

**J-A-C ELECTRIC COOPERATIVE**

**Distributed Generation  
Procedures & Guidelines  
Manual for Members**

## GENERAL

In order to receive service from the Cooperative, a customer must join or become a "Member" of the Cooperative. Throughout this DG Manual, customers will be referred to as "Members." For more information about the cooperative membership application process, including any applicable membership fees or deposits, see the Cooperative to request new member information.

It is the intent of the Cooperative to allow Members to install Distributed Generation (DG), provided the Member's DG facility does not adversely affect the Cooperative. The Member must conduct his/her own analysis to determine the economic benefit of DG operation.

A DG facility that is not connected to the Cooperative's system in any **way** is known as "stand-alone" or "isolated" DG. The Member may operate a DG facility in stand-alone or isolated fashion as long as such DG facility does not adversely affect the Cooperative's system. A DG facility connected in any way to the Cooperative's system shall be considered as in "parallel." For purposes of this DG Manual, a DG facility is considered operating in "parallel" anytime it is connected to the Cooperative's system in any way, even if the Member does not intend to export power. All provisions of this DG Manual shall apply to parallel operation of DG facilities as so defined. Member shall fully comply with the provisions of this DG Manual, as same may be amended from time to time at the sole discretion of the Cooperative.

This DG Manual is not a complete description or listing of all laws, ordinances, rules and regulations, nor is this DG Manual intended to be an installation or safety manual. The Member requesting to interconnect a DG facility to the Cooperative's system is responsible for and must follow, in addition to all provisions of this DG Manual, the Cooperative's *Rules and Regulations and Tariffs for Electric Service*, the Cooperative's *Line Extension Policy*, the *Policies and Procedures* of the Cooperative's power supplier where applicable, the *Policies and Procedures* of the Cooperative's transmission service provider where applicable, the current *IEEE 1547 Standard Guide for Distributed Generation Interconnection* (a copy is on file at the Cooperative for inspection along with information so the Member may obtain his/her own copy), other applicable IEEE standards, applicable ANSI standards, including ANSI C84.1 Range A and any other applicable governmental and regulatory laws, rules, ordinances or requirements. All legal, technical, financial, etc. requirements in the following sections of this DG Manual must be met prior to interconnection of the DG facility to the Cooperative's system.

A Member may serve all load behind the meter at the location serving the DG facility but will not be allowed to serve multiple meters, multiple consuming facilities or multiple Members with a single DG facility or under a single DG application without prior written approval by the cooperative.

DG facilities larger than 10 MW are not covered by this DG Manual and will be considered by the Cooperative on a case-by-case basis.

## I. DETERMINE THE CATEGORY OF DISTRIBUTED GENERATION FACILITY

### 1) Connection Level Category

- a) Connected to the Cooperative's system  
The Member requests and/or the Member's DG facility require connection to the Cooperative's system. All provisions of this DG Manual cover this category.
- b) Connected to the Cooperative's Power Supplier's system  
The Member requests and/or the Member's DG facility require connection to the Cooperative's Power Supplier's system. This DG Manual does NOT cover this category. The Member should contact the Cooperative's Power Supplier directly as follows: Manager of Communications/Key Accounts, Brazos Electric Cooperative, 1-888-751-6500.

## 2) Power Export Category

- a) Parallel - no power export  
The Member operates a DG facility connected in any way to the Cooperative system but with no intention to export power.
- b) Parallel-power generated to be both consumed and exported  
The Member operates a DG facility connected in any way to the Cooperative's system designed primarily to serve the Member's own load but with the intention to export excess power.
- b) Parallel - power generated to be exported only  
The Member operates a DG facility connected in any way to the Cooperative's system designed primarily with the intention to export power.

## 3) Size Category

- a) Facilities 25 kW and smaller  
Facilities up to 25 kW of connected generation will be placed in this size category unless the Member requests connection over the 25 kW size category.
- b) Facilities above 25 kW of connected generation Not considered under this DG Manual

## II. MEMBER'S INITIAL REQUIREMENTS

### 1) Notification

- a) The Member must meet all the Cooperative's membership and service requirements in addition to the requirements in the DG Manual.
- b) Anyone owning or operating a DG facility in parallel with the Cooperative's system must notify the Cooperative of the existence, location and category of the DG facility.

## 2) Service Request

- a) In advance of request for an interconnection, the Member must contact the Cooperative and complete the "Cooperative Agreement for Interconnection and Parallel Operation of Distributed Generation."
- b) DG facilities under 5 kW in size and of standard manufacture and design (as so determined by the Cooperative) may submit the Agreement Short Form. All other facilities must submit the Agreement Long Form.
- c) A separate form must be submitted for each facility.

