

Hamilton County Electric  
Cooperative Association

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

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## **PURPOSE**

The purpose of this “Distributed Generation Procedures and Guidelines Manual for Members” (“Manual”) is to provide procedures, guidelines and requirements for a Member to install and connect to the Cooperative’s electric distribution system certain electric generation facilities described and referred to as “Distributed Generation” (“DG”). The Member is required to submit an application, fulfill the requirements set forth in the Manual, and execute an agreement with the Cooperative prior to connecting the Member’s distributed generation facilities to the Cooperative’s electric distribution system.

The Cooperative reserves the right to revise and amend this Manual from time to time.

## **GENERAL**

In order to receive electric service from the Cooperative, a customer must join or become a “Member” of the Cooperative. Throughout this Manual, customer will be referred to as “Member”. For more information about the Cooperative membership application process, including any applicable membership fees or deposits, see the Cooperative to request new member information. (Member/customers that intend to only export power to the distribution cooperative will have to become a cooperative Member due to billing/metering issues. Any gross metering arrangement will accumulate patronage and may allow Member to participate in patronage capital margin allocation.)

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

A DG facility that is not connected to the Cooperative’s electric distribution system in any way is known as a “stand-alone” or “isolated” DG. The Member may operate a DG facility in a stand-alone or isolated fashion as long as such DG facility does not adversely affect the Cooperative or the Cooperative’s electric distribution system. A DG facility interconnected in any way to the Cooperative’s electric distribution system shall be considered as operating in “parallel”. For purposes of this Manual, a DG facility is considered operating in “parallel” anytime it is interconnected to the Cooperative’s electric distribution system in any way, even if the Member does not intend to export power to the Cooperative or its Power Supplier. All provisions of this Manual shall apply to any parallel operation of DG facilities.

This Manual is not a complete description or listing of all the laws, ordinances, rules and regulations that a Member must or should follow, nor is this Manual intended to be an installation or safety manual. The Member requesting to interconnect a DG facility to the Cooperative’s electric distribution system is responsible for and must follow, in addition to all provisions of this Manual, the Cooperative’s *Rules and Regulations and Electric Tariffs*, the Cooperative’s *Line Extension Policy*, the *Policies and Procedures* of the Cooperative’s power supplier where applicable, the current *IEEE 1547 Standard Guide for Distributed Generation Interconnection*, and any and all other applicable

governmental and regulatory laws, rules, ordinances or requirements. All legal, technical, financial, and other requirements in the following sections of this Manual must be met prior to interconnection of the DG facility to the Cooperative's electric distribution system.

A Member may serve all of his/her loads behind the meter at the location serving the DG facility, but the Member will not be allowed to serve multiple meters, multiple consuming facilities or other Members with a single DG facility or under a single DG application.

DG facilities equal to or larger than 1 MW are not covered by this Manual and will be considered by the Cooperative and its Power Supplier on a case-by-case basis.

## **I. DETERMINE THE CATEGORY OF DISTRIBUTED GENERATION FACILITY**

For the purpose of this Manual, each DG facility will be categorized in accordance with the following criteria.

### 1) Connection Level Category

- a) Connected to the Cooperative's electric distribution system  
The Member requests and/or the Member's DG facility requires connection to the Cooperative's distribution system. All provisions of this manual cover facilities in this category less than 1 MW.
- 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 system connected in any way to the Cooperative's electric distribution system but with no intention to export power to the Cooperative and/or its Power Supplier.
- b) Parallel – power generated to be both consumed and exported  
The Member operates a DG system connected in any way to the Cooperative's electric distribution system designed primarily to serve the Member's own load but with the intention to export excess power to the Cooperative.
- c) Parallel – power generated to be exported only  
The Member operates a DG system connected in any way to the Cooperative's electric distribution system designed primarily with the intention to export power to the Cooperative.

