tested as a complete Pre-packaged DG shall hereinafter be referred to as “Component DG”.

**2.2.10 interconnection:** The mechanical tie between the DG equipment and the electrical power system.

**2.2.11 interconnection facilities:** The DG equipment installed to interconnect with the cooperative’s electric power distribution system.

**2.2.12 point of common connection (PCC):** The specific location where the DG Owner’s interconnection facilities and the cooperative’s electric power distribution system join.

## **2.3 References**

The following standards shall be used in conjunction with this interconnection requirements document. When an approved revision supersedes one of the following standards, then the latest revision shall apply.

*IEEE Guide for Protective Relaying of Utility-Consumer Interconnection, C37.95 (Latest revision)*

*IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems, 519-1992*

*IEEE Recommended Practice for Electric Power Distribution for Industrial Plants, 141-1993*

*IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems, 1547-2003 reaffirmed 2008*

*Additional applicable standards and codes are in section 1.5 Standard of interconnection facilities contained herein.*

## **3. Other DG interconnection considerations**

### **3.1 Liability**

#### **3.1.1 Damages caused by electric power system disturbances (self protection).**

The DG Owner will be responsible for protecting his DG and interconnection facilities in such a manner that distribution and transmission system outages, protection/isolation device operations, short circuits, faults, or other disturbances including zero sequence currents and ferroresonant over-voltages do not damage the DG Owner's facilities.

#### **3.1.2 Damages caused by DG Owner’s interconnection**

The DG Owner is responsible for any damage created or harm done as the result of the DG Owner’s interconnection equipment and/or the improper operation of that equipment.

##### **3.1.2.1 Internal damages**

The DG Owner shall be liable for any damages to his DG and interconnection facilities as the result of his own DG interconnection.

### **3.1.2.2 External damages**

The DG Owner shall be liable for any external damages or harm done as the result of his DG interconnection. The external parties include but are not limited to the electric power system owner and/or any other connected members that were harmed. Those harmed may include non-members or animals that come into contact with power line facilities being supplied by the DG Owner's interconnected DG when the power line would otherwise be de-energized.

## **3.2 Economic requirements**

### **3.2.1 Pre-Interconnection Study**

The Cooperative shall, at the DG Owner's expense, conduct one or more Pre-Interconnection Study prior to the interconnection of the DG. These studies will include consideration of the requirements of the Public Utilities Regulatory Policy Act ("PURPA"), when applicable, and will indicate the system improvements/changes that may be required prior to connection of the DG. It should be recognized by the Parties that adequate time will be required to perform the studies and to make the improvements/changes prior to connection of the distributed generation.

### **3.2.2 Upgrade distribution interconnection equipment**

The total cost of any additional equipment that must be installed by Cooperative on its distribution system to allow parallel operation must be borne by the DG Owner, including the transformers and any facilities which must be added due to increased fault current or special operating conditions.

### **3.2.3 Metering**

The cost of the metering required for connection of the DG system shall be borne by the DG Owner.

### **3.2.4 Reconfigured distribution system**

The DG Owner may be responsible for paying for all modifications required for reconnecting to a reconfigured distribution system.

### **3.2.5 Transformer losses**

The generator step-up transformer losses shall be the DG Owner's responsibility; therefore the metering shall be at the distribution voltage level, or adjusted to the distribution voltage level. Rate considerations will reflect these requirements.

## **3.3 Specific technical interconnection requirements (non – IEEE Std.)**

The technical specifications and requirements contained in this section are specific items not contained in the IEEE 1547 Standard.

### **3.3.1 Proposed interconnection drawings**

Adequate drawings of the proposed DG interconnection facilities, which will include a one-line diagram and proposed relay systems, shall be submitted to Cooperative for review during the planning stage. Additional drawings and specifications may be required which will be determined on a case by case basis.

### **3.3.2 DG Owner interconnection modification**

The DG Owner shall notify Cooperative to obtain prior approval for any proposed modifications to the interconnection facilities.

