



Distributed Generation  
Procedures & Guidelines  
Manual for Members

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## **GENERAL**

In order to receive service from Denton County Electric Cooperative, Inc., d/b/a CoServ Electric (Cooperative), a customer must become a "Member" of the Cooperative. Throughout this manual, customers will be referred to as "Members." For more information about the Cooperative membership application process, including any applicable membership fees or deposits, contact 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 or other Members of the Cooperative. The Member must conduct his/her own analysis to determine the economic benefit of DG operation for that Member.

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 operating in "parallel." For purposes of this 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 Manual shall apply to parallel operation of DG facilities as so defined.

This Manual is not a complete description or listing of all laws, ordinances, rules and regulations related to Distributed Generation, nor is this 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 Manual, the Cooperative's rules and regulations and tariffs for electric service, the Cooperative's line extension policy(ies), the policies and procedures of the Cooperative's power supplier(s) (Power Supplier) where applicable, the policies and procedures of the Cooperative's transmission service provider where applicable, the current *National Electric Code*, the current *IEEE 1547 Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces* (the IEEE 1547 Standard) (a copy of the IEEE 1547 Standard is on file at the Cooperative for inspection along with additional 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 Manual must be met prior to interconnection of the DG facility to the Cooperative's system. (*Note: "current" as used in the above paragraph and throughout this Manual shall mean the most recent edition of the applicable standard, guideline, or statute at the time the DG facility is installed or other applicable time.*)

A Member may serve all load behind the meter at the location serving the DG facility but shall 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 approval by the Cooperative.

Kilowatts (kW) as used in this manual refer to kilowatts of direct current (DC) capacity (i.e., kW-DC) for photovoltaic (PV) systems of 50 kW or smaller. For all references to PV systems larger than 50 kW and for all other technologies, kW refers to alternating current (AC) capacity (i.e., kW-AC). Megawatts (MW) as used in this manual refers to MW-AC.

DG facilities larger than 10 megawatts (MW) are not covered by this 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 requires connection to the Cooperative's system. All provisions of this manual cover this category.
- b) Connected to the Cooperative's Power Supplier's system  
The Member requests and/or the Member's DG facility requires connection to the Cooperative's Power Supplier's transmission system and/or substations. This manual does NOT cover this category.

### 2) Power Export Category

- a) Isolated  
The Member operates a DG facility that is not connected in any way to the Cooperative's system.
- b) Parallel with No Power Export  
The Member operates a DG facility that is connected in any way to the Cooperative's system but with no intention to export power.
- c) Parallel for Both Consumption and Export  
The Member operates a DG facility that is connected in any way to the Cooperative's system designed primarily to serve the Member's own load but with the intention to occasionally or intermittently export excess power.
- d) Parallel for Export Only  
The Member operates a DG facility that is connected in any way to the Cooperative's system designed primarily with the intention to export power.

### 3) Qualifying or Non-Qualifying Category

- a) Qualifying Facilities (QF) are defined by the Public Utility Regulatory Policies Act of 1978 (PURPA). Refer to CFR Title 18, Subchapter K, Part 292.
- b) The distinction between QF and Non-Qualifying Facilities (NQF) mainly deals with fuel use.
  - (1) In general, a QF must have as its primary energy source biomass, waste, renewable resources, geothermal resources or any combination. See PURPA for a full description.
  - (2) DG facilities not designated as QF under the provisions of PURPA will be considered NQF by the Cooperative.
- c) The Cooperative shall provide interconnection for a DG facility that that is a QF to Members, subject to the provisions of this Manual and all other applicable rules and regulations.
- d) The Cooperative shall purchase power from a Member with a DG facility that is a QF, subject to the provisions of this policy and other applicable rules and regulations.
- e) The Cooperative may purchase power from a Member with a DG facility that is an NQF. However, if the Member's DG facility is an NQF, then the Cooperative may, at its sole discretion, not allow the interconnection of the Member's DG facility

and/or elect not to purchase power from the Member.

