



Victoria Electric Cooperative

Your Touchstone Energy® Cooperative 

# **Distributed Generation (DG) Procedures & Guidelines Manual for Members**

NOVEMBER 2020



# Table of Contents

- I. GENERAL..... 1
- II. DETERMINE THE CATEGORY OF DISTRIBUTED GENERATION (DG) FACILITY ..... 2
  - 1) Connection Level Category..... 2
  - 2) Cooperative Contact Information ..... 2
  - 3) Ownership of Facilities ..... 2
  - 4) Power Export Category..... 2
  - 5) Qualifying or Non-Qualifying Category ..... 3
- III. MEMBER’S INITIAL REQUIREMENTS ..... 3
  - 1) Notification ..... 3
  - 2) Service Request..... 3
  - 3) Submit a DG Plan ..... 4
  - 4) Service Study..... 4
- IV. COOPERATIVE AND POWER SUPPLIER REVIEW PROCESS ..... 5
  - 1) Plan Review Process ..... 5
- V. SALES TO AND PURCHASES FROM A DG FACILITY ..... 6
- VI. MEMBER’S RESPONSIBILITY PRIOR TO OPERATION ..... 7
  - 1) Line Extension and Modifications to Cooperative Facilities ..... 7
  - 2) Applicable Regulations ..... 7
  - 3) Liability Insurance ..... 7
  - 4) Contracts..... 8
  - 5) Initial Interconnection ..... 8
- VII. OPERATION OF PARALLEL FACILITY ..... 8
  - 1) Purpose ..... 8
  - 2) Pre-certified Equipment..... 9
  - 3) General Interconnection and Protection Requirements..... 9
  - 4) Manual Disconnect ..... 9
  - 5) Prevention of Interference ..... 9
  - 6) Access ..... 12
  - 7) Liability for Injury and Damages..... 12
  - 8) Metering/Monitoring ..... 13
  - 9) Notice of Change in Installation..... 13
  - 10) Testing and Record Keeping..... 13
  - 11) Disconnection and Reconnection of Service..... 14
  - 12) Compliance with Laws, Rules and Tariffs..... 14
- AGREEMENT FOR INTERCONNECTION AND PARALLEL OPERATION OF DISTRIBUTED GENERATION ..... 15
- EXHIBIT A: DESCRIPTION OF FACILITIES AND POINT OF INTERCONNECTION ..... 21
- FACILITIES SCHEDULE NO. .... 23
- Application for Operation of Member-Owned Generation ..... 25
- Distributed Generation Rider Application ..... 29
- Drawing Examples ..... 30



## I. GENERAL

In order to receive service from Victoria Electric Cooperative, Inc. (“the 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 qualifying Distributed Generation (DG), provided the Member’s DG facility does not adversely affect the Cooperative, is less than 700 kW in size, and is rated to produce an amount of electricity less than or equal to the amount of electricity the Member for whom the DG is installed is reasonably expected to consume. 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*, the *Policies and Procedures* of the Cooperative’s power supplier where applicable, the *Policies and Procedures* of the Cooperative’s transmission service provider where applicable, the current *IEEE 1547 Standard Guide for Distributed Generation Interconnection* (a copy is on file at the Cooperative for inspection along with information so the Member may obtain his/her own copy), other applicable IEEE standards, applicable ANSI standards, including ANSI C84.1 Range A and any other applicable governmental and regulatory laws, rules, ordinances or requirements. All legal, technical, financial, etc. requirements in the following sections of this 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 700 kW and facilities rated to produce an amount of electricity greater than the amount of electricity the Member for whom the DG is installed is reasonably expected to consume are not covered by this Manual and will be considered by the Cooperative on a non-discriminatory case-by-case basis.

## II. DETERMINE THE CATEGORY OF DISTRIBUTED GENERATION (DG) 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 South Texas Electric Cooperative (STEC) system, the Cooperative's Power Supplier  
The Member requests and/or the Member's DG facility requires connection to STEC system. This Manual does NOT cover this category. The Member should contact STEC directly.

### 2) Cooperative Contact Information

All matters related to DG interconnection shall be directed to the Cooperative's Engineering Department.

Victoria Electric Cooperative, Inc. – Engineering Department  
5502 US Hwy 59 N  
Victoria, TX 77902  
(361) 573-2428  
engineering@victoriaelectric.coop

### 3) Ownership of Facilities

The Member shall either 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, or contract with another person to finance, install, or maintain facilities on the Member's side of the meter, regardless of whether the Member takes ownership of the installed distributed generation.

