

**JACKSON ELECTRIC MEMBERSHIP CORPORATION**



**DISTRIBUTED GENERATION  
INTERCONNECTION PROCEDURE**

**Approved December 4, 2009**

**JACKSON ELECTRIC MEMBERSHIP CORPORATION**  
**DISTRIBUTED GENERATION INTERCONNECTION**  
**PROCEDURE**

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# **JACKSON ELECTRIC MEMBERSHIP CORPORATION**

## **DISTRIBUTED GENERATION INTERCONNECTION PROCEDURE**

### **I. PURPOSE**

The purpose of this procedure is to define the minimum requirements for the interconnection of Distributed Generation (DG) to Jackson Electric Membership Corporation's (JEMC) Distribution System. It is to be used as a guide for JEMC customers wanting to install generation and operate it in parallel to the Distribution System (Interconnection Customer or Customer).

The requirements are intended to achieve the following:

1. Permit the Distributed Generation owner to operate their equipment in parallel with the Distribution System in a safe and efficient manner.
2. Insure the safety of the general public and JEMC personnel.
3. Minimize the possible damage to the property of the general public, JEMC, and JEMC customers.
4. Minimize adverse operating conditions of the Distribution System.
5. Minimize adverse service level to other JEMC customers.
6. Comply with all State and Federal Regulations.
7. Describe cost responsibility for interconnection.
8. Provide standard agreements and application processes.

### **II. DEFINITIONS**

The following words and terms shall have the following meanings:

1. "Business Day" means any JEMC workday Monday thru Friday except for JEMC holidays during which the offices of JEMC are closed. These are including New Years Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the day after Thanksgiving Day, Christmas Eve, and Christmas Day.
2. "Certified" means to adhering to applicable operational and safety standards including ANSI/IEEE standards, Underwriters Laboratory (UL) standards, NEC, and the NESC. Certified equipment shall be certified by testing according to the appropriate standard and documentation of testing and certification should be available upon request to JEMC.
3. "Certified Inverter" means a device that changes direct current (DC) electrical power to alternating current (AC) electrical power and is certified to UL-1741 and complies with IEEE 1547 and referenced standards.

4. “Distributed Generation” or (DG) means a facility owned and operated by a JEMC customer for the production of electrical energy that is located on the customer’s premises and operates in parallel with the Distribution System. By special permission as described in the Addendum to the Interconnect Agreement, the DG facility may be owned and operated by a non-JEMC customer.
5. “Distribution System” means the collection of lines, poles, and equipment owned and operated by JEMC for the purpose of delivering electrical power to its customers.
6. “Fast Track Process” means an acceptance of the Interconnection Request by JEMC without further engineering studies upon the DG facility qualifying using the screens in Section IV part 2.
7. “Interconnection Request” means the submittal of the Application in which the Interconnection Customer expresses intent to interconnect a DG facility to the Distribution System.
8. “Line Section” means a section of the Distribution System between two sectionalizing devices.
9. “Point of Common Coupling” means the point where the JEMC owned facilities connects to the Interconnection Customer Owned, usually but not necessarily at the metering point.
10. “Reclosing” means the sequence of open and close operations by fault protective devices which are automatic and intended to clear or isolate a fault on the Distribution System with the least service interruption to JEMC customers.
11. “Single-Phase Shared Secondary” means any section of the Distribution System operated at single phase service utilization voltage (typically 240 Volts) that provides electrical power to more than one customer.
12. “Study Process” means the process of identifying, completing, and reviewing necessary engineering studies to evaluate the Interconnection Request. The Study Process is an interactive process between JEMC and the Interconnection Customer described in Section IV parts 3 and 4.

### **III. REQUIREMENTS FOR INTERCONNECTION**

#### **1. Evaluation of Requirements**

Each DG will be evaluated by JEMC to determine what engineering studies are required for safety and power quality concerns. The interconnection of the DG shall not cause any reduction in the quality of service being provided to other customers. The impact of the DG on the Distribution System is highly dependent on the location of the DG on the Distribution System.