4) Size Category

- a) Facilities 50 kW and smaller  
Facilities  $\leq$  50 kW of connected generation will be placed in this size category unless the Member requests connection under the  $>$  50 kW size category.
- b) Facilities above 50 kW and less than or equal to 10 MW  
Facilities  $>$  50 kW and up to 10 MW of connected generation will be placed in this size category. Facilities  $\leq$  50 kW may be placed in this size category if so requested by the Member.
- c) Facilities above 10 MW of connected generation not considered under this manual

5) Fuel and Technology Category

- a) Solar Photovoltaic (PV)
- b) Solar – Other
- c) Wind Turbine
- d) Natural Gas – Reciprocating Engine
- e) Natural Gas – Microturbine
- f) Diesel – Reciprocating Engine
- g) Gasoline – Reciprocating Engine
- h) Landfill Gas – Reciprocating Engine
- i) Landfill Gas – Other
- j) Battery
- k) Stand-By or Portable Generator
- l) Other Fuel

## 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 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 complete and submit to the Cooperative the "Application for Operation of Customer-Owned Generation," in the form attached to this Manual.
- b) A separate application must be submitted for each installation.

3) Submit a DG Plan

- a) As a part of the application, the Member shall submit a plan detailing the electrical design, one-line diagram, interconnection requirements, system size, and operational plans (including expected days and times of operation) for the DG facility (the "DG plan"). At any time during the review process, the Cooperative may require additional information including a requirement that the DG plan 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 an emergency or back-up power supply for the facility, the Cooperative may, at its sole discretion, waive the application fee.

| DG System Nominal Capacity (Connected Load)* | Application Fee            | Additional Engineering Fee |
|--|----------------------------|----------------------------|
| < 1kW to 50 kW                               | \$25                       | As Required                |
| Over 50 kW to 100 kW                         | \$100                      | As Required                |
| Over 100 kW to 1 MW                          | \$200                      | As Required                |
| Over 1 MW to 10 MW                           | \$1,000                    | As Required                |
| > 10 MW                                      | Not covered by this manual |                            |

\* Kilowatts (kW) as used in this manual refer to kilowatts of direct current (DC) capacity (i.e., kW-DC) for photovoltaic (PV) systems of 50 kW or smaller. For all references to PV systems larger than 50 kW and for all other technologies, kW refers to alternating current (AC) capacity (i.e., kW-AC). Megawatts (MW) as used in this manual refers to MW-AC.

### 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 Member’s application and accompanying documents, including but not limited to, one-line diagram, plans, specifications, and other information provided and will return an interconnection approval or disapproval together with any applicable analysis to the Member within the following timeframes after receipt of final plans and specifications and any additional information required by the Cooperative:
- DG Facilities up to 20 kW in size: 15 business days.
  - DG Facilities larger than 20 kW and up to 100 kW: 30 business days.
  - DG Facilities larger than 100 kW: 45 business days.
- b) Technical review shall be consistent with guidelines established by the current *National Electric Code* and *IEEE 1547 Standard*. 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 approval period specified above may be reinitialized after 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. Any additional 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.
  - e) Should it become necessary at any 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 or continue to purchase the output of the Member's DG facilities, or because the quality of the power provided by the Member's DG facilities adversely affects the Cooperative's and/or its Power Supplier's delivery system, the cost of such modifications shall be borne, in advance, by the Member to the Cooperative and/or its Power Supplier(s).

#### **IV. SALES TO AND PURCHASES FROM A DG FACILITY**

- 1) For all DG where the Member desires to export power
  - a) The Member shall sign a Member Interconnection Information and Agreement in the form provided by the Cooperative.
  - b) All accounts with installed DG facilities shall be billed under one of the Cooperative's existing rate tariffs.
  - c) 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, including any charges in the Cooperative's DG tariff.
  - d) The Member shall pay all rates and charges so listed.
  - e) Neither the Cooperative nor its Power Supplier is under any obligation to purchase power from an NQF.
  - f) All self-generated energy that is not exported to the Cooperative's system must be consumed on-site. No wheeling of self-generated energy from one site to another site is permitted, except as provided in subparts (1) and (2) below:
    - (1) A Member who desires to export power for financial settlement must request it in accordance with Section 202.19 Generation Export Service of the Cooperative's Tariff for Electric Service (Tariff).
    - (2) The Member shall be subject to any market charges related to the Member's DG facility, including but not limited to scheduling, dispatching and energy imbalance.
  - g) In addition to all other charges, the Cooperative may bill the Member for any additional facilities charges incurred by the Cooperative in order to facilitate the installation and/or operation of the Member's DG facility.
  