### 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. Qualifying Facilities will always be given consideration by the Cooperative for connection.
- 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.
  - (2) A DG facility will normally be considered as a NQF by the Cooperative.
- c) The Cooperative will provide interconnection for a DG facility to a Member, subject to the provisions of this Manual and all other applicable rules and regulations.
- d) The Cooperative will negotiate a power purchase agreement with a Member with a DG facility that is a QF, subject to the provisions of this Manual and all other applicable rules and regulations.

- e) The Cooperative may negotiate a power purchase agreement with a Member with a DG facility that is a NQF.

4) Size Category

- a) Facilities 100 kW and smaller

- (1) Facilities  $\leq 100$  kW of connected generation will be placed in this size category unless the Member requests connection under the  $> 100$  kW and  $\leq 1$  MW size category.

- b) Facilities above 100 kW and below 1 MW

- (1) Facilities  $> 100$  kW and  $< 1$  MW of connected generation will be placed in this size category. Facilities  $\leq 100$  KW may be placed in this size category if so requested by the Member.

- c) Facilities above 1 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 or facilities in parallel with the Cooperative's electric distribution system must notify the Cooperative of the existence, location and category of the DG facility.

2) Service Request

- a) In advance of any request for an interconnection, the Member must contact the Cooperative and complete the "Cooperative Application for DG Interconnection and Parallel Operation" (see Exhibit C)
- b) A separate form must be submitted for each DG facility and each location.

3) Submittal of 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 Plans to be prepared by a Professional Engineer registered in the State of Texas.
- b) Prior to review of the application and DG Plan by the Cooperative, the Member may be required to pay an application fee as indicated below. A separate fee must be submitted for each DG facility.
- c) In the case of DG facilities (i) to be operated in parallel with the Cooperative’s electric distribution system, (ii) with no intention to export power to the Cooperative and (iii) are of standard manufacture and 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.

DG Size (Connected Generation)	Application Fee	Additional Engineering Fee
< 5 kW	\$200	None
5 kW to 100 kW	\$200	As Required
100 kW to 1 MW	\$400	As Required
Over 1 MW	Not Applicable	

**III. COOPERATIVE REVIEW PROCESS**

1) Plan Review Process

- a) The Cooperative and its Power Supplier, if requested by 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 Standard 1547 Guide for Distributed Generation Interconnection*.
- 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 costs 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 disclaims any expertise or special knowledge relating to the design or performance of such generating installations and does not warrant the efficiency, cost-effectiveness, safety, durability, or reliability of such DG facilities and 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 its 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 facility adversely affects the Cooperative and/or its Power Supplier's delivery system, the Member will be responsible to reimburse the Cooperative and/or its Power Supplier 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 any QFs or NQF where the Member desires to export power:

- a) All DG facilities will be connected 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) All applicable rates and charges included in the Cooperative's rate tariffs shall apply to a DG facility in addition to any special charges listed in the tariff.
- d) The Member shall pay all rates and charges so listed.
- e) The Cooperative is under no obligation to purchase power from a NQF.

2) For QF  $\leq$  100 kW where the Member desires to export power:

- a) No net metering shall be used.
- b) 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.
- c) The Cooperative shall credit the Member's account 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 at the Cooperative's avoided cost.
- d) The Member shall sign an approved contract for interconnection service with the Cooperative.
- e) In addition to all other charges, the Cooperative may bill the Member for any additional facilities charges as determined in the contract for service.
- f) The Cooperative may, at its sole discretion, purchase power from an NQF under the terms of this section.

- 3) For QF > 100 kW 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 supplied to the Member by the Cooperative and the energy supplied to the Cooperative by the Member.
  - b) An approved load profile meter shall be used which can be remotely read by the Cooperative and/or its Power Supplier through an approved communications link. If the site selected makes the installation of an approved communications link not feasible, 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 credit the Member's account 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 at the Cooperative's avoided cost.
  - f) The Member shall sign approved contracts for Interconnection of Distributed Generation with the Cooperative as required.
  - g) In addition to all other charges, the Cooperative may bill the Member for any additional facilities charges as determined in the contract for service and the Cooperative's tariffs.
  - h) The Cooperative may, at its sole discretion, purchase power from a NQF under the terms of this section.
- 4) The Cooperative shall not be required to make any purchases that will cause the Cooperative to not be in compliance with any applicable contracts or requirements with its power suppliers.