The following are criteria that each DG shall abide by:

- a. The DG will not cause JEMC service voltage to go outside the requirements of ANSI C84.1 Range A.

- b. The grounding scheme of the DG shall not cause over voltages that exceed the rating of equipment connected to the Distribution System and shall not disrupt the coordination of protective devices.
- c. The DG shall tie into the Distribution System without causing a voltage fluctuation at the Point of Common Coupling plus or minus 5 percent and shall not create objectionable flicker for other customers.
- d. The DG shall cease to be energized for faults on the Distribution System before any Reclosing. And shall only reconnect after the Distribution System has been within voltage and frequency limits for 5 minutes.

The DG owner is solely responsible for protecting their equipment in such a manner that faults or other disturbances on the Distribution System do not cause damage to the DG owner's equipment.

## **2. General Requirements**

The following are requirements for any DG that will be operated in parallel with the Distribution System.

- a. The DG system will have to be reviewed and accepted by JEMC before installation. This includes all devices and equipment.
- b. Any relay settings used for JEMC protection will be reviewed and accepted by JEMC.
- c. Maintenance requirements for the DG system must be reviewed and accepted by JEMC.
- d. A disconnect device shall be installed to electrically isolate the Distribution System from the DG. This device shall provide a visible air gap between the DG and Distribution System and be lockable in the opened position.

## **3. Operating Requirements**

The following are requirements for any DG that will be operated in parallel with the Distribution System. These requirements prevent power flowing into the transmission grid.

- a. The total generation output is less than the minimum substation load.
- b. The total generation output is less than the minimum substation load under maximum single distribution contingency.

## **4. Protection Requirements**

The DG and Point of Common Coupling shall be designed with proper protective devices to promptly and automatically disconnect the generation from the Distribution System in

the event of a fault or other system abnormality. The type of protection required will be determined by:

- a. Size and type of the generating equipment.
- b. The method of connecting and disconnecting the DG from JEMC's electrical power system.
- c. The location of generating equipment on the Distribution System.

## **5. Electrical Code Compliance**

The DG owner shall be responsible for complying with all applicable local, independent, state and federal codes such as, but not limited to: building codes, National Electric Code (NEC), National Electrical Safety Code (NESC), noise, and emissions standards.

The DG shall comply with the latest revisions of the ANSI/IEEE standards applicable to the installation, especially IEEE 1547 "Standard for Interconnecting Distributed Resources with Electric Power Systems."

## **IV. APPLICATION PROCESS**

A customer who intends to interconnect a DG system with the Distribution System will undergo the following process:

1. The Interconnection Customer completes the Interconnection Request (Application) and submits it to JEMC. JEMC acknowledges to the Customer receipt of the Application within three business Days of receipt. JEMC evaluates the Application for completeness and notifies the Customer within ten Business Days of receipt that the Application is or is not complete and, if not, advises what material is missing.
2. JEMC verifies that the DG Facility can be interconnected safely and reliably using the screens contained in the Fast Track Process within 15 Business Days of receiving the completed Interconnection Request. If the proposed DG is a Certified Inverter-based system no larger than 10 kW, it can apply using the Fast Track Process. Otherwise, the following are screens used to determine the applicability of the Fast Track Process.
  - a. The proposed DG system is no larger than 100 kW.
  - b. The proposed DG does not exceed 15% of the annual minimum load for the Line Section with which it will interconnect.
  - c. The proposed DG, in aggregation with other generation on the distribution circuit, shall not contribute more than 10% to the distribution circuit's maximum fault current at the point of the nearest interconnection with the JEMC primary distribution voltage.
  - d. The proposed DG, in aggregation with other generation on the distribution circuit, shall not cause any distribution protective device and equipment (including, but not limited to, substation breakers, fuse cutouts, and line

reclosers), or interconnection customer equipment on the system to exceed 87.5% of the short circuit interrupting capability.