## 3) Submit a DG Plan

- a) As a part of the application, the Member shall submit a plan detailing the electrical design, interconnection requirements, size, and operational plans for the DG facility (the "DG plan"). Either at the time of submission or at any time during the review process, the Cooperative may require additional information or may require the DG plan to be prepared by a Professional Engineer registered in the state of Texas.
- b) In the case of DG facilities (i) to be operated in parallel with the Cooperative's system, (ii) with no intention to export power to the Cooperative and (iii) that are of standard design and intended entirely as emergency or back-up power supply for the facility, the Cooperative may, at its sole discretion, waive the application fee.
- c) Prior to review of the application and DG plan by the Cooperative, the Member shall pay an application fee as indicated below. A separate fee must be submitted for each DG facility.

DG Size (Connected Load)	Application Fee	Additional Engineering Fee
Up to 25 kW	\$250	As Required

## III. COOPERATIVE AND POWER SUPPLIER REVIEW PROCESS

### 1) Plan Review Process

- a) The Cooperative and its Power Supplier, if requested by the Cooperative, will review the application and accompanying documents, plans, specifications, and other information provided and will return an interconnection analysis to the Member within 60 days of receipt of final plans and specifications and additional information, if any, requested by the Cooperative.

b) Technical review will be consistent with guidelines established by the most recent *IEEE Standard 1547 Guide for Distributed Generation Interconnection*. The Member may be required by the Cooperative to provide proof that their DG Facilities have been tested and certified by applicable IEEE guidelines.

c) If corrections or changes to the plans, specifications and other information are to be made by the Member, the 60 day period may be reinitialized when such changes or corrections are provided to the Cooperative. In addition, any changes to the site or project requiring new analysis by the Cooperative may require additional cost and a new DG plan. The cost will be determined by the Cooperative and shall be paid by the Member.

d) The Member acknowledges and agrees that any review or acceptance of such plans, specifications and other information by the Cooperative and/or its Power Supplier shall not impose any liability on the Cooperative and/or its Power Supplier and does not guarantee the adequacy of the Member's equipment or DG facility to perform its intended function. The Cooperative and its Power Supplier disclaim any expertise or special knowledge relating to the design or performance of DG installations and does not warrant the efficiency, cost-effectiveness, safety, durability, or reliability of such DG installations. Installation and operation of the DG facility shall at all times be at the Member's risk and expense.

e) In the event it is necessary at the time of initial interconnection or at some future time for the Cooperative and/or its Power Supplier to modify electric delivery systems in order to serve the Member's DG facilities and/or purchase the output of the Member's DG facilities, or because the quality of the power provided by the Member's DG adversely affects the Cooperative's and/or its Power Supplier's delivery system, the Member will be responsible to pay the Cooperative and/or its Power Supplier in advance for all costs of modifications required for the interconnection of the Member's DG facilities.

#### **IV. SALES TO A DG FACILITY**

##### **1) For all DG installations**

a) All DG facilities shall be billed under one of the Cooperative's existing rate tariffs.

b) All sales of electric power and energy by the Cooperative to a Member shall be consistent with the applicable retail rate schedule established by the Cooperative as if there were no DG installation at the Member's premises.

c) The Member shall pay all rates and charges so listed in the applicable tariff sections.

d) The Cooperative shall bill the Member for the excess energy supplied by the Cooperative over and above the energy supplied by the Member during each billing period according to the Cooperative's applicable retail rate schedule.

e) When the energy supplied by the Member exceeds the energy supplied by the Cooperative during a billing period, the monthly charge and/or minimum bill of the retail rate schedule shall be billed by the Cooperative and the excess energy

shall be provided at a cost of 3 cents (\$0.03) per kWh to the Cooperative.

- f) No net metering shall be used. The type of metering to be used shall be specified at the sole discretion of the Cooperative. The metering shall provide data so the Cooperative can determine each billing period the energy supplied to the Member by the Cooperative.
- g) At the sole discretion of the Cooperative, an approved load profile meter may be required which can be remotely read by the Cooperative through an approved communications link. Otherwise, the meter shall be read monthly by the DG Owner/Operator or the Cooperative personnel.
- h) The Cooperative shall bill the Member for the full energy used by the Member during each billing period according to the Cooperative's applicable retail rate schedule.

## 2) Purchases from the Member

- a) The Cooperative shall not be required to make any purchases that will cause the Cooperative to no longer be in compliance with any applicable contracts or all-power contract requirements with its power supplier(s).