### **3.3.3 Induction generation**

Induction generation may be connected and brought up to synchronous speed (as an induction motor) if it can be demonstrated that the initial voltage drop measured on the distribution system side at the point of interconnection is within the allowable visible flicker limits referenced in section 4.3.2. Otherwise, the DG Owner may be required to install hardware or employ other techniques to bring voltage fluctuations to acceptable levels.

#### **3.3.3.1 Line-commutated inverters**

Line-commutated inverters do not require synchronizing equipment.

#### **3.3.3.2 Self-commutated inverters**

Self-commutated inverters whether of the utility-interactive type or stand-alone type shall be used in parallel with the distribution system only with synchronizing equipment.

#### **3.3.4 Additional DG testing**

If upon connecting to the distribution system, a system emergency develops, safety issues arise, or the quality of service to other members deteriorates, Cooperative may perform additional inspections or tests of the DG Owner's protection system.

### **3.3.5 Installation Certification of a Residential Component DG interconnection system 10kW or less**

Certification by a State Registered Professional Engineer (PE) shall be required for all residential Component DG (see definition 2.2.8 Component DG). The PE shall certify that the technical requirements of this interconnection document have been met, and shall submit a report to the Cooperative for review of the test data from sections 5.3 and 5.4. The PE shall allow for Cooperative representatives to be present during the 5.4 Commissioning tests. In addition to the written periodic interconnection test procedure that shall be agreed upon by the DG Owner and Cooperative specified in section 5.5, the PE shall develop a maintenance plan and log that the DG Owner shall maintain and make available to Cooperative upon request.

### **3.3.6 Installation Certification of a Residential Pre-packaged DG interconnection system 10kW or less**

A Certifying Agent shall perform or directly supervise commissioning tests for a residential Pre-packaged DG system (see definition 2.2.7 Pre-packaged DG). The cooperative reserves the right to require the DG Owner to have the interconnection facilities PE certified when there is doubt about whether the DG interconnection package will meet the Pre-packaged DG criteria and/or that either the NABCEP certified technician or the factory-certified technician meets the Certifying Agent requirements. . The Cooperative approved Certifying Agent shall certify that the technical requirements of this interconnection document have been met, and shall submit a report to the Cooperative for review of the test data from sections 5.3 and 5.4. The Cooperative approved Certifying Agent shall allow for Cooperative representatives to be present during the 5.4 Commissioning tests. In addition to the written periodic interconnection test procedure that shall be agreed upon by the DG Owner and Cooperative specified in section 5.5, the Cooperative approved Certifying Agent shall develop a maintenance plan and log that the DG Owner shall maintain and make available to Cooperative upon request.

## **4. Interconnection technical specifications and requirements (IEEE 1547 scheme)**

The technical guidelines and comments contained in this section were organized to coincide with the corresponding specification or requirement stated in IEEE Std. 1547-2003 reaff. 2008. An interpretation based on the information contained in this section shall not be less restrictive than that required from the corresponding IEEE information. The IEEE Standard 1547 topical numbering scheme was used herein for updating and reference purposes.

### **4.1 General requirements**

#### **4.1.1 Voltage regulation**

The DG Owner shall operate the DG in such a manner that the voltage levels on the distribution system are in the same nominal range as if the DG were not connected to the distribution system of the Cooperative.

#### **4.1.2 Integration with Area Electric Power System grounding**

No general comments see IEEE1547 section 4.1.2 for details.

#### **4.1.3 Synchronization**

The DG unit shall parallel with the distribution system without causing a voltage fluctuation at the point of common coupling greater than  $\pm 5\%$  and shall meet the flicker requirements of IEEE 1547 section 4.3.2.

#### **4.1.4 Distributed resources on distribution secondary grid and spot networks**

No general comments see IEEE1547 section 4.1.4 for details.

##### **4.1.4.1 Distribution secondary grid networks**

No general comments see IEEE1547 section 4.1.4.1 for details.

##### **4.1.4.2 Distribution secondary spot networks**

The DG Owner's protection scheme shall also prevent unnecessary tripping of the distribution system breakers that would affect the distribution system's capability of providing reliable service to others.