- e. If the proposed DG is to be interconnected to a Single-Phase Shared Secondary, the aggregate generation capacity on the secondary, including the proposed DG, shall not exceed 20 kW.
- f. If the proposed DG 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 20% of the nameplate rating of the service transformer.
- g. No construction of facilities by JEMC on its own system shall be required to accommodate the small DG.

If the proposed DG passes the screens for the Fast Track Process, and unless JEMC determines that the DG Facility cannot be interconnected consistent with safety, reliability, and power quality standards in accordance with Section II, then JEMC shall approve the Interconnection Request and provide the Customer an executable Interconnection Agreement within five Business Days after the determination.

Also, if the proposed DG fails any of the screens for the Fast Track Process, but JEMC determines that the DG may nevertheless be interconnected consistent with safety, reliability, and power quality standards in accordance with Section II, JEMC shall approve the Interconnection Request and provide the Customer an executable Interconnection Agreement within five Business Days after the determination.

In either of the cases above, steps 3 and 4 of the Application Process are deemed completed. However, if the proposed DG fails any of the screens and JEMC determines that the DG Facility cannot be interconnected consistent with safety, reliability, and power quality standards in accordance with Section II, the Customer will have the opportunity to attend a scoping meeting as described in step 3.

- 3. If the proposed DG (1) is larger than 100 kW, (2) is not Certified, or (3) is Certified but did not pass the Fast Track Process the Study Process shall be used. The Study Process starts with a scoping meeting to discuss the Interconnection Request. In this meeting any further studies, such as a feasibility study, a system impact study, or a facility study will be discussed, along with any further fees needed to perform these studies. Also, in the case that modifications to the request are required in order to comply with the requirements of Section II, the modifications will be identified by JEMC and communicated to the Interconnection Customer. At this point, the Customer can determine whether or not to proceed with the further studies, pay applicable fees, and/or make necessary modifications to the Application.
- 4. After JEMC completes all required studies, the results of the studies will be shared with the Interconnection Customer. These results may include identification of system upgrades and dedicated facilities, estimates of the interconnection costs, any monitoring, special metering or control requirements, any special protection requirements, or any other applicable study results. At this point, the Customer can determine whether or not to proceed with a final design submission and pay any identified interconnection costs. JEMC will review the final design and unless JEMC determines that the DG Facility

cannot be interconnected consistent with safety, reliability, and power quality standards in accordance with Section II, then JEMC shall approve the Interconnection Request and shall provide the Customer an executable Interconnection Agreement within five Business Days after the determination.