## **V. MEMBER'S RESPONSIBILITY PRIOR TO OPERATION**

### 1) General Responsibilities

- a) Member shall be solely responsible for the design, installation, operation, maintenance, and repair of the DG System and Member's interconnection facilities. The interconnection of the DG System to the JAC electrical system shall comply with the Public Utility Commission of Texas Substantive Rules §25.212 relating to Technical Requirements for Interconnection and Parallel Operation of On-Site Distributed Generation, (16 Texas administrative Code §25.212) or any successor rule addressing distributed generation. JAC shall inspect the DG System and the interconnection equipment. All costs to interconnect with the JAC electric system shall be the responsibility of Member. JAC shall not be required to take or pay for any energy generated by the DG System until the DG System successfully passes JAC's Field Inspection and Member shall have reimbursed JAC for all its interconnection costs. Maintenance of the DG System shall be performed in accordance with the applicable manufacturer's recommended maintenance schedule.
- b) Co-op shall not be obligated to accept and shall have the right to require Member to temporarily curtail, interrupt, or reduce, deliveries of energy in order to construct, install, maintain, repair, replace, remove, investigate, inspect, or test any part of the interconnection facilities, equipment, or any part of the Co-op electric system. Co-op may disconnect, without notice, the DG System from the electric distribution system, if, in Co-op's opinion, a hazardous condition exists, and such immediate action is necessary to protect persons, or Co-op's facilities or other members' facilities from damage or interference caused by Member's DG System or lack of properly operating protective devices.

- c) Member hereby grants Co-op access on and across its property at any reasonable time to inspect the DG System and the interconnection equipment, to read or test meters and metering equipment, and to operate, maintain and repair Co-op's facilities. No inspection by Co-op of the DG System or the interconnection facilities shall impose on Co-op any liability or responsibility for the operation, safety or maintenance of the DG system or Member's interconnection facilities.

## 2) Applicable Regulations

The DG facility shall be installed and operated by the Member subject to and in accordance with the terms and conditions set forth in the Cooperative's rules, regulations, bylaws, rates and tariffs, as amended from time to time, and, if applicable, approved by the Cooperative's board of directors, which are incorporated herein by reference, and in compliance with all applicable federal, state and local laws, regulations, zoning codes, building codes, safety rules, environmental restrictions, ordinances and regulations, including without limitation, the most recent IEEE Standard 1547 Guide for Distributed Generation Interconnection, applicable ANSI standards, including ANSI C84.1 Range A, Electric Reliability Council of Texas (ERGOT) Independent System Operator (ISO) directives and ERGOT guidelines, and in accordance with industry standard prudent engineering practices.

## 3) Liability Insurance

The Member is not required to provide a certificate of insurance coverage to JAC. It is recommended, however, that the Member carry liability insurance coverage which insures the Member against all claims for property damage and for personal injury or death arising out of, resulting from or in any manner connected with the installation, operation, and maintenance of the Member's generating equipment.

## 4) Contracts

### a) Interconnection Contract

The Member will sign and deliver an Agreement for Interconnection to the Cooperative substantially in the form as shown in the COOPERATIVE AGREEMENT FOR INTERCONNECTION AND PARALLEL OPERATION OF DISTRIBUTED GENERATION included in this DG Manual.

## 5) Initial Interconnection

- a) Upon satisfactory completion of the review process and execution of required agreements as outlined in this DG Manual, the Cooperative will begin installation of the interconnection of DG facilities. The interconnection will be completed as soon as practical after completion of the review process and execution of the necessary agreements/contracts. After completion of interconnection requirements and prior to initiation of service, the Cooperative will conduct a final inspection of the facilities and interconnection to the Cooperative's system. Upon final inspection satisfactory to the Cooperative, the Cooperative will initiate service to the Member.
- b) The Cooperative's review process and final inspection is intended as a means to

help safeguard the Cooperative's facilities and personnel. The Member acknowledges and agrees that any review or acceptance of such plans, specifications and other information by the Cooperative and/or its Power Supplier shall not impose any liability on the Cooperative and/or its Power Supplier and does not guarantee the adequacy of the Member's equipment or DG facility to perform its intended function. The Cooperative and its Power Supplier disclaims any expertise or special knowledge relating to the design or performance of DG installations and does not warrant the efficiency, cost-effectiveness, safety, durability, or reliability of such DG installations.

## **VI. REFUSAL TO INTERCONNECT SERVICE OR DISCONNECTION OF INTERCONNECTION SERVICE**

The Cooperative may, at its sole discretion, prevent the interconnection or disconnect the interconnection of DG facilities due to reasons such as safety concerns, reliability issues, power quality issues, breach of interconnection contract or any other issue which the Cooperative considers to be a reasonable basis for such action. Any disconnection may be without prior notice.