### 4) Power Export Category

- a) Parallel – power generated to be wholly consumed with no power export.  
The Member operates a DG facility connected in any way to the Cooperative's system but with no intention to export power.
- b) Parallel – power generated to be both exported and consumed.  
The Member operates a DG facility connected in any way to the Cooperative's system rated to produce an amount of electricity less than or equal to the amount of electricity the Member for whom the DG is installed is reasonably expected to consume with the intention to export excess power.
- c) Parallel – power generated to be exported only.  
The Member operates a DG facility where either the power generated is intended for export only or where the DG facility is rated to produce an amount of electricity greater than the amount of electricity the Member for whom the DG is installed is reasonably expected to consume. This manual does not cover this category. The Cooperative will consider applications for service under this category on a case-by-case basis.

## 5) Qualifying or Non-Qualifying Category

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.

The distinction between QF and Non-Qualifying Facilities (NQF) mainly deals with fuel use.

A QF is defined as electric generation with a capacity of not more than 2 MW provided by renewable energy technology, as defined by PURPA, installed on a retail electric customer's (Member's) side of the meter. In general, this means that the DG must have as its primary energy source biomass, waste, renewable resources, geothermal resources or any combination. See PURPA for a full description

Solar electric equipment installed on the Member's side of the meter at a building or other facility owned or operated by an independent school district, irrespective of the level of generation capacity shall be considered as a QF, but is not covered by the provisions of this Manual if greater than 700 kW.

DG facilities not designated as QF under the provisions of PURPA will be considered NQF by the Cooperative.

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.

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.

The Cooperative may choose to provide interconnection and may choose to purchase power from a Member with a DG facility that is a NQF at the sole discretion of the Cooperative as determined on a non-discriminatory case-by- case basis.

## III. MEMBER'S INITIAL REQUIREMENTS

### 1) Notification

- a) The Member must meet the requirements of all Cooperative tariffs, conditions of service, membership and other service rules and regulations in addition to the requirements in this Manual.
- b) The rated capacity of the Member's DG must not exceed the Cooperative's service capacity.
- c) Anyone owning or operating a DG facility in parallel with the Cooperative's system as defined in this Manual must notify the Cooperative of the existence, location and category of the DG facility, whether the Member intends to export power to the Cooperative or not.

### 2) Service Request

- a) In order to interconnect a DG facility to the Cooperative system, a Member shall first submit to the Cooperative the "Cooperative Application for Interconnection and Parallel Operation of Distributed Generation," included in this Manual at least sixty (60) days prior to the desired interconnection date.
- 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 general plan of the proposed interconnection showing the electrical design of the generating installation including all major equipment for interconnection with the Cooperative’s system (the “DG plan”). Drawing examples are provided for reference in the appendix of this Manual. 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 licensed in the State of Texas.
- b) For multiple facilities, a separate application including any required application fees shall be submitted by the Member for each interconnection point desired.
- c) The Member shall provide such additional information as may be reasonably requested and required by the Cooperative to evaluate the DG plan.
- d) The Cooperative may, at its sole discretion, waive the required application fee and other provisions of this manual in the case of a proposed generation installation which is planned (i) to be operated in parallel with the Cooperative’s system, (ii) with no intention to export power to the Cooperative and (iii) that are of standard design and intended entirely as an emergency or back-up power supply for the Member.
- e) The paid, non-refundable application fee indicated below is required prior to the Cooperative processing the Member’s application.

DG Size (Connected Load)	Application Fee (\$)	Additional Engineering Fee (\$)
0 kW to 10 kW	50.00	None
> 10 kW to 50 kW	100.00	As Required
> 50 kW to 700 kW	250.00	As Required
> 700 kW	Not covered by this Manual	

### 4) Service Study

The Cooperative and its Power Supplier, if requested by the Cooperative, may conduct a service study, coordination study and/or utility system impact study prior to interconnection of a DG facility. See the section on Pre- Interconnection Studies that follows.