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

- 1) Line Extension and Modifications to Cooperative's 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 its electric delivery

systems in order to serve the Member's DG facilities and/or purchase or continue to purchase the Member's output from the Member's DG facility, or because the quality of the power provided by the Member's DG facility adversely affects the Cooperative and/or its Power Supplier's delivery system, the Member will be responsible to 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 distribution facilities serving the DG installation or the Member's premises or location such that metering equipment, transformers and/or any other Member-owned equipment must be changed, 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 padlock.
- f) Section VII of this Manual includes additional detail and operational and safety requirements. The Member will follow all requirements of Section VII of these Guidelines prior to and during operation of the Member's DG facility.

## 2) Applicable Regulations

- a) The Member shall comply with all applicable tariffs, policies and procedures of the Cooperative and/or its Power Supplier. (DG tariffs, policies and procedures included.)
- b) The Member shall comply with all applicable laws, ordinances rules and regulations of any federal, county, state, and/or local authority, including, but not limited to: the most recent *IEEE Standard 1547 Guide for Distributed Generation Interconnection*, applicable ANSI standards, including ANSI C84.1 Range A relating to installation, safety, easements, code restrictions, operation and other matters.
- c) The Member shall be solely responsible for compliance with all applicable environmental laws, requirements and regulations, including but not limited to reporting and permits.

## 3) Liability Insurance

### a) Facilities larger than 100 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.
- (2) The amount of such insurance coverage shall be not less than \$500,000 per occurrence. This amount may be increased at the sole discretion of the Cooperative, if the nature of the project so requires.

- (3) The certificate shall provide that the insurance policy will not be changed or canceled during its term without thirty (30) 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 and at any time upon request.

#### 4) Contracts

##### a) Interconnection Contract

- (1) The Member must sign and deliver to the Cooperative an interconnection contract substantially in the form as shown in Exhibit I or II.

##### b) Purchase Power Contract (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)  $\leq 100$  kW: As outlined in the Cooperative's tariffs
- (2)  $> 100$  kW and  $\leq 1$  MW: The Member will sign and deliver a power purchase contract with the Cooperative based on avoided cost data in the Cooperative tariff.
- (3)  $> 1$  MW: DG facilities of this size are not covered by this manual and will be considered by the Cooperative and its Power Supplier on a case-by-case basis.
- (4) The Cooperative will provide the required contract forms with the 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 the installation of the interconnection for the DG facilities. The interconnection will be completed as soon as practical after completion of the review process and execution of the necessary 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. Any review 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 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 any 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**

### **1) Purpose**

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

### **2) 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 on the Member's side of the point of common coupling as defined by the IEEE.
- b) Exceptions include Cooperative-owned metering equipment and transformers.

### **3) 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 the DG facilities operated in parallel with the Cooperative's electric distribution system.
- b) Member's equipment will have capability to both establish and maintain synchronism, and to automatically disconnect and isolate the DG facility from the Cooperative's electric distribution 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's electric distribution 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 installation and/or the Cooperative system characteristics so warrant.

4) Quality of Service

- a) Member's DG facility will generate power at the nominal voltage of the Cooperative's electric distribution system at the Member's delivery point as defined by ANSI C84.1 Range A.
- b) Member's DG facility 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) 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's electric distribution system is not adversely affected in any manner.
- e) 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, reimburse the Cooperative for required correction, or be disconnected from the Cooperative's electric distribution system.

5) 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 padlock owned by the Cooperative.
- 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 facility 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's 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 location of 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 unless visibly disconnected from the Cooperative's system.
- i) In the event the Cooperative loses power to the line serving a Member's DG facilities for any reason, any Member with DG facilities which are intended to export power shall not operate its DG facilities unless disconnected from the Cooperative's system.