- 2) For DG  $\leq$  50 kW where the Member desires to export power:
  - a) The Cooperative may bill a Member with DG facilities an additional monthly Distributed Generation customer charge.
  - b) For power produced in excess of on-site requirements, the Member shall be compensated by netting the Member's kWh generation against the Member's kWh consumption, referred to as "net metering." 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.
- c) When the energy supplied by the Member exceeds the energy supplied by the Cooperative over an entire billing period, the monthly customer charge specified in the Tariff and/or minimum bill of the retail rate schedule shall be billed by the Cooperative in addition to the monthly DG customer charge, and the excess energy shall be provided at no charge to the Cooperative.
  - d) The Cooperative may, at its sole discretion, purchase power from an NQF as described in this section.
- 3) For DG > 50 kW and < 10 MW where the Member desires to export power:
- a) The Cooperative may bill a Member with DG facilities an additional monthly Distributed Generation customer charge.
  - b) 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 within each billing period the energy consumed by the Member and the energy produced by the Member.
  - c) 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 Cooperative personnel and the Member shall be billed for the additional cost of reading the meter.
  - d) The Cooperative shall bill the Member for the full energy from the Cooperative's system used by the Member during each billing period according to the Cooperative's applicable retail rate schedule.
  - e) The Cooperative may pay the Member on a monthly basis for the energy supplied by the Member to the Cooperative. The rate paid by the Cooperative to the Member shall be the Cooperative's avoided cost of wholesale power as defined in the Cooperative's tariffs. A purchase agreement must be in place between the Cooperative and the Member.
  - f) A Member who desires to export power for financial settlement must request it in accordance with Section 202.19 Generation Export Service of the Tariff.
  - g) The Cooperative may, at its sole discretion, purchase power from an NQF as described in this section.
- 4) 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) Line Extension and Modifications to Cooperative Facilities
  - a) As a part of the interconnection analysis performed by the Cooperative, if applicable, the Member shall be provided with an estimate of any line extension or other cost to be incurred in providing electric delivery service to the Member's DG facility.
  - b) Notwithstanding the Cooperative's line extension policy, the full cost of the construction of any transmission, substation, distribution, transformation, metering, protective, or other facilities or equipment which, at the sole discretion of the Cooperative and/or its Power Supplier, is required to serve the Member's



DG facility, shall be borne, in advance, by the Member.

- c) 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 or continue to purchase the Member's output, or because the quality of the power provided by the Member's DG adversely affects the Cooperative and/or its Power Supplier's delivery system, the Member shall reimburse the Cooperative and/or its Power Supplier for all costs of modifications required for the interconnection of the Member's DG facilities.
- d) In the event the Cooperative at any time changes primary voltage of facilities serving the DG facility such that metering equipment, transformers and/or any other Member-owned equipment must be changed to continue receiving service at the new primary voltage level, the full cost of the change shall be borne by the Member.

## 2) Disconnect Switch and DG Output Meter

- a) In all cases, the Member shall bear the full cost of the installation of a visible load break disconnect switch by and to the sole specification of the Cooperative. The switch will be readily accessible to Cooperative personnel and of a type that can be secured in an open position by a Cooperative lock.
  - (1) When the DG is used for backup power only, a break before make transition is required to avoid back feed. A visible load break disconnect switch is preferred but not required pending evaluation of the member's proposed configuration and equipment selection
- b) At the Cooperative's request, the Member shall bear the full cost of a standard meter socket for a meter to be installed and measure the full output of the DG system. The meter itself shall be paid for and be installed by the Cooperative in order to monitor the total output of the DG system.

## 3) Applicable Regulations

The DG facility shall be installed and operated subject to and in accordance with the terms and conditions set forth in the Cooperative's rules, regulations, bylaws, rates and tariffs, as amended as needed, 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 current IEEE 1547 Standard, applicable ANSI standards, including ANSI C84.1 Range A, Electric Reliability Council of Texas (ERCOT) Independent System Operator (ISO) directives and ERCOT guidelines, and in accordance with prudent industry standard engineering practices.

## 4) Liability Insurance

- a) Facilities 50 kW and smaller
  - (1) Not Required
- b) Facilities larger than 50 kW
  - (1) Prior to interconnection, the Member shall provide a certificate of insurance showing satisfactory liability insurance including, but not limited to,

contractual liability insurance covering indemnity agreements 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. The Cooperative may require that it be named as an additional insured on such liability insurance.

