

COSERV ELECTRIC

Distributed Generation Procedures & Guidelines Manual for Members

April 2008

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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 join or 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, 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 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, 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 *IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems* (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 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 approval by the Cooperative.

DG facilities larger than 10 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 system. This manual does NOT cover this category.

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.
- c) 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) 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 26, Volume 4, Sec. 292.204.
- 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 will provide interconnection for a DG facility to Members, subject to the provisions of this Manual and all other applicable rules and regulations.
- d) The Cooperative will 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.

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 below 10 MW
Facilities $>$ 50 kW and below 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

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 contact the Cooperative and 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 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
< 5 kW	None	None
5 kW to 100 kW	\$25	As Required
101 kW to 1 MW	\$100	As Required
Over 1 MW to 10 MW	\$1,000	As Required
> 10 MW	Not covered by this manual	

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.
- b) Technical review will be consistent with guidelines established by the most recent *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 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 generating installations and does not warrant the efficiency, cost-effectiveness, safety, durability, or reliability of such DG installations.
- 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 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 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 AND PURCHASES FROM A DG FACILITY

1) For all DG where the Member desires to export power

- 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, including any charges in the Cooperative's DG tariff.
- c) The Member shall pay all rates and charges so listed.
- d) Neither the Cooperative nor its Power Supplier is under any obligation to purchase power from a NQF.
- e) All self-generated energy must be consumed on-site. No wheeling of self-generated energy from one site to another site will be permitted.
- f) The Customer shall be subject to any market charges related to the Customer's DG facility, including but not limited to Scheduling, Dispatching and Energy imbalance.

2) For QF \leq 50 kW where the Member desires to export power:

- a) For power produced in excess of on-site requirements, the Member will 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.
- b) 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 in addition to the monthly metering charge, and the excess energy shall be provided at no charge to the Cooperative.
- c) The Member shall sign an interconnection agreement in form and substance acceptable to the Cooperative.
- d) In addition to all other charges, the Cooperative may bill the Member for any additional facilities charges as determined by the Cooperative and appended to the interconnection agreement.
- e) The Cooperative may, at its sole discretion, purchase power from an NQF as described in this section.

- 3) For QF > 50 kW and < 10 MW where the Member desires to export power:
 - a) 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 consumed by the Member and the energy produced by the Member.
 - b) 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.
 - c) 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.
 - d) In addition to all other charges, the Cooperative may add an additional monthly customer charge for Members with DG facilities to recover any additional billing, meter reading and/or customer service costs.
 - e) The Cooperative shall 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.
 - f) The Member shall sign an interconnection agreement in form and substance acceptable to the Cooperative.
 - g) In addition to all other charges, the Cooperative may bill the Member for any additional facilities charges as determined by the Cooperative and appended to the Interconnection Agreement.
 - h) The Cooperative may, at its sole discretion, purchase power from a 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, the Member will 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 Member shall pay in advance 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.
 - 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 will 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 in the future 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 will be borne by the Member.
- e) In all cases, the Member shall pay 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.

2) 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 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 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 industry standard prudent engineering practices.

3) Liability Insurance

a) Facilities 50 kW and smaller

- (1) Prior to interconnection, the Member must provide proof of adequate insurance.
- (2) The amount of the insurance may be increased at the sole discretion of the Cooperative if the nature of the project so requires.
- (3) The insurance policy will not be changed or canceled during its term without thirty days written notice to the Cooperative.
- (4) The Member shall provide proof of such insurance to the Cooperative upon request.

b) Facilities larger than 50 kW

- (1) Prior to interconnection, the Member must provide a certificate of insurance showing satisfactory liability insurance including 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 from time to time by the Cooperative at the sole discretion of the Cooperative.
- (3) The certificate shall provide that the insurance policy will 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 at least annually.

4) Contracts

- a) Interconnection Contract - The Member will sign and deliver to the Cooperative an interconnection agreement in form and substance acceptable to the Cooperative.
- b) Energy Purchase Agreement (where the Member with a QF desires to deliver power or, in the case of a Member with a NQF, the Cooperative agrees to purchase power)
 - (1) ≤ 50 kW: Net Metering: As outlined in the Cooperative's tariffs
 - (2) > 50 kW and < 10 MW: As outlined in the Cooperative's tariffs.
 - (3) > 10 MW: Not covered in this Manual.

5) Initial Interconnection

- a) Upon satisfactory completion of the review process and execution of required agreements as outlined in this 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 satisfactory final inspection, the Cooperative will 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 the interconnection of DG facilities due to reasons such as safety concerns, reliability issues, power quality issues, 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 as defined in the Cooperative's tariffs.
- b) At its sole discretion, the Cooperative may locate cooperative owned metering equipment and 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 the 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, 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 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 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 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 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 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.

- b) 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 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.
- b) Facilities \leq 50 kW
The facility will be net metered by one of the following methods, at the sole discretion of the Cooperative.
 - (1) Installing a single meter which runs forward and backward or
 - (2) Installing two 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 metering equipment as installed and specified at the sole discretion of the Cooperative.
 - (2) There shall be no net metering.
- d) The meter 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.
- e) The Cooperative may, at its sole discretion, require the Member to pay the Cooperative in advance for metering and monitoring equipment and installation expense.
- f) Meter testing shall follow the Cooperative's standard policy on metering testing and accuracy.
- g) At its sole discretion, the Cooperative may meter the facility at 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, 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 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 reasonable issue.

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, 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.

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.*

PART 1
OWNER/APPLICANT INFORMATION

Company: _____
Mailing Address: _____
City: _____ County: _____ State: _____ Zip Code: _____
Phone Number: _____ Representative: _____

PROJECT DESIGN/ENGINEERING (as applicable)

Company: _____
Mailing Address: _____
City: _____ County: _____ State: _____ Zip Code: _____
Phone Number: _____ Representative: _____

ELECTRICAL CONTRACTOR (as applicable)

Company: _____
Mailing Address: _____
City: _____ County: _____ State: _____ Zip Code: _____
Phone Number: _____ Representative: _____

TYPE OF GENERATOR (as applicable)

Photovoltaic _____ Wind _____ Microturbine _____
Diesel Engine _____ Gas Engine _____ Turbine Other _____

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 Site Load _____ (kW) Total DG Output _____ (kW)

Mode of Operation (check all that apply)

Isolated _____ Paralleling _____ Power Export _____

DESCRIPTION OF PROPOSED INSTALLATION AND OPERATION

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

PART 2

(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: _____ 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: _____
 Manufacturer: _____
 Serial Number: _____ Date of manufacturer: _____
 H.P. Rates: _____ H.P. Max.: _____ Inertia Constant: _____ lb.-ft²
 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 a detailed one-line diagram of the proposed facility, 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.

SIGN OFF AREA

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: _____
 Title: _____
 Address: _____

 Phone: _____
 Fax: _____