6) 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 or other service requirements. Such entry onto the Member's property may be without prior 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.

7) Modification of the Cooperative's Distribution System

- a) 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 its 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 and/or its Power Supplier's delivery system, the Member will be responsible to reimburse the Cooperative and/or its Power Supplier for all costs of modifications required for the interconnection of the Member's DG facilities.

8) 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 facilities except:
  - (1) When the negligence of the Cooperative or its agent or agents was the sole proximate cause of injuries, including death therefrom, to Member or to employees of Member or in the case of a residential Member, to all people of the household, and
  - (2) As to all other injuries and damages, to the extent that injuries or damages are proximately caused by or result in whole or in part from:

- (a) Any negligence of the Cooperative or its agent or agents independent of and unrelated to the maintenance of Cooperative facilities or any condition on Member's premises, or
  - (b) The breach by the Cooperative of any provision of any contract regarding purchase and/or sale of electrical energy or service between the Member and the Cooperative.
- 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. For claims resulting from failures, interruptions, or voltage and waveform fluctuations occasioned in whole or in part by the negligence of the Cooperative or its agent or agents, the Cooperative shall be liable only for that portion of the damages arising from personal injury, death of persons, or costs of necessary repairs to or reasonable replacement of electrical equipment proximately caused by the negligent acts of the Cooperative or its agent or agents. **ALL PROVISIONS NOTWITHSTANDING, IN NO EVENT SHALL THE COOPERATIVE BE LIABLE TO THE MEMBER FOR ANY INTEREST, LOSS OF ANTICIPATED REVENUES, EARNINGS, PROFITS, 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.**

9) Metering/Monitoring

- a) The Cooperative shall specify, install and own all metering equipment, with exception of the DG production meter socket
- b) DG facilities  $\leq$  100 kW

The DG facility will be metered by installing a meter which measures the flow of energy in each direction and a meter that measures all production of the DG

- c) DG facilities  $>$  100 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 and/or its Power Supplier.
  - (2) There shall be no net metering.



(3) The meter shall be read at a time or times of month determined at the Cooperative's sole discretion for remotely 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.

- d) DG facilities > 1 MW (Not covered by this Manual)
- e) The Cooperative may, at its sole discretion, require the Member to reimburse the Cooperative 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 DG facility at primary or secondary level.

10) 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's system, the Member shall immediately correct such conditions or be subject to immediate disconnection from the Cooperative's 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 of generator used, will require a new application process, including, but not limited to, application form, application fee, DG Plan and DG Plan review by the Cooperative.

11) 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 DG facilities 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.

12) Disconnection of Service

The Cooperative may, at its sole discretion, discontinue 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.

13) 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 the industry standard prudent engineering practices.

**COOPERATIVE AGREEMENT  
FOR INTERCONNECTION OF DISTRIBUTED GENERATION**

**SHORT FORM CONTRACT**

This Interconnection Agreement ("Agreement") is made and entered into this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by Hamilton County Electric Cooperative Assn., a corporation organized under the laws of the state of Texas, and \_\_\_\_\_ ("DG Owner/Operator"), each hereinafter sometimes referred to individually as "Party" or both referred to collectively as the "Parties". In consideration of the mutual covenants set forth herein, the Parties agree as follows:

The provisions of the Cooperative's Distributed Generation Manual shall be considered to be a part of this contract.

This agreement provides for the safe and orderly operation of the electrical facilities interconnecting the DG Owner/Operator's facility at \_\_\_\_\_

\_\_\_\_\_ and the electrical distribution facility owned by the Cooperative.

This Agreement does not supersede any requirements of any applicable tariffs in place between the DG Owner/Operator and the Cooperative.

1. **Intent of Parties:** It is the intent of the DG Owner/Operator to interconnect an electric power generator to the Cooperative's electrical distribution system.

It is the intent of the Cooperative to operate the distribution system to maintain a high level of service to their customers and to maintain a high level of power quality.