- (2) The amount of such insurance coverage shall be not less than \$1,000,000 per occurrence. The amount of such coverage and the type of insurance coverage required shall be acceptable to the Cooperative and may be amended as needed by the Cooperative at the sole discretion of the Cooperative.
- (3) The certificate shall provide that the insurance policy may not be changed or canceled during its term without thirty days written notice to the Cooperative. The term of the insurance shall be coincident with the term of the interconnection contract or shall be specified to renew throughout the length of the interconnection contract.
- (4) The Member shall provide proof of such insurance to the Cooperative on an annual basis and/or upon request.

#### 5) Contracts

- a)  $\leq 50\text{kW}$ : Member Interconnection Information and Agreement shall be signed prior to the Cooperative accepting the DG connection.
- b)  $> 50\text{ kW}$  and  $<10\text{ MW}$ : Member Interconnection Information and Agreement – The Member shall sign and deliver to the Cooperative an interconnection agreement in form and substance acceptable to the Cooperative.
- c)  $> 10\text{ MW}$ : Not covered in this Manual.
- d) Energy Purchase Agreement (where the Member with a QF desires to deliver power or, in the case of a Member with an NQF, the Cooperative agrees to purchase power)
  - (1)  $\leq 50\text{ kW}$ : Net Metering, as outlined in the Cooperative's tariffs. No Energy Purchase Agreement required.
  - (2)  $> 50\text{ kW}$  and  $< 10\text{ MW}$ : As outlined in the Cooperative's tariffs. Energy Purchase Agreement between Member and Cooperative is required.
  - (3)  $> 10\text{ MW}$ : Not covered in this Manual.

#### 6) Initial Interconnection

- a) Upon satisfactory completion of the review process and execution of required agreements as outlined in this Manual, the Cooperative shall begin installation of the interconnection of DG facilities. The interconnection shall 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 shall conduct a final inspection of the facilities and interconnection to the Cooperative's system. Upon satisfactory final inspection, the Cooperative shall initiate service to the Member.
- b) The Cooperative's review process and final inspection is intended as a means to 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 generating 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 an existing interconnection of DG facilities due to reasons such as safety concerns, reliability issues, power quality issues, breach of Cooperative's meter seal, breach of interconnection contract or any other reasonable issue. 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 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 (i.e., on the Member's side of the billing meter) as defined in the Cooperative's tariffs. The only exception to this is the DG Output Meter(s) (see below).
- b) At its sole discretion, the Cooperative may locate and install cooperative owned metering equipment (the DG Output Meter(s)) and transformers past the point of delivery. Such DG Output Meter(s) shall be used by the Cooperative to measure the full output of the DG facility. If installed, DG Output Meter(s) shall be installed, owned, and maintained solely by the Cooperative, with the exception that the Member shall be required to install the associated meter socket.

### **2) Self-Protection of DG Facilities**

- a) The Member shall 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 shall 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 shall 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 shall 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) The Member's DG installation shall generate power at a frequency within the tolerances as defined by IEEE 1547.
- c) The 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) The 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, shall be such that the Cooperative system is not adversely affected in any manner.
- f) In the event that the adverse effects are caused in whole or in part by the Member's DG facility, the Member shall correct the cause of such effects within 30 days, reimburse the Cooperative for required correction, or be disconnected from the Cooperative system.

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 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 shall make reasonable efforts to notify the Member.
- f) The Member shall not bypass the disconnect switch at any time for any reason.
- g) Signage may 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 Manual which are solely for the purpose of emergency backup or peak shaving without intent to export power shall not operate their DG facilities at any time unless disconnected from the

Cooperative system. At its sole discretion, the Cooperative may require the Member to install at his/her own expense an interlocking switch for the purpose of ensuring 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, those 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 shall have the right to enter the Member's property for purposes of testing, operating the disconnect switch, reading or testing all 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 shall furnish the Cooperative with convenient means to circumvent the barrier for full access for the above-mentioned reasons.