- a) DG facilities for which no pre-interconnection study fee may be charged the Cooperative will not charge a Member a fee to conduct a pre- interconnection study for pre-certified DG units up to 500 kW that export not more than 15% of the total load on a single radial feeder and contribute not more than 25% of the maximum potential short circuit current on a single radial feeder. All other DG facilities may be charged a fee to offset the costs incurred in a pre-interconnection study.
- b) DG facilities for which pre-interconnection study fees may be charged Prior to the interconnection of a DG facility for which a pre-interconnection study fee may be charged, the Cooperative may charge a Member a fee to offset its costs incurred in a pre-interconnection study.
  - i) In the case of DG facilities (1) to be operated in parallel with the Cooperative’s system, (2) with no intention to export power to the Cooperative and (3) that are of standard design and intended entirely as emergency or back-up power supply for the facility, the Cooperative may waive the application fee.

- ii) The Member shall receive an estimate of the study cost before the Cooperative initiates the study.

## IV. COOPERATIVE AND POWER SUPPLIER REVIEW PROCESS

### 1) Plan Review Process

#### a) General

The Cooperative and/or its Power Supplier, South Texas Electric Cooperative (STEC), if requested by the Cooperative, may conduct a service study, coordination study and/or utility system impact study prior to interconnection of a DG facility. In instances where the studies are deemed necessary, the scope of such studies shall be based on the characteristics of the particular DG facility to be interconnected and the Cooperative's system at the specific proposed location. By agreement between the Cooperative and the Member, studies related to interconnection of a DG facility on the Member's premises may be conducted by a qualified third party. The Member will be required to reimburse the Cooperative for the full amount of the interconnection study in addition to any application fee(s).

#### b) Technical Review

The technical review will be consistent with guidelines established by the most recent IEEE Standard 1547 *Standard for Interconnecting Distributed Resources with Electric Power Systems*. The Member may be required by the Cooperative to provide proof that the Member's DG facilities have been tested and certified by applicable IEEE guidelines.

#### c) Non-standard Equipment/Design

Should the Member's DG plan involve the use of non-standard equipment or design techniques, the Cooperative may require the member to obtain the approval of the proposed plan by a Professional Engineer licensed in the State of Texas.

#### d) Time to complete

The Cooperative will complete the interconnection study and/or review of the DG plan within sixty (60) days following the receipt of a completed application and payment of any required fees. If corrections or changes to the plans, specifications and other information are made by the Member, the 60-day period may be reinitialized when such changes or corrections are provided to the Cooperative. Moreover, any changes to the site or project requiring new analyses 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.

#### e) Reporting

The Cooperative shall prepare written reports of the study findings and make them available to the Member.

#### f) Network service

Network service is defined as two or more Cooperative primary distribution feeder sources electrically tied together on the secondary or low voltage side to form one power source for one or more Members. The service is designed to maintain service to the Members even after the loss of one of these primary distribution feeder sources. In the event that a DG facility requests interconnection to a secondary network system, additional requirements may apply.

g) Communications

The Cooperative and the Member agree to treat knowledge gained as a result of the application and/or interconnection studies about the other party as confidential.

h) Liability

The Member acknowledges and agrees that any review or acceptance of any plan submitted shall not impose any liability on the Cooperative and does not guarantee the adequacy of the Member's equipment 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.

i) Non-discrimination

All applications for interconnection and parallel operation shall be processed by the Cooperative in a non-discriminatory manner. Applications will be processed in the order that they are received. It is recognized that certain applications may require minor modifications while they are being reviewed by the Cooperative. Such minor modifications to a pending application shall not require that it be considered incomplete and treated as a new or separate application.

## V. SALES TO AND PURCHASES FROM A DG FACILITY

For QF less than 700 kw and rated to produce an amount of electricity less than or equal to the amount of electricity the Member for whom the DG is installed is reasonably expected to consume and where the Member desires to export power:

- 1) The Cooperative shall bill the Member for the energy supplied by the Cooperative during each billing period according to the Cooperative's applicable retail rate schedule.
- 2) Energy supplied by the Member to the Cooperative's system exceeding on site consumption shall be purchased by the Cooperative at the Cooperative's avoided cost of generation.
- 3) The Member shall sign an approved contract for interconnection service with the Cooperative.
- 4) 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.
- 5) The Cooperative may, at its sole discretion, as determined on a case-by-case non-discriminatory basis, purchase power from an NQF.
- 6) The type of metering to be used shall provide data so the Cooperative can determine the energy supplied to the Member by the Cooperative in excess of on-site consumption and the energy supplied to the Cooperative by the Member.
- 7) 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) unless required by law or state regulation.
- 8) Any renewable energy credits (RECs) resulting from the operation of the DG are the property of the DG Member unless sold or otherwise transferred by the Member.