#### **4.1.5 Inadvertent energization of the Area Electric Power System**

The DG shall be equipped with a protection system designed to prevent the DG from being connected to a de-energized circuit owned by Cooperative.

#### **4.1.6 Monitoring provisions**

Not required for 10kW and below see IEEE1547 section 5.3.3 for details.

#### **4.1.7 Isolation device**

The DG shall have a Cooperative approved lockable, load break isolation device with a visible opening that shall be in a location accessible to and operable by Cooperative personnel at all times. Cooperative reserves the right to operate the disconnect switch for operational or safety reasons.

#### **4.1.8 Interconnection integrity**

No general comments see IEEE1547 section 4.1.8 for details.

##### **4.1.8.1 Protection from electromagnetic interference**

No general comments see IEEE1547 section 4.1.8.1 for details.

##### **4.1.8.2 Surge withstand performance**

No general comments see IEEE1547 section 4.1.8.2 for details.

##### **4.1.8.3 Paralleling device**

No general comments see IEEE1547 section 4.1.8.3 for details.

### **4.2 Response to Area Electric Power System abnormal conditions**

#### **4.2.1 Area Electric Power System faults**

If an area fault occurs, the DG Owner shall be responsible for automatically disconnecting its DG from the distribution system.

#### **4.2.2 Area Electric Power System reclosing coordination**

During a fault condition, the DG Owner shall be responsible for automatically disconnecting the DG from the distribution system prior to the automatic reclosing of a distribution circuit breaker or recloser (see section 3.1.1). Since most short circuits on overhead lines are of a temporary nature, it is the normal practice of Cooperative to automatically reclose the upstream protective device on overhead lines after an automatic trip. Instantaneous reclosing (10-15 cycles) of circuit breakers and line reclosers may also be used.

#### **4.2.3 Voltage**

The DG Owner shall provide an automatic method of disconnecting the generating equipment from the distribution system, within the times shown, if the voltage falls within those values shown in Table 1 below.

Table 1-- Response to Abnormal Voltages under Fault Conditions

Percent of Normal Voltage	Clearing Time in Seconds
Below 50	0.16
50 to 88	2.0
110 to 120	1.0
120 and above	0.16

#### **4.2.4 Frequency**

The operating frequency of the DG shall not deviate more than +0.5 Hertz (Hz) or -0.7 Hz from a 60 Hz base. The interconnection equipment shall automatically disconnect the DG from the distribution system within 10 cycles if this frequency tolerance cannot be maintained.

#### 4.2.5 Loss of synchronism

No general comments see IEEE1547 section 4.2.5 for details.

#### 4.2.6 Reconnection to Area Electric Power System

The DG Owner may reconnect when the distribution system voltage and frequency return to normal range and the system is stabilized (fixed delay of five minutes).

### 4.3 Power quality

#### 4.3.1 Limitation of dc injection

No general comments see IEEE1547 section 4.3.1 for details.

#### 4.3.2 Limitation of flicker induced by the DR

Voltage flicker on the distribution system caused by the DG Owner's equipment will be limited to the irritation level stated in IEEE1547 section 4.3.2. In this section, flicker is considered objectionable when it either causes a modulation of the light level of lamps sufficient to be irritating to humans, or causes equipment to operate incorrectly. Failure to meet these limits shall result in immediate disconnection by Cooperative until such time that all problems are corrected.

#### 4.3.3 Harmonics

Harmonic current injection into the distribution system at the point of common coupling shall not exceed the limits stated below in Table 3. The harmonic current injections shall be exclusive of any harmonic currents due to harmonic voltage distortion present in the distribution system without the DG connected.

**Table 3—Maximum Harmonic Current Distortion in Percent of Current**

Individual harmonic order h (odd harmonics) <sup>b</sup>	$h < 11$	$11 \leq h < 17$	$17 \leq h < 23$	$23 \leq h < 35$	$35 \leq h$	Total demand distortion (TDD)
Percent (%)	4.0	2.0	1.5	0.6	0.3	5.0

<sup>b</sup>Even harmonics are limited to 25% of the odd harmonic limits above

### 4.4 Islanding

#### 4.4.1 Unintentional islanding

The DG's protective equipment will detect an islanding event, and it will isolate the DG from the Area Electric Power System within two seconds.