6) Liability for Injury and Damages

- a) The Member assumes full responsibility for electric energy furnished at and past the point of interconnection 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 resulting therefrom, and damages to property occurring upon the premises owned or operated by the Member arising from electric power and energy delivered by the Cooperative or in any way arising directly or indirectly from the Member's DG facility.
- 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, 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 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 his/her facility complies with all applicable regulations including, but not limited to, laws, regulations, ordinances, Cooperative and Cooperative's 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, including both billing meter(s) and DG Output Meter(s).
- b) Facilities  $\leq$  50 kW

The facility shall be net metered by one of the following methods, at the sole discretion of the Cooperative.

- (1) Installing a single billing meter which runs forward and backward, or
- (2) Installing two billing meters, each measuring the flow of energy in a single direction and netting the energy consumption between the two meters to determine the net monthly flow of energy.

c) Facilities > 50 kW

- (1) Power transfer at the point of interconnection will be measured by billing metering equipment as installed and specified at the sole discretion of the Cooperative.
- (2) There shall be no net metering.

- d) For the DG Output Meter, Member shall provide a meter socket for the Cooperative to measure the full output of the DG facility.
- e) The meters shall be read at a time or times of month determined at the Cooperative's sole discretion for acquiring metering data. The Member shall provide the Cooperative an approved communications link at the Member's cost for this purpose if so requested by the Cooperative. The type of communications link and metering equipment measuring purchase of power by the Cooperative shall be installed and specified at the sole discretion of the Cooperative.
- f) The Cooperative may, at its sole discretion, require the Member to pay the Cooperative in advance for billing metering and monitoring equipment and installation expense.
- g) Meter testing shall follow the Cooperative's standard policy on metering testing and accuracy.
- h) At its sole discretion, the Cooperative may meter the facility at the primary or secondary level.

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, requires notification to the Cooperative. Cooperative, at its sole discretion, shall determine if changes are significant and, if so, may 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 shall 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 shall maintain records of all maintenance activities, which the Cooperative may review, by request, at reasonable times and upon reasonable notice.
  - c) For systems greater than 500 kW, a log and/or electronic record of generator operations shall be kept. At a minimum, the log or record shall include the date, generator time on, generator time off, and megawatt and megavar output. The Cooperative may review such logs or records, by request, at reasonable times and upon reasonable notice.

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 deemed reasonable by the Cooperative.

11) Compliance With Laws, Rules and Tariffs

The DG installation owned and installed by the Member shall be installed and operated subject to and in accordance with the terms and conditions set forth in the Cooperative's rules, regulations, bylaws, rates and tariffs, subject to amendment as needed, 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.

**EXHIBIT A**

**CoServ Electric**  
**Application for Operation of Customer-Owned Generation**

**This application should be completed as soon as possible and returned to the Cooperative Customer Service representative in order to begin processing the request. See *Distributed Generation Procedures and Guidelines Manual for Members* for additional information.**

*INFORMATION: This application is used by the Cooperative to determine the required equipment configuration for the Customer interface. Every effort should be made to supply as much information as possible.*

**INSTRUCTIONS:**

All Renewable DG Systems with a Capacity of 50 kW or less: Complete Part 1, Part 2, and Part 4 of Application and return to Cooperative at address listed in Part 4 prior to installing DG equipment.

All Renewable DG Systems with a Capacity Larger than 50 kW and All Other Technologies: Complete all Parts of Application and return to Cooperative at address listed in Part 4 prior to installing DG equipment.

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**PART 1**  
**OWNER/APPLICANT INFORMATION**

Company: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City: \_\_\_\_\_ County: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
Phone Number: \_\_\_\_\_ Representative: \_\_\_\_\_  
Email address: \_\_\_\_\_

**PROJECT DESIGN/ENGINEERING (as applicable)**

Company: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City: \_\_\_\_\_ County: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
Phone Number: \_\_\_\_\_ Representative: \_\_\_\_\_  
Email address: \_\_\_\_\_

**ELECTRICAL CONTRACTOR (as applicable)**

Company: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City: \_\_\_\_\_ County: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_



Phone Number: \_\_\_\_\_ Representative: \_\_\_\_\_  
Email address: \_\_\_\_\_

**PART 2**

**CATEGORY OF DISTRIBUTED GENERATION FACILITY**

**CONNECTION LEVEL CATEGORY**

Connected to the Cooperative’s System \_\_\_\_\_  
Connected to the Cooperative’s Power Supplier’s System \_\_\_\_\_  
Not Connected \_\_\_\_\_