## VI. MEMBER'S RESPONSIBILITY PRIOR TO OPERATION

### 1) Line Extension and Modifications to Cooperative Facilities

- a) If interconnection of a particular DG facility will require substantial capital upgrades to the Cooperative's system, the Cooperative shall provide the Member with an estimate of the schedule and Member's cost for the upgrade. If the Member desires to proceed with the upgrade, the Member and the Cooperative will enter into a contract for the completion of the upgrade.
- b) If the Cooperative concludes that an application for interconnection describes facilities that may require additional devices and operating schemes beyond those described in this Manual, the Cooperative shall make those additional requirements known to the Member at the time the interconnection studies are completed.
- c) 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.
- d) Notwithstanding the Cooperative's line extension policy, the Member shall pay the full cost of construction of any transmission, substation, distribution, transformation, metering, protective, or other facilities or equipment which is required to serve the Member's DG facility.
- 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 because the Member's DG and/or the quality of 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.

### 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 Standard 1547 *Standard for Interconnecting Distributed Resources with Electric Power Systems*, 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 Member meeting the standards of this Manual shall not be required to purchase any amount, type or classification of liability insurance the Member would not have in the absence of the DG. However, the Cooperative recommends the Member obtain 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.

## 4) **Contracts**

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

## 5) **Initial Interconnection**

The Member shall provide the Cooperative with a completed application for interconnection and parallel operation with the Cooperative system using the form contained in this Manual. The interconnection of the DG to the Cooperative system shall take place on the following schedule:

- a) The Cooperative will notify the Member upon satisfactory completion of the review process and execution of any required agreements as outlined in this Manual. The Member shall notify the Cooperative in writing at least fourteen (14) days in advance of energizing the DG installation and permit the Cooperative or its agents to inspect and test any or all protective equipment required for the interconnection. The Member shall revise and re-submit the application with information reflecting any proposed modification.
- b) If interconnection of a particular DG facility will require substantial capital upgrades to the Cooperative's system, the Cooperative shall provide the Member with an estimate of the cost for the upgrade and construction schedule. If the Member desires to proceed with the upgrade, the Member and the Cooperative will enter into a contract for its completion. The interconnection shall take place no later than two weeks following the completion of such upgrades.
- c) The Cooperative shall use reasonable efforts to interconnect facilities within the time frames described in this Manual. If in a particular instance the Cooperative determines that it cannot interconnect a DG facility within the time frames stated in this Manual, it will notify the DG Member in writing of that fact. The notification will identify the reason or reasons interconnection could not be performed in accordance with the schedule and provide an estimated date for interconnection.
- d) The Cooperative's review process and any inspections are 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 warranty the efficiency, cost-effectiveness, safety, durability, or reliability of such DG installations.

## VII. OPERATION OF PARALLEL FACILITY

### 1) **Purpose**

The purpose of this section is to describe the requirements and procedures for safe and effective connection and operation of DG.

- a) The Member may operate a 60 Hertz (Hz) three-phase or single-phase DG facility, in parallel with the Cooperative's system pursuant to an interconnection agreement, provided that the equipment meets or exceeds the requirements of this Manual.

- b) This section describes typical interconnection requirements. Certain specific interconnection locations and conditions may require the installation and use of more sophisticated protective devices and operating schemes, especially when the facility is exporting power to the Cooperative's system.

## 2) **Pre-certified Equipment**

Pre-certified equipment may be installed on the Cooperative's system in accordance with an approved interconnection control and protection scheme without further review of their design by the Cooperative, though the protective settings and operations shall be those specified by the Cooperative.

## 3) **General Interconnection and Protection Requirements**

- a) The DG shall be equipped with protective hardware and software designed to prevent the DG from being connected to a de-energized circuit owned by the Cooperative.
- b) The DG shall be equipped with the necessary protective hardware and software designed to prevent connection or parallel operation of the DG with the Cooperative system unless the Cooperative system voltage and frequency are of normal magnitude.
- c) The Member will be responsible for protecting their DG in such a manner that Cooperative system outages, short circuits, or other disturbances including zero sequence currents and ferro resonant over-voltages do not damage the Member's DG. The Member's protective equipment shall also prevent unnecessary tripping of the Cooperative system breakers that would affect the Cooperative system's capability of providing reliable service to other Members.
- d) Circuit breakers or other interrupting devices at the point of common coupling must be capable of interrupting maximum available fault current.