It is the intent of both parties to operate the facilities in a way that ensures the safety of the public and their employees.

3. **Operating authority:** The DG Owner/Operator is responsible for establishing operating procedures and standards within their organization. The operating authority for the DG Owner/Operator shall ensure that the Operator in Charge of the generator is competent in the operation of the electrical generation system and is aware of the provisions of any operating agreements and regulations relating to the safe operation of electrical power systems.

The operating authority for the DG Owner/Operator is:

Name or title of operating authority \_\_\_\_\_

Address \_\_\_\_\_

Phone number \_\_\_\_\_

4. **Operator in Charge:** The operator in charge is the person identified by name or job title responsible for the real time operation of all electrical facilities related to the interconnection and owned by their organization.

The operator in charge for the DG Owner/Operator is:

Name or title of operating authority \_\_\_\_\_

Address \_\_\_\_\_

Phone number \_\_\_\_\_

**5. Limitation of Liability and Indemnification:**

- a. Notwithstanding any other provision in this Agreement, with respect to the Cooperative's provision of electric service to DG Owner/Operator and the services provided by the Cooperative pursuant to this Agreement, Cooperative's liability to DG Owner/Operator shall be limited as set forth in the Cooperative's tariffs and terms and conditions for electric service, which are incorporated herein by reference.
- b. Neither Cooperative nor DG Owner/Operator shall be liable to the other for damages for any act or omission that is beyond such party's control, including, but not limited to, any event that is a result of an act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm, flood, explosion, breakage or accident to any part of the System or to any other machinery or equipment, a curtailment, law, order, or regulation or restriction by governmental, military, or lawfully established civilian authorities.
- c. Notwithstanding Paragraph 5.b of this Agreement, the DG Owner/Operator shall assume all liability for, and shall indemnify Cooperative for, any claims, losses, costs, and expenses of any kind or character to the extent that they result from DG Owner/Operator's negligence or other wrongful conduct in connection with the design, construction or operation of the Facilities or Interconnection Facilities. Such indemnity shall include, but is not limited to, financial responsibility for (a) monetary losses; (b) reasonable costs and expenses of defending an action or claim; (c) damages related to death or injury; (d) damages to property; and (e) damages for the disruption of business. This paragraph does not create a liability on the part of the DG Owner/Operator to the Cooperative or a third person, but requires indemnification where such liability exists.
- d. Cooperative and DG Owner/Operator shall each be responsible for the safe installation, maintenance, repair and condition of their respective lines, wires, switches, or other equipment or property on their respective sides of the Point of Interconnection. The Cooperative, while retaining the right to inspect, does not assume any duty of inspecting the DG Owner/Operator's lines, wires, switches, or other equipment or property and will not be responsible therefore. DG Owner/Operator assumes all responsibility for the electric service supplied hereunder and the facilities used in connection therewith at or beyond the Point of Interconnection.
- e. For the mutual protection of the DG Owner/Operator and the Cooperative, only with Cooperative prior written authorization are the connections between the Cooperative's service wires and the DG Owner/Operator's service entrance conductors to be energized.