**POWER EXPORT CATEGORY**

**Mode of Operation**

Isolated \_\_\_\_\_ Parallel with No Power  
Export \_\_\_\_\_  
Parallel for Both Consumption  
and Export \_\_\_\_\_ Parallel for Export Only \_\_\_\_\_

**QUALIFYING OR NON-QUALIFYING CATEGORY**

Qualifying (Renewable, Biomass, Waste, or  
Geothermal): \_\_\_\_\_  
Non-Qualifying: \_\_\_\_\_

**SIZE CATEGORY AND ESTIMATED LOAD INFORMATION**

The following information will be used to help properly design the Cooperative customer interconnection. This information is not intended as a commitment or contract for billing purposes.

Total DG Output \_\_\_\_\_(kW) (specify AC or DC) Total Site Load\_\_\_\_(kW)

**FUEL AND TECHNOLOGY TYPE OF GENERATOR**

Solar Photovoltaic \_\_\_\_\_ Solar, Non -Photovoltaic \_\_\_\_\_  
Wind-turbine \_\_\_\_\_ Natural Gas / Engine \_\_\_\_\_  
Natural Gas / Microturbine \_\_\_\_\_ Diesel / Engine \_\_\_\_\_  
Gasoline / Engine \_\_\_\_\_ Landfill Gas / Engine \_\_\_\_\_  
Landfill Gas / Other \_\_\_\_\_ Other Fuel \_\_\_\_\_  
Standby or Portable Generator (please specify fuel type) \_\_\_\_\_

**DESCRIPTION OF PROPOSED INSTALLATION AND OPERATION**

Give a general description of the proposed installation, including when you plan to operate the generator.

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**PART 3**

**EQUIPMENT INFORMATION AND SPECIFICATIONS**

(Complete all applicable items. Copy this page as required for additional generators.)

**SYNCHRONOUS GENERATOR DATA**

Unit Number: \_\_\_\_\_ Total number of units with listed specifications on site: \_\_\_\_\_

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

Type / Model No.: \_\_\_\_\_ Date of manufacture: \_\_\_\_\_

Serial Number (each): \_\_\_\_\_

Phases: Single \_\_\_\_\_ Three \_\_\_\_\_ R.P.M.: \_\_\_\_\_ Frequency (Hz): \_\_\_\_\_

Rated Output (for one unit): \_\_\_\_\_ Kilowatt \_\_\_\_\_ Kilovolt-Amper \_\_\_\_\_

Rated Power Factor (%): \_\_\_\_\_ Rated Voltage (Volts) \_\_\_\_\_ Rated Amperes: \_\_\_\_\_

Field Volts: \_\_\_\_\_ Field Amps: \_\_\_\_\_ Motoring power (kW): \_\_\_\_\_

Synchronous Reactance (X'd): \_\_\_\_\_ % on \_\_\_\_\_ KVA base

Transient Reactance (X'd): \_\_\_\_\_ % on \_\_\_\_\_ KVA base

Subtransient Reactance (X'd): \_\_\_\_\_ % on \_\_\_\_\_ KVA base

Negative Sequence Reactance (Xs): \_\_\_\_\_ % on \_\_\_\_\_ KVA base

Zero Sequence Reactance (Xo): \_\_\_\_\_ % on \_\_\_\_\_ KVA base

Neutral Grounding Resistor (if applicable): \_\_\_\_\_

$I_2^2t$  of K (heating time constant): \_\_\_\_\_  
Additional Information: \_\_\_\_\_

**INDUCTION GENERATOR DATA**

Rotor Resistance (Rr): \_\_\_\_\_ ohms Stator Resistance (Rs): \_\_\_\_\_ ohms  
Rotor Reactance (Xr): \_\_\_\_\_ ohms Stator Reactance (Xs): \_\_\_\_\_ ohms  
Magnetizing Reactance (Xm): \_\_\_\_\_ ohms Short Circuit Reactance (Xd''): \_\_\_\_\_ ohms  
Design letter: \_\_\_\_\_ Frame Size: \_\_\_\_\_  
Exciting Current: \_\_\_\_\_ Temp Rise (deg C°): \_\_\_\_\_

Reactive Power Required: \_\_\_\_\_ Vars (no load), Vars \_\_\_\_\_ (full load)