## **VII. OPERATION OF PARALLEL FACILITY**

The purpose of this section is to outline the Cooperative's operational requirements (the fulfillment of which is the responsibility of the Member) for DG facilities operated in parallel with the Cooperative's system and is not intended to be a complete listing of all operational, regulatory, safety and other requirements.



### 1) Ownership of facilities

- a) The Member shall own and be solely responsible for all expense, installation, maintenance and operation of all facilities, including all power generating facilities, at and beyond the point of delivery as defined in the Cooperative's tariffs.
- b) At its sole discretion, the Cooperative may locate cooperative owned metering equipment and/or transformers past the point of delivery.

### 2) Self-Protection of DG Facilities

- a) The Member will furnish, install, operate and maintain in good order and repair all equipment necessary for the safe operation of DG facilities operated in parallel with the Cooperative system.
- b) The Member's equipment will have capability to both establish and maintain synchronism with the Cooperative system and to automatically disconnect and isolate the DG facility from the Cooperative system.
- c) The Member's DG facility will be designed, installed and maintained to be self-protected from normal and abnormal conditions on the Cooperative system including, but not limited to, overvoltage, undervoltage, overcurrent, frequency deviation, and faults. Self-protection will be compatible with all applicable Cooperative protection arrangements and operating policies.
- d) Additional protective devices and/or functions may be required by the Cooperative when, in the sole judgment of the Cooperative, the particular DG facility installation and/or the Cooperative system characteristics so warrant.

### 3) Quality of service

- a) The Member's DG facility will generate power at the nominal voltage of the Cooperative's system at the Member's delivery point as defined by ANSI C84.1 Range A
- b) Member's DG installation will generate power at a frequency within the tolerances as defined by IEEE 1547.
- c) Member's DG facility shall produce power at a minimum power factor of at least 95% or shall use power factor correction capacitors to ensure at least a 95% power factor.
- d) Member's DG facility shall be in accordance with the power quality limits specified in IEEE 519.
- e) The overall quality of the power provided by the Member's DG facility including, but not limited to, the effects of harmonic distortion, voltage regulation, voltage flicker, switching surges and power factor, will be such that the Cooperative system is not adversely affected in any manner.
- f) In the event that adverse effects are caused in whole or in part by the Member's DG facility, the Member will correct the cause of such effects within 30 days of the initial adverse effect and, if applicable, reimburse the Cooperative for required correction. However, the disconnection of the facilities by the Cooperative is permitted if, in the sole judgment of the Cooperative, adverse affects may warrant immediate disconnection from the Cooperative's system per Section VII.4.

#### 4) Safety disconnect

- a) The Member shall install a visible load break disconnect switch at the Member's expense and to the Cooperative's specifications.
- b) The switch will be located so as to be readily accessible to Cooperative personnel in a location acceptable to both the Member and Cooperative.
- c) The switch shall be a type that can be secured in an open position by a lock owned by the Cooperative. If the Cooperative has locked the disconnect switch open, the Member shall not operate or close the disconnect switch.
- d) The Cooperative shall have the right to lock the switch open when, in the sole judgment of the Cooperative:
  - (1) It is necessary to maintain safe electrical operating and/or maintenance conditions,
  - (2) The Member's DG adversely affects the Cooperative system, or
  - (3) There is a system emergency or other abnormal operating condition warranting disconnection.
- e) The Cooperative reserves the right to operate the disconnect switch for the protection of the Cooperative system even if it affects the Member's DG facility. In the event the Cooperative opens and/or closes the disconnect switch:
  - (1) The Cooperative shall not be responsible for energization or restoration of parallel operation of the DG facility.
  - (2) The Cooperative will make reasonable efforts to notify the Member.
- f) The Member will not bypass the disconnect switch at any time for any reason.
- g) Signage shall be placed by the Cooperative at the Member's expense and located at the disconnect indicating the purpose of the switch along with contact names and numbers of both the Member and the Cooperative.
- h) Members with DG facilities as defined in this DG Manual which are solely for the purpose of emergency backup without intent to export power shall not operate their DG facilities at any time unless visibly disconnected from the Cooperative system. At its sole discretion, the Cooperative may require Member to install at his/her own expense an interlocking switch for the purpose of insuring the Member's facilities do not operate in parallel with the Cooperative's facilities.
- i) Should the Cooperative lose power serving the Member's DG facilities for any reason, Members with DG facilities shall not operate their DG facilities unless visibly disconnected from the Cooperative system.