## 4) **Manual Disconnect**

The Member shall furnish and install a single manual disconnect device that has a visual break that is appropriate to the voltage level (a disconnect switch, a draw-out breaker, or fuse block), and is accessible to the Cooperative's personnel, and capable of being locked in the open position. The Member shall follow the Cooperative's switching, clearance, tagging, and locking procedures, which the Cooperative shall provide for the Member.

## 5) **Prevention of Interference**

### a) Voltage

The Member will operate its DG in such a manner that the voltage levels on the Cooperative system are in the same range as if the DG were not connected to the Cooperative system. The Member shall provide an automatic method of disconnecting the DG from the Cooperative system if a sustained voltage deviation in excess of +5% or -10% from normal voltage persists for more than 30 seconds, or a deviation in excess of +10% or -30% from normal voltage persists for more than 10 cycles. The Member may reconnect when the Cooperative system voltage and frequency return to normal range and the system is stabilized.

b) Flicker

The Member's equipment shall not cause excessive voltage flicker on the Cooperative's system. This flicker shall not exceed 3% voltage dip, in accordance with the IEEE Standard 519 as measured at the point of common coupling.

c) Frequency

The operating frequency of the Member's DG shall not deviate more than +0.5 Hz or -0.7 Hz from a 60 Hz base. The Member shall automatically disconnect the DG from the Cooperative system within 15 cycles if this frequency tolerance cannot be maintained. The Member may reconnect when the Cooperative system voltage and frequency return to normal range and the system is stabilized.

d) Harmonics

In accordance with IEEE Standard 519 the total harmonic distortion (THD) voltage shall not exceed 5% of the fundamental 60 Hz frequency nor 3% of the fundamental frequency for any individual harmonic when measuring at the point of common coupling with the utility system.

e) Fault and line clearing

The Member shall automatically disconnect from the Cooperative system within 10 cycles if the voltage on one or more phases falls below -30% of nominal voltage on the Cooperative system serving the Member premises. This disconnect timing also ensures that the DG is disconnected from the Cooperative system prior to automatic re-close of breakers. The Member may reconnect when the Cooperative system voltage and frequency return to normal range and the system is stabilized. To enhance reliability and safety and with the Cooperative's approval, the member may employ a modified relay scheme with delayed tripping or blocking using communications equipment between the Member and the Cooperative.

f) Control, protection and safety protection requirements specific to single phase generators of 50 kW or less connected to the Cooperative's system

Exporting to the Cooperative's system may require additional operational or protection devices and will require coordination of operations with the Cooperative. The necessary control, protection and safety equipment specific to single-phase DG of 50 kW or less connected to secondary or primary systems include an interconnect disconnect device, a generator disconnect device, an over-voltage trip, and under-voltage trip, an over/under frequency trip, and a synchronization check for synchronous and other types of DG with stand-alone capability.

g) Control, protection and safety equipment requirements specific to three-phase synchronous generators, induction generators, and inverter systems

i) Three phase synchronous generators

The Member's DG circuit breakers shall be three-phase devices with electronic or electromechanical control. The Member is solely responsible for properly synchronizing its generator with the Cooperative. The excitation system response ratio shall not be less than 0.5. The generator's excitation system(s) shall conform, as near as reasonably achievable, to the field voltage versus time criteria specified in the ANSI Standard C50.13-1989 in order to permit adequate field forcing during transient conditions.

- ii) Three phase induction generators and inverter systems

Induction generation may be connected and brought up to synchronous speed (as an induction motor) if it can be demonstrated that the initial voltage drop measured on the utility system at the point of common coupling is within the visible flicker stated in this manual. Otherwise, the Member may be required to install hardware or employ other techniques to bring voltage fluctuations to acceptable levels. Line-commutated inverters do not require synchronizing equipment. Self-commutated inverters whether of the utility- interactive type or stand-alone type shall be used in parallel with the utility system only with synchronizing equipment. Direct-current generation shall not be operative in parallel with the utility system.
- h) Protective function requirements
  - i) Facilities rated ten kW or less