Additional Information: \_\_\_\_\_

**PRIME MOVER** (Complete all applicable items)

Unit Number: \_\_\_\_\_ Type / Model No.: \_\_\_\_\_  
Manufacturer: \_\_\_\_\_  
Serial Number: \_\_\_\_\_ Date of manufacturer: \_\_\_\_\_  
H.P. Rates: \_\_\_\_\_ H.P. Max.: \_\_\_\_\_ Inertia Constant: \_\_\_\_\_ lb.-ft<sup>2</sup>  
Energy Source (hydro, steam, wind, etc.) \_\_\_\_\_

**GENERATOR TRANSFORMER** (Complete all applicable items)

TRANSFORMER (between generator and utility system)  
Generator unit number: \_\_\_\_\_ Date of manufacturer: \_\_\_\_\_  
Manufacturer: \_\_\_\_\_  
Serial Number: \_\_\_\_\_  
High Voltage: \_\_\_\_\_ KV, Connection: delta wye, Neutral solidly grounded? \_\_\_\_\_  
Low Voltage: \_\_\_\_\_ KV, Connection: delta wye, Neutral solidly grounded? \_\_\_\_\_  
Transformer Impedance (Z): \_\_\_\_\_ % on \_\_\_\_\_ KVA base  
Transformer Resistance (R): \_\_\_\_\_ % on \_\_\_\_\_ KVA base  
Transformer Reactance (X): \_\_\_\_\_ % on \_\_\_\_\_ KVA base  
Neutral Grounding Resistor (if applicable): \_\_\_\_\_

**INVERTER DATA** (if applicable)

Manufacturer: \_\_\_\_\_ Model: \_\_\_\_\_  
Rate Power Factor (%): \_\_\_\_\_ Rated Voltage (Volts): \_\_\_\_\_ Rated Amperes: \_\_\_\_\_  
Inverter Type (ferroresonant, step, pulse-width modulation, etc.): \_\_\_\_\_  
Type commutation: forced line  
Harmonic Distortion: Maximum Single Harmonic (%) \_\_\_\_\_  
Maximum Total Harmonic (%) \_\_\_\_\_

Note: Attach all available calculations, test reports, and oscillographic prints showing inverter output voltage and current waveforms.

**POWER CIRCUIT BREAKER** (if applicable)

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

Rated Voltage (kilovolts): \_\_\_\_\_ Rated ampacity (Amperes) \_\_\_\_\_

Interrupting rating (Amperes): \_\_\_\_\_ BIL Rating \_\_\_\_\_

Interrupting medium / insulating medium (ex. Vacuum, gas, oil) \_\_\_\_\_ / \_\_\_\_\_

Control Voltage (Closing): \_\_\_\_\_(Volts) AC DC

Control Voltage (Tripping): \_\_\_\_\_(Volts) AC DC Battery Charged Capacitor

Close energy: Spring Motor Hydraulic Pneumatic Other: \_\_\_\_\_

Trip energy: Spring Motor Hydraulic Pneumatic Other: \_\_\_\_\_

Bushing Current Transformers: \_\_\_\_\_ (Max. ratio) Relay Accuracy Class: \_\_\_\_\_

Multi Ratio? No Yes: (available taps) \_\_\_\_\_

**ADDITIONAL INFORMATION**

*In addition to the items listed above, please attach all applicable elementary diagrams, major equipment (generators, transformers, inverters, circuit breakers, protective relays, etc.), specifications, test reports, etc., and any other applicable drawings or documents necessary for the proper design of the interconnection.*

**PART 4  
SIGN OFF AREA**

Please attach a detailed one-line diagram of the proposed facility, contractor proposal (if applicable), and any related information that further describes the equipment to be installed.

The customer agrees to provide the Cooperative with any additional information required to complete the interconnection. The customer shall operate his equipment within the guidelines set forth by the Cooperative.

\_\_\_\_\_  
Applicant

\_\_\_\_\_  
Date

**ELECTRIC COOPERATIVE CONTACT FOR APPLICATION SUBMISSION AND FOR MORE INFORMATION:**

**Cooperative contact:** Energy Engineering Department  
**Email address:** solar@coserv.com  
**Mailing address:** CoServ  
7701 S. Interstate 35E  
Corinth, TX 76210  
**Phone:** 940-321-7800  
**Fax:** 940-270-6640