**6. Metering:** Metering shall be accomplished as described in the Cooperative's DG Manual.

7. **Insurance:** Insurance shall be required as described in the Cooperative's DG Manual.
8. **Suspension of Interconnection:** It is intended that the interconnection should not compromise the Cooperative's protection or operational requirements. The operation of the DG Owner/Operator's System and the quality of electric energy supplied by the DG Owner/Operator shall meet the standards as specified by the Cooperative. If the operation of the DG Owner/Operator's system or quality of electric energy supplied (in the case of power export) does not meet the standards as specified, then (the Cooperative) will notify the DG Owner/Operator to take reasonable and expedient corrective action. The Cooperative shall have the right to disconnect the DG Owner/Operator's System, until compliance is reasonably demonstrated. Notwithstanding, the Cooperative may in its sole discretion disconnect the DG Owner/Operator's generating plant from the Distribution Facility without notice if the operating of the Generating Plant may be or may become dangerous to life and property.
9. **Compliance with Laws, Rules and Tariffs:** Both the Cooperative and the DG Owner/Operator shall be responsible for complying with all applicable laws, rules and regulations, including but not limited to the laws of the state of Texas, and the Cooperative's DG Manual, Tariffs, Rules and Regulations, By-Laws and other governing documents. The interconnection and services provided under this Agreement shall at all times be subject to the terms and conditions set forth in the tariff schedules and rules of the Cooperative as applicable to the electric service provided by the Cooperative, which tariffs and rules are hereby incorporated into this Agreement by this reference. The Cooperative shall have the right to publish changes in rates, classification, service or rule, with the proper notification to all DG owners/operators and Cooperative members.
10. **Maintenance Outages:** Maintenance outages will occasionally be required on the Cooperative's system, and the Cooperative will provide as much notice and planning as possible to minimize downtime. It is noted that in some emergency cases such notice may not be possible. Compensation will not be made for unavailability of Cooperative's facilities due to outages.
11. **Access:** Access is required by the Cooperative to the DG Owner/Operator's plant site for maintenance, operating and meter reading. The Cooperative reserves the right, but not the obligation, to inspect the DG Owner/Operator's facilities.
12. **Force Majeure:** For the purposes of this Agreement, a Force Majeure event is any event: (a) that is beyond the reasonable control of the affected party; and (b) that the affected party is unable to prevent or provide against by exercising reasonable diligence, including the following events or circumstances, but only to the extent that they satisfy the preceding requirements: acts of war, public disorder, rebellion or insurrection; floods, hurricanes, earthquakes, lightning, storms or other natural calamities; explosions or fires; strikes, work stoppages or labor disputes; embargoes; and sabotage. If a Force Majeure event prevents a party from fulfilling any obligations under this agreement, such party will promptly notify the other party in writing and will keep the other party informed on a continuing basis as to the scope and duration of the Force Majeure event. The affected party will specify the circumstances of the Force Majeure event, its expected duration and the steps that the affected party is taking to mitigate the effect of the event on its performance. The affected party will be entitled to suspend or modify its performance of obligations under this Agreement but will use reasonable efforts to resume its performance as soon as possible.

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

The Cooperative may, at its sole discretion, prevent the interconnection, or disconnect the interconnection, of any 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.

### **I. OPERATION OF PARALLEL FACILITY**

#### 1) Purpose

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

#### 2) 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 on the Member's side of the point of common coupling as defined by the IEEE.
- b) Exceptions include Cooperative-owned metering equipment and transformers.

#### 3) 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 the DG facilities operated in parallel with the Cooperative's electric distribution system.
- b) Member's equipment will have capability to both establish and maintain synchronism with the Cooperative's system and to automatically disconnect and isolate the DG facility from the Cooperative's 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's 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 installation and/or the Cooperative system characteristics so warrant.

#### 4) Quality of service

- a) Member's DG facility will generate power at the nominal voltage of the Cooperative's electrical distribution system at the Member's delivery point as defined by ANSI C84.1 Range A.
- b) Member's DG facility 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) 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's electric distribution system is not adversely affected in any manner.
- e) 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, reimburse the Cooperative for required correction, or be disconnected from the Cooperative's system.

5) 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 padlock owned by the Cooperative.
- 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 facility 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's 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 location of 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 unless visibly disconnected from the Cooperative's system.
- i) In the event the Cooperative loses power to the line serving a Member's DG facilities for any reason, any Member with DG facilities which are intended to export power shall not operate its DG facilities unless disconnected from the Cooperative's system.

6) 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 or other DG and/or service requirements. Such entry onto the Member's property may be without prior 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.

7) Modification of the Cooperative's System

- a) 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 its 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 and/or its Power Supplier's delivery system, the Member will be responsible to reimburse the Cooperative and/or its Power Supplier for all costs of modifications required for the interconnection of the Member's DG facilities.
- b) 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 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 installation.