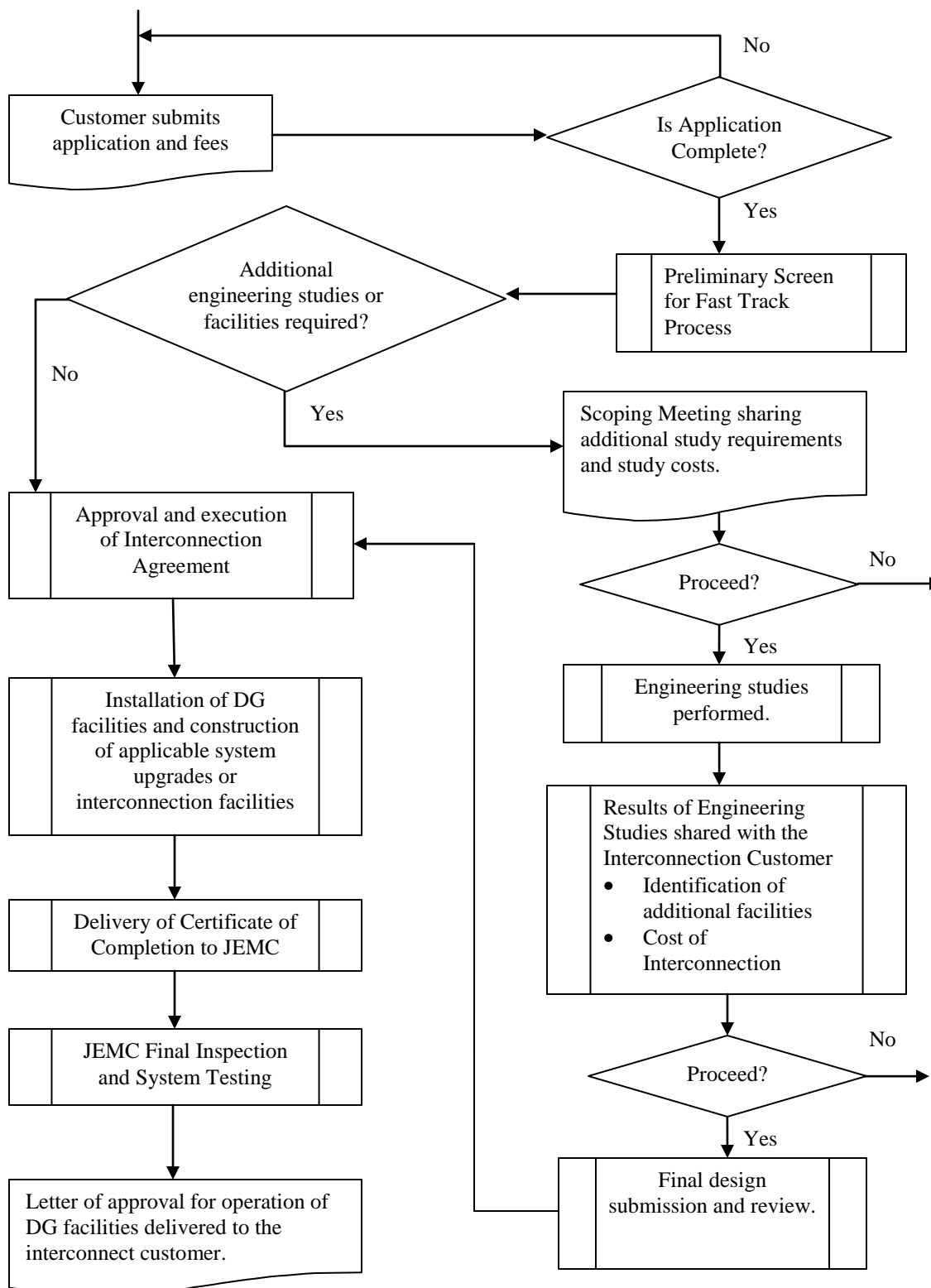
5. After execution of the Interconnection Agreement and payment for the identified interconnection costs, if applicable, the Interconnection Customer can proceed with installation of the DG system. JEMC will use prudent utility practices to coordinate with the Interconnection Customer to complete the system installation and construct any needed Distribution System facilities. After installation and all applicable equipment modifications or additions are completed the customer shall cause the installation to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction and shall return the Certificate of Completion to JEMC.
6. Prior to parallel operation of the DG, an inspection shall be performed by JEMC to insure the proper installation and operation of the interconnection protective devices in compliance with applicable standards. The inspection may include a witness test. If the witness test is not satisfactory, JEMC has the right to disconnect the DG Facility and notify the Customer of what steps it must take to pass inspection. If the witness test is satisfactory, JEMC will notify the Customer in writing that interconnection of the DG facility is authorized and schedule any necessary metering replacement. The Customer has no right to operate in parallel until a witness test has been performed, or previously waived on the Application. JEMC is obligated to complete this witness test within ten Business Days of the receipt of the Certificate of Completion. If JEMC does not inspect within ten Business Days or within a schedule determined by mutual agreement of the parties, the witness test is deemed waived. Neither the inspection nor the granting of approval to connect shall serve to relieve the DG owner of any liability for injury, death or damage attributable to the negligence of the DG owner.

## **V. INSURANCE REQUIREMENTS**

The Interconnection Customer shall maintain general liability insurance, during the term of the Agreement, from a qualified insurance agency with a B+ or better rating by "Best". The amount of general liability insurance coverage required will be commercially reasonable and be determined on a case-by-case basis by JEMC.