#### 5) Access

- a) Persons authorized by the Cooperative will have the right to enter the Member's property for purposes of testing, operating the disconnect switch, reading or testing the metering equipment, maintaining right-of-way or other DG facility equipment and/or Cooperative service requirement. Such entry onto the Member's property may be without notice.
- b) If the Member erects or maintains locked gates or other barriers, the Member will furnish the Cooperative with convenient means to circumvent the barrier for immediate full access for the above-mentioned reasons.

## 6) Liability for Injury and Damages

- a) The Member assumes full responsibility for electric energy furnished by the Member and shall indemnify the Cooperative and/or its Power Supplier against and hold the Cooperative and/or its Power Supplier harmless from all claims for both injuries to persons, including death, and damages to property resulting therefrom.
- b) The Cooperative and/or its Power Supplier shall not be liable for either direct or consequential damages resulting from failures, interruptions, or voltage and waveform fluctuations occasioned by causes reasonably beyond the control of the Cooperative and/or its Power Supplier including, but not limited to, acts of God or public enemy, acts of terrorism, sabotage and/or vandalism, accidents, fire, explosion, labor troubles, strikes, order of any court or judge granted in any bona fide adverse legal proceeding or action, or any order of any commission, tribunal or governmental authority having jurisdiction. ALL PROVISIONS NOTWITHSTANDING, IN NO EVENT SHALL THE COOPERATIVE BE LIABLE TO THE MEMBER FOR ANY INTEREST, LOSS OF ANTICIPATED REVENUE, EARNINGS, PROFITS, OR INCREASED EXPENSE OF OPERATIONS, LOSS BY REASON OF SHUTDOWN OR NON-OPERATION OF MEMBER'S PREMISES OR FACILITIES, OR FOR ANY INDIRECT, INCIDENTAL, OR CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES ARISING OUT OF OR RELATED, IN WHOLE OR PART, TO THIS AGREEMENT. THE COOPERATIVE SHALL NOT BE LIABLE IN ANY EVENT FOR CONSEQUENTIAL DAMAGES.
- c) The Member is solely responsible for insuring that the Member's facility complies with all applicable regulations including, but not limited to, laws, regulations, ordinances, Cooperative and Cooperative Power Supplier tariffs, policies and directives, and ERCOT rules, policies and directives.

## 7) Metering/Monitoring

- a) The Cooperative shall specify, install and own all metering equipment.
  - (1) Power transfer at the point of interconnection will be measured by metering equipment as installed and specified at the sole discretion of the Cooperative.
  - (2) There shall be no net metering.

## 8) Notice of Change in Installation

- a) The Member will notify the Cooperative in writing thirty (30) days in advance of making any change affecting the characteristics, performance, or protection of the DG facility.
- b) If any modification undertaken by the Member will create or has created conditions which may be unsafe or adversely affect the Cooperative system, the Member shall immediately correct such conditions or be subject to immediate disconnection from the Cooperative system.
- c) Any change in the operating characteristics of the DG facility including, but not limited to, size of generator, total facility capacity, nature of facility, fuel source, site change, hours of operation, or type used, may, at the sole discretion of the Cooperative, require a new application process, including, but not limited to,

application form, application fee, DG plan and DG plan review by the Cooperative.

#### 9) Testing and Record Keeping

- a) The Member will test all aspects of the protection systems up to and including tripping of the generator and interconnection point at start-up and thereafter as required. Testing will verify all protective set points and relay/breaker trip timing and shall include procedures to functionally test all protective elements of the system. The Cooperative may witness the testing.
- b) The Member will maintain records of all maintenance activities, which the Cooperative may review at reasonable times.
- c) For systems greater than 500 kW, a log of generator operations shall be kept. At a minimum, the log shall include the date, generator time on, generator time off, and megawatt and megavar output. The Cooperative may review such logs at reasonable times.

#### 10) Disconnection of Service

The Cooperative may, at its sole discretion, discontinue the interconnection of DG installations due to reasons such as safety concerns, reliability issues, power quality issues, breach of interconnection contract or any other issue, which the Cooperative considers to be a reasonable basis for such action.

#### 11) Compliance With Laws, Rules and Tariffs

The DG installation owned and installed by the Member shall be installed and operated by Member subject to and in accordance with the terms and conditions set forth in the Cooperative's rules, regulations, bylaws, rates and tariffs, as amended from time to time, and, if applicable, approved by the Cooperative's board of directors, which are incorporated herein by reference, and in compliance with all applicable federal, state and local laws, regulations, zoning codes, building codes, safety rules, environmental restrictions, ordinances and regulations, including without limitation, Electric Reliability Council of Texas (ERCOT) Independent System Operator (ISO) directives and ERCOT guidelines, and in accordance with industry standard prudent engineering practices.