8) 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 facilities except:
  - (1) When the negligence of the Cooperative or its agent or agents was the sole proximate cause of injuries, including death therefrom, to Member or to employees of Member or in the case of a residential Member, to all people of the household, and
  - (2) As to all other injuries and damages, to the extent that injuries or damages are proximately caused by or result in whole or in part from:
    - (a) Any negligence of the Cooperative or its agent or agents independent of and unrelated to the maintenance of Cooperative facilities or any condition on Member's premises, or
    - (b) The breach by the Cooperative of any provision of any contract regarding purchase and/or sale of electrical energy or service between the Member and the Cooperative.



- 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. For claims resulting from failures, interruptions, or voltage and waveform fluctuations occasioned in whole or in part by the negligence of the Cooperative or its agent or agents, the Cooperative shall be liable only for that portion of the damages arising from personal injury, death of persons, or costs of necessary repairs to or reasonable replacement of electrical equipment proximately caused by the negligent acts of the Cooperative or its agent or agents. **ALL PROVISIONS NOTWITHSTANDING, IN NO EVENT SHALL THE COOPERATIVE BE LIABLE TO THE MEMBER FOR ANY INTEREST, LOSS OF ANTICIPATED REVENUES, EARNINGS, PROFITS, 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.**

9) Liability Insurance

a) Facilities larger than 100 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.
- (2) The amount of such insurance coverage shall be not less than \$500,000 per occurrence. This amount may be increased at the sole discretion of the Cooperative if the nature of the project so requires.
- (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.

10) Metering/Monitoring

a) The Cooperative shall specify, install and own all metering equipment, with exception to the DG production meter socket.

b) DG facilities  $\leq$  100 kW

The DG facility will be metered by installing a meter which measures the flow of energy in each direction and a meter that measures all DG production

c) DG facilities > 100 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 and/or its Power Supplier.
- (2) There shall be no net metering.
- (3) The meter shall be read at a time or times of month determined at the Cooperative's sole discretion for remotely 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.

d) DG facilities > 1 MW (Not covered by this Manual)

- e) The Cooperative may, at its sole discretion, require the Member to reimburse the Cooperative 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 DG facility at primary or secondary level.

11) 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's system, the Member shall immediately correct such conditions or be subject to immediate disconnection from the Cooperative's 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 of generator used, will require a new application process, including, but not limited to, application form, application fee, DG Plan and DG Plan review by the Cooperative.

12) 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 DG facilities 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.

13) Disconnection of Service

The Cooperative may, at its sole discretion, discontinue 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.

14) Compliance With Laws, Rule 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 the industry standard prudent engineering practices.

**15) Term:** This document is intended to be valid for a period of two (2) years. It may be canceled by either party with 30 days notice to the other party.

AGREED TO BY

DG Owner/Operator

Cooperative

\_\_\_\_\_  
Name

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date



**EXHIBIT A**  
**DESCRIPTION OF FACILITIES AND POINT OF INTERCONNECTION**

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

**EXHIBIT B**

**FACILITIES SCHEDULE NO.**

[The following information is to be specified for each Point of Interconnection, if applicable]

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

[COOPERATIVE NAME]

[DG OWNER/OPERATOR NAME]

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

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

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

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

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

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

**EXHIBIT C**

**ELECTRIC COOPERATIVE**

Application for Operation of Member-Owned Distributed 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 Member's Distributed Generation (DG) facility. Every effort should be made by the Member to supply as much information as possible.*

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**PART 1  
OWNER/APPLICANT INFORMATION**

Applicant: \_\_\_\_\_

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 DISTRIBUTED 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's interconnection for the DG facility. 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 DG INSTALLATION AND OPERATION**

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

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**PART 2**

(Complete all applicable items. Copy this page as required for each DG facility.)

**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-Amp \_\_\_\_\_  
 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: \_\_\_\_\_

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**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<sup>o</sup>): \_\_\_\_\_  
 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.-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