## APPENDIX A

### INTERCONNECTION APPLICATION PROCESS FLOWCHART



**APPENDIX B**  
**INTERCONNECTION REQUEST**  
**(APPLICATION)**

**JACKSON ELECTRIC MEMBERSHIP CORPORATION**

**INTERCONNECTION REQUEST  
(APPLICATION)**

**Processing Fee**

A non-refundable processing fee of \$100 must accompany this Application.

**Interconnection Customer**

Name: \_\_\_\_\_  
Contact Person: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
Telephone (Day): \_\_\_\_\_  
(Evening): \_\_\_\_\_  
Fax: \_\_\_\_\_  
E-Mail Address: \_\_\_\_\_

**Contact (if different from Interconnection Customer)**

Name: \_\_\_\_\_  
Contact Person: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
Telephone (Day): \_\_\_\_\_  
(Evening): \_\_\_\_\_  
Fax: \_\_\_\_\_  
E-Mail Address: \_\_\_\_\_

**Distributed Generation Facility Information**

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

System Design Capacity: \_\_\_\_\_ (kW) \_\_\_\_\_ (kVA)  
Prime Mover: Photovoltaic \_\_\_\_\_ Reciprocating Engine \_\_\_\_\_ Fuel Cell \_\_\_\_\_  
Turbine \_\_\_\_\_ Other \_\_\_\_\_  
Energy Source: Solar \_\_\_\_\_ Wind \_\_\_\_\_ Hydro \_\_\_\_\_ Diesel \_\_\_\_\_  
Natural Gas \_\_\_\_\_ Fuel Oil \_\_\_\_\_ Other (describe) \_\_\_\_\_  
Generator Manufacturer: \_\_\_\_\_ Model: \_\_\_\_\_

Inverter Information (if applicable)

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

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

\_\_\_\_\_Single Phase \_\_\_\_\_Three Phase

Is the equipment UL 1741 Listed? Yes \_\_\_\_\_No \_\_\_\_\_

If Yes, attach manufacturer's cut-sheet showing UL 1741 listing.

Disconnect Switch Manufacturer \_\_\_\_\_ Model: \_\_\_\_\_

Disconnect Switch Rating: \_\_\_\_\_ (AC Amps)

List components of the Distributed Generation Facility equipment package that are currently certified:

Equipment Type

Certifying Entity

- 1.
- 2.
- 3.
- 4.
- 5.

Please attach a detailed one-line diagram of the proposed Distributed Generation Facility, major equipment specifications (generators, transformers, inverters, circuit breakers, protective relays, disconnect switches, etc), and any other applicable drawings or documents necessary to for the proper design of the interconnection.

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

### **Interconnection Customer Signature**

I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to provide any further information required during the Interconnection Application Process and to install and operate the interconnecting equipment according to the Terms and Conditions as outlined in Jackson Electric Membership Corporation's Distribution Interconnection Procedure.

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

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

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

**APPENDIX C**  
**INTERCONNECTION AGREEMENT**

**JACKSON ELECTRIC MEMBERSHIP CORPORATION**

**DISTRIBUTED GENERATION FACILITY INTERCONNECTION  
AGREEMENT**

This Agreement made \_\_\_\_\_, 20\_\_ between Jackson Electric Membership Corporation (hereinafter called “Cooperative”), and \_\_\_\_\_ located at \_\_\_\_\_ (hereinafter called the “Interconnection Customer”), (hereinafter sometimes individually referred to as a “Party” and sometimes collectively referred to as the “Parties”).

WHEREAS, the Cooperative is an electric membership corporation providing retail electric service, and

WHEREAS, the Interconnection Customer is a member of the Cooperative; and

WHEREAS, the Interconnection Customer desires to install, own, operate, and maintain a Distributed Generation (DG) facility as defined in the Cooperative’s Distributed Generation Interconnection Procedure; and

WHEREAS, the Interconnection Customer desires to operate its generation equipment in parallel with the Cooperative’s System.