#### 4.4.2 Intentional islanding

No general comments see IEEE1547 section 4.4.2 for details.

## **5. Interconnection test specifications and requirements**

The test guidelines contained in this section relate to the test specifications and requirements in the IEEE Standard 1547-2003 reaff. 2008, and IEEE Standard 1547.1-2005; therefore, all interpretations of this section's test guidelines shall not be less restrictive than the test specifications and requirements in these versions of the IEEE 1547 standard.

### **5.1 Design test**

The design test shall be performed in accordance with the latest version of IEEE Std.1547 section 5.1. The design test is performed on a representative sample. It would commonly be accomplished in a factory or testing laboratory.

### **5.2 Production test**

The production tests shall be performed in accordance with the latest version of IEEE Std.1547 section 5.2. This test refers to test requirements listed in IEEE section 5.1. It requires that every interconnection system (not just a sample rate) be tested either in the factory or during the commission test for certain critical interconnection requirements. Therefore, the following production test requirements shall be conducted as part of the commission test if these items were not conducted in the factory.

- IEEE 1547 section 5.1.1 Response to abnormal voltage and frequency
- IEEE1547 section 5.1.2 Synchronization

### **5.3 Interconnection installation evaluation**

System design verification shall be made to ensure that specific requirements and coordination elements have been met in accordance with the latest version of IEEE Std.1547. This provision requires evaluating whether the design for the proposed interconnection facility will allow the following requirements to be met after installation.

#### **5.3.1 Grounding integration with Area Electric Power System**

No general comments see IEEE1547 section 5.3.1 for details.

#### **5.3.2 Isolation device**

No general comments see IEEE1547 section 5.3.2 for details.

#### **5.3.3 Monitoring provisions**

Not required for 10kW and below see IEEE1547 section 5.3.3 for details.

#### **5.3.4 Area Electric Power System faults**

No general comments see IEEE1547 section 5.3.4 for details.

#### **5.3.5 Area Electric Power System reclosing coordination**

No general comments see IEEE1547 section 5.3.5 for details.

## **5.4 Commissioning tests**

The commission test shall be performed in accordance with the latest version of IEEE Std.1547 section 5.4.

Care should be taken to verify that IEEE 1547 sections 5.1.1 and 5.1.2 will be conducted as part of the Commissioning tests if they were not conducted in the factory as a production test requirement on every interconnection system (not just a sample rate).

- IEEE 1547 section 5.1.1 Response to abnormal voltage and frequency
- IEEE1547 section 5.1.2 Synchronization

Written test procedures are required for all commissioning tests. Usually the equipment manufacturer or system integrator(s) will provide these test procedures. These test procedures shall be approved by the DG owner and Cooperative.

If required, the following two tests shall be conducted prior to the initial parallel operation of the DG:

- Any tests of IEEE 1547 section 5.1 that have not been previously performed on a representative sample and formally documented
- Any tests of IEEE1547 section 5.2 that have not been previously performed

The applicable tests of IEEE Std. 1547 section 5.1 shall be repeated when:

- Functional software or firmware changes.
- Hardware component field modified / replaced or repaired with parts different from tested configuration.

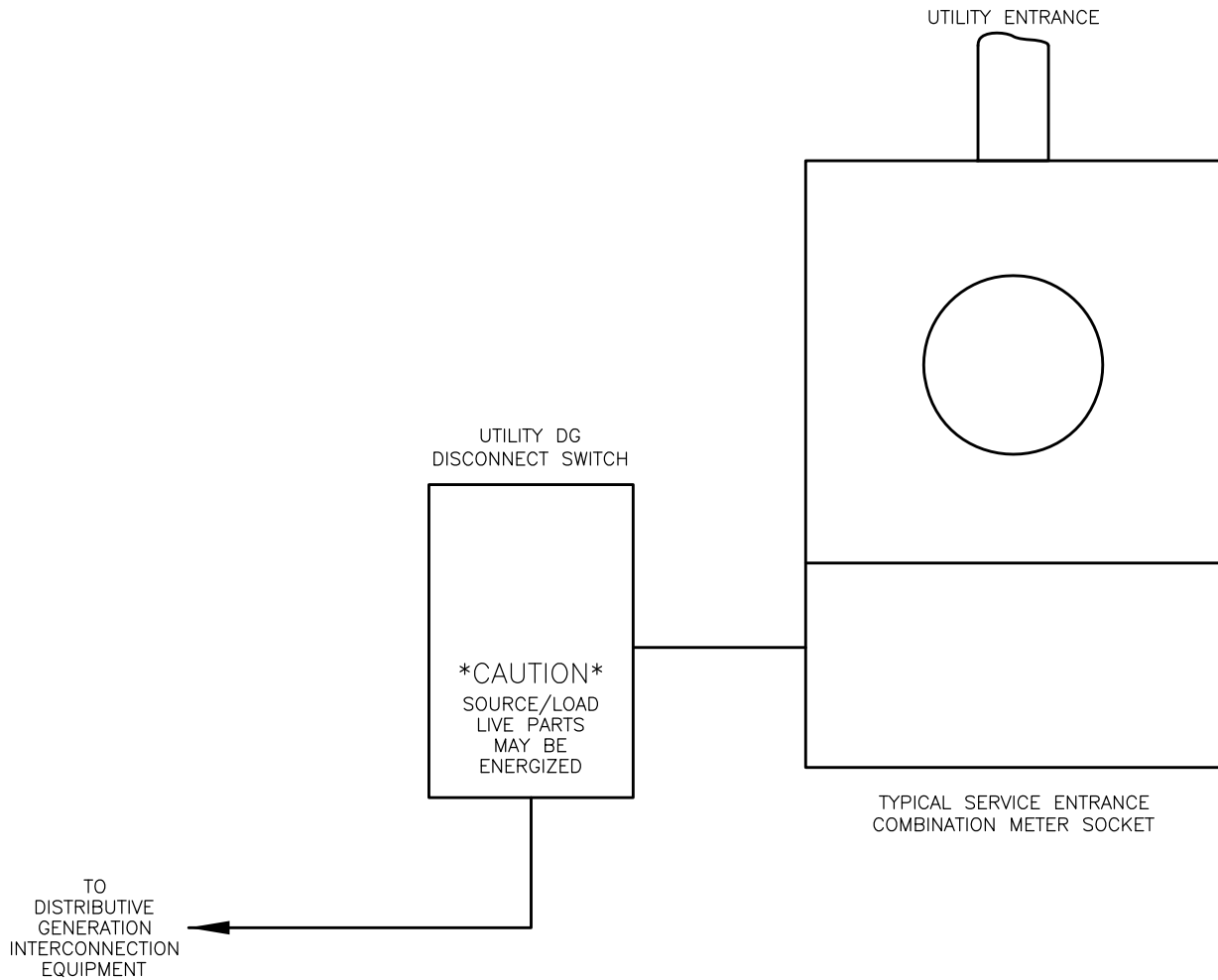
The applicable tests of IEEE Std. 1547 section 5.2, section 5.4.1, and section 5.4.2 shall be repeated when:

- Protection settings have been changed after testing.
- Protection functions have been adjusted after the initial commissioning process.

## **5.5 Periodic interconnection tests**

The periodic interconnection tests shall be performed in accordance with the latest version of IEEE Std.1547 section 5.5. Reports from the periodic testing of the protective functions of the interconnection and/or a log for battery inspection shall be maintained according to the manufacture's recommendation.

# ANNEX A: TYPICAL DISTRIBUTIVE GENERATION ISOLATION DEVICE ARRANGEMENT



NOTE: UTILITY DISCONNECT  
(SEE SECTION 4.1.7)  
INSTALLATION SHALL MEET  
ALL FEDERAL, STATE AND  
LOCAL STANDARDS AND  
CODES.

COOP\_DISCONNECT.DWG