Must have an interconnect disconnect device, a generator disconnect device, an over-voltage trip, an under-voltage trip, an over/under frequency trip, and a manual or automatic synchronizing check (for facilities with stand-alone capability).
  - ii) Facilities rated in excess of ten kW but not more than 500 kW

Must have an interconnect disconnect device, a generator disconnect device, an over-voltage trip, and under-voltage trip, and over/under frequency trip, a manual or automatic synchronizing check (for facilities with stand-alone capability), either a ground over-voltage trip or a ground over-current trip depending on the ground system if required by the Cooperative, an reverse power sensing if the facility is not exporting (unless the generator is less than the minimum load of the Member).
  - iii) Facilities rated more than 500 kW

Must have an interconnect disconnect device, a generator disconnect device, an over-voltage trip, and under-voltage trip, and over/under frequency trip, either a ground over-voltage trip or a ground over-current trip depending on the ground system if required by the Cooperative, an automatic synchronizing check (for facilities with stand-alone capability) and reverse power sensing if the facility is not exporting (unless the facility is less than the minimum load of the Member). If the facility is exporting power, the power direction protective function may be used to block or delay the under-frequency trip with the agreement of the Cooperative.
- i) Facilities not identified

In the event the standards for a specific unit or facility are not set out in this manual, the Cooperative and the Member may interconnect a facility using mutually agreed upon technical standards.
- j) Requirements specific to a facility paralleling for 60 cycles or less (closed transition switching)

The protective devices required for facilities 10 MW or less which parallel with the Cooperative system for 60 cycles or less are an interconnect disconnect device, a generator disconnect device, an automatic synchronizing check for generators with stand-alone capability, an over-voltage trip, an under voltage trip, an over/under frequency trip, and either a ground over-voltage trip or a ground over- current trip depending on the grounding system, if required by the Cooperative.

k) Inspection and start-up

The Member shall provide the Cooperative with notice at least two weeks before the initial energizing and start-up testing of the Member's DG equipment and the Cooperative may witness the testing of any equipment and protective systems associated with the interconnection. The Member shall revise and re-submit the application with information reflecting any proposed modification that may affect the safe and reliable operation of the Cooperative system.

l) Site testing and commissioning

Testing of protection systems shall include procedures to functionally test the protective elements of the system up to and including tripping of the generator and interconnection point. Testing will verify all protective set points and relay/breaker trip timing. The Cooperative may witness the testing of installed switchgear, protection and generator. The Member is responsible for routine maintenance of the generator and control and protective equipment. The Member will maintain records of such maintenance activities, which the Cooperative may review at reasonable times. For DG 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.

**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, maintaining right-of-way or other DG facility equipment and/or Cooperative service requirement. Such entry onto the Member's property may be without notice.
- b) If the Member erects or maintains locked gates or other barriers, the Member shall furnish the Cooperative with convenient means to circumvent the barrier for full access for the above-mentioned reasons.

**7) Liability for Injury and Damages**

- a) The Member assumes full responsibility for electric energy furnished at and past the point of delivery 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.

- c) The Member is solely responsible for insuring his/her facility complies with all applicable regulations including, but not limited to, laws, regulations, ordinances, Cooperative and its Power Supplier's tariffs, policies and directives, and ERCOT rules, policies and directives.

## **8) Metering/Monitoring**

- a) The Cooperative may supply, own and maintain all necessary meters and associated equipment to record energy purchases by the Member and energy exports to the Cooperative system.
- b) The Member shall supply at no cost to the Cooperative a suitable location on their premises for the installation of the Cooperative's meters and other equipment.
- c) The facility will be metered by one of the following methods, at the discretion of the Cooperative. The two metered values shall be separately accounted for by the Cooperative.
  - i) Installing a single meter with two registers capable of measuring in-flow and out-flow at the point of common coupling or
  - ii) Installing separate meters, that measure the in-flow and the out-flow at the point of common coupling.
- d) The meter shall be read at a time or times of month determined by the Cooperative for acquiring metering data.
- e) The Cooperative may, at its sole discretion, require the Member to pay the Cooperative any significant differential cost of the metering and monitoring equipment and installation expense beyond that that a standard Member in the same rate class would require.
- 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.

## **9) 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.

## **10) Testing and Record Keeping**

- a) The Cooperative shall maintain records concerning applications received for interconnection and parallel operation of DG facilities. Such records will include the date each application is received, documents generated in the course of processing each application, correspondence regarding each application, and the final disposition of each application.

- b) 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.
- c) The Member will maintain records of all maintenance activities, which the Cooperative may review at reasonable times.

## **11) Disconnection and Reconnection of Service**

- a) The Cooperative may disconnect a DG facility under the following conditions:
  - i) Expiration or termination of the interconnection agreement  
Upon expiration or termination of the interconnection agreement with a Member, in accordance with the terms of the agreement, the Cooperative may disconnect the DG facilities.
  - ii) Non-compliance with technical requirements  
The Cooperative may disconnect a DG facility if the facility is not in compliance with the technical requirements specified in this Manual. Within two business days from the time the Member notifies the Cooperative that the DG facility has been restored to compliance with the technical requirements of this manual, the Cooperative shall verify such compliance. Upon such verification, the Member in coordination with the Cooperative may reconnect the DG facility.
  - iii) System emergency  
The Cooperative may temporarily disconnect a Member and/or a DG facility without prior written notice in cases where continued interconnection will endanger persons or property. During the forced outage of the Cooperative system, the Cooperative shall have the right to temporarily disconnect a Member and/or a DG facility to make immediate repairs on the Cooperative's system. When possible, the Cooperative shall provide the Member with reasonable notice and reconnect the Member as quickly as reasonably practical.
  - iv) Routine maintenance, repairs and modifications  
The Cooperative may disconnect a Member and/or a DG facility with seven business days prior written notice of service interruption for routine maintenance, repairs and Cooperative system modifications. The Cooperative shall reconnect the Member as quickly as reasonably possible following such service interruption.
  - v) Lack of approved application and interconnection agreement  
The Cooperative may refuse to connect or may disconnect a DG facility if the application has not been received and approved.

## **12) 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, Public Utility Commission of Texas (PUCT), Electric Reliability Council of Texas (ERCOT) Independent System Operator (ISO) directives and ERCOT guidelines, and in accordance with industry standard prudent engineering practices.

## VICTORIA ELECTRIC COOPERATIVE, INC.

### AGREEMENT FOR INTERCONNECTION AND PARALLEL OPERATION OF DISTRIBUTED GENERATION

This Interconnection Agreement ("Agreement") is made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, by **Victoria Electric Cooperative, Inc.**, ("Cooperative"), 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:

**1. Scope of Agreement** -- This Agreement is applicable to conditions under which the Cooperative and the DG Owner/Operator agree that one or more generating facilities (described in Exhibit A) owned by the DG Owner/Operator of \_\_\_\_\_ kW or less, to be interconnected at \_\_\_\_\_ V or less ("Facilities") may be interconnected to the Cooperative's electric power distribution system ("System").

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

**2. Establishment of Point of Interconnection** - The point where the electric energy first leaves the wires or facilities owned by the Cooperative and enters the wires or facilities provided by DG Owner/Operator is the "Point of Interconnection." Cooperative and DG Owner/Operator agree to interconnect the Facilities at the Point of Interconnection in accordance with the Cooperative's Rules and Regulations and DG Manual relating to interconnection of Distributed Generation (the "Rules") and as described in the attached Exhibit A. The interconnection equipment installed by the DG Owner/Operator ("Interconnection Facilities") shall be in accordance with the Rules as well

**3. Responsibilities of Cooperative and DG Owner/Operator for Installation, Operation and Maintenance of Facilities** - 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. DG Owner/Operator shall conduct operations of its Facilities in compliance with all aspects of the Rules, and Cooperative shall conduct operations of its electric distribution facilities in compliance with all aspects of the Rules, or as further described and mutually agreed to in the applicable Facilities Schedule. Maintenance of Interconnection Facilities shall be performed in accordance with the applicable manufacturers' recommended maintenance schedule. The DG Owner/Operator agrees to cause its Interconnection Facilities to be constructed in accordance with specifications equal to or better than those provided by the National Electrical Safety Code and the National Electrical Code, both codes approved by the American National Standards Institute, in effect at the time of construction.

The DG Owner/Operator covenants and agrees to cause the design, installation, maintenance, and operation of, its Facilities and Interconnection Facilities so as to reasonably minimize the likelihood of a malfunction or other disturbance, damaging or otherwise affecting or impairing the System. DG Owner/Operator shall comply with all applicable laws, regulations, zoning codes, building codes, safety rules and environmental restrictions applicable to the design, installation and operation of its Facilities and Interconnection Facilities.

Cooperative will notify DG Owner/Operator if there is evidence that the Facilities' operation causes disruption or deterioration of service to other Member(s) served from the System or if the Facilities' operation causes damage to the System. DG Owner/Operator will notify the Cooperative of any emergency or hazardous condition or occurrence with the DG Owner/Operator's Facilities, which could affect safe operation of the System.

**4. Operator in Charge** - The Cooperative and the DG Owner/Operator shall each identify an individual (by name or title) who will perform as "Operator in Charge" of the facilities and their section of the Interconnection Facilities. This individual must be familiar with this Agreement as well as provisions of other agreements and any regulations that may apply.

## **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. Design Reviews and Inspections** - The DG Owner/Operator shall provide to the Cooperative the following documentation and inspection results:

- a. One-Line Diagram. The diagram shall include at a minimum, all major electrical equipment that is pertinent to understanding the normal and contingency operations of the DG Interconnection Facilities, including generators, switches, circuit breakers, fuses, protective relays and instrument transformers.
- b. Testing Records. Testing of protection systems shall be limited to records of compliance with standard acceptance procedures and by industry standards and practices. These records shall include testing at the start of commercial operation and periodic testing thereafter.

**7. Right of Access, Equipment Installation, Removal & Inspection** - The Cooperative may send an employee, agent or contractor to the premises of the DG Owner/Operator at any time whether before, during or after the time the Facility first produces energy to inspect the Interconnection Facilities, and observe the Facility's installation, commissioning (including any testing), startup, and operation.

At all times Cooperative shall have access to DG Owner/Operator's premises for any reasonable purpose in connection with the interconnection described in this Agreement, the Rules, or to provide service to its Members.

**8. Confidentiality of Information** - Unless compelled to disclose by judicial or administrative process, or by other provisions of law or as otherwise provided for in this Agreement, the DG Owner/Operator and the Cooperative will hold in confidence any and all documents and information furnished by the other Party in connection with this Agreement.

**9. Prudent Operation and Maintenance Requirements** - The DG Owner/Operator shall operate and maintain its Facilities and Interconnection Facilities in accordance with industry standards prudent electrical practices in effect at the time a DG Owner/Operator executes an interconnection agreement with the Cooperative.

**10. Disconnection of Unit** - DG Owner/Operator retains the option to disconnect its Facilities from the System, provided that DG Owner/Operator notifies the Cooperative of its intent to disconnect by giving the Cooperative at least thirty (30) days' prior written notice. Such disconnection shall not be a termination of the Agreement unless DG Owner/Operator exercises rights under Section 13.

DG Owner/Operator shall disconnect Facilities from the System upon the effective date of any termination under Section 13.

Subject to the Rules, for routine maintenance and repairs on the System, Cooperative shall provide DG Owner/Operator with seven (7) business days' notice of service interruption.

Cooperative shall have the right to suspend service in cases where continuance of service to DG Owner/Operator will endanger persons or property. During the forced outage of the System serving DG Owner/Operator, Cooperative shall have the right to suspend service to effect repairs on the System, but the Cooperative shall use its efforts to provide the DG Owner/Operator with reasonable prior notice.

**11. Metering** - Metering shall be accomplished as described in the Cooperative's DG Manual.

**12. Insurance** - Insurance shall be required as described in the Cooperative's DG Manual.

**13. Effective Term and Termination Rights** - This Agreement becomes effective when executed by both Parties and shall continue in effect until terminated. This Agreement may be terminated as follows: (a) DG Owner/Operator may terminate this Agreement at any time by giving the Cooperative sixty (60) days written notice; (b) Cooperative may terminate upon failure by the DG Owner/Operator to generate energy from the Facilities in parallel within six (6) months after completion of the interconnection; (c) either Party may terminate by giving the other Party at least thirty (30) days prior written notice that the other Party is in default of any of the terms and conditions of the Agreement or the Rules or any rate schedule, tariff, regulation, contract, or policy of the Cooperative, so long as the notice specifies the basis for termination and there is opportunity to cure the default; (d) Cooperative may terminate by giving DG Owner/Operator at least sixty (60) days notice in the event that there is a material change in an applicable law, or any requirement of the Cooperative's wholesale electric suppliers or any transmission utility, independent system operator