NOW THEREFORE, it is understood and agreed that the Cooperative shall permit the Interconnection Customer to connect its generation system to the Cooperative’s Distribution System and to operate its generation equipment in parallel with the Cooperative’s Distribution System subject to the following terms and conditions:

1) CONSTRUCTION OF THE FACILITY

The Interconnection Customer may proceed to construct (including operational testing not to exceed two hours) the DG Facility when the Cooperative approves the Interconnection Request and executes this Agreement.

2) INTERCONNECTION AND OPERATION

The Customer may operate DG Facility and interconnect with the Cooperative’s electric system once all of the following have occurred:

- 2.1) Upon completing construction, the Customer will cause the DG Facility to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction, and
- 2.2) The Customer returns the Certification of Completion to the Cooperative, and
- 2.3) The Cooperative has either:
  - 2.3.1) Completed its inspection of the DG Facility to ensure that all equipment has been appropriately installed and that all electrical connections have been made

in accordance with applicable codes. All inspections must be conducted by the Cooperative, at its own expense, within ten Business Days after receipt of the Certificate of Completion and shall take place at a time agreeable to the Parties. The Cooperative shall provide a written statement that the DG Facility has passed inspection or shall notify the Customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place; or

2.3.2) If the Cooperative does not schedule an inspection of the DG Facility within ten Business Days after receiving the Certification of Completion, the witness test is deemed waived (unless the Parties agree otherwise); or

2.3.3) The Cooperative waives the right to inspect the DG Facility.

2.4) The Cooperative has the right to disconnect the DG Facility in the event of improper installation or failure to return the Certificate of Completion.

2.5) Revenue quality metering equipment must be installed and tested in accordance with applicable ANSI standards by the Cooperative.

### 3) SAFE OPERATION AND MAINTENANCE

The Customer shall be fully responsible to operate, maintain, and repair the DG Facility as required to ensure that it complies at all times with the interconnection standards to which it has been certified.

### 4) ACCESS

The Cooperative shall have access to the disconnect switch for the DG Facility at all times. The Cooperative shall provide reasonable notice to the Customer when possible prior to using its right of access.

### 5) DISCONNECTION

The Cooperative may temporarily disconnect the DG Facility upon the following conditions:

5.1) For scheduled outages upon reasonable notice.

5.2) For unscheduled outages or emergency conditions.

5.3) If the DG Facility does not operate in the manner consistent with these Terms and Conditions.

5.4) The Cooperative shall inform the Customers in advance of any scheduled disconnection.

### 6) INDEMNIFICATION

The Parties shall at all times indemnify, defend, and save the other Party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs,

attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's action or inactions of its obligations under this agreement on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.

7) INSURANCE

The Parties each agree to maintain commercially reasonable amounts of insurance. The Customer shall maintain general liability insurance, during the term of the Agreement, from a qualified insurance agency with a B+ or better rating by "Best".

8) LIMITATION OF LIABILITY

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under paragraph 6.

9) ADDITIONAL TERMS AND CONDITIONS

Any additional terms and conditions not addressed the body of this Agreement may be attached in an Addendum A.

10) TERMINATION

The agreement to operate in parallel may be terminated under the following conditions:

- 10.1) By the Customer - By providing written notice to the Cooperative.
- 10.2) By the Cooperative - If the DG Facility fails to operate for any consecutive 12 month period or the Customer fails to remedy a violation of these Terms and Conditions.
- 10.3) Permanent Disconnection - In the event this Agreement is terminated, the Cooperative shall have the right to disconnect its facilities or direct the Customer to disconnect its DG Facility.
- 10.4) Survival Rights - This Agreement shall continue in effect after termination to the extent necessary to allow or require either Party to fulfill rights or obligations that arose under the Agreement.

11) ASSIGNMENT/TRANSFER OF OWNERSHIP OF THE FACILITY

This Agreement shall survive the transfer of ownership of the DG Facility to a new owner when the new owner agrees in writing to comply with the terms of this Agreement and so notifies the Cooperative.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement all as of the day and year first above written.

Jackson Electric Membership Corporation

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

Name: Randall Pugh

Title: President / CEO

Interconnection Customer

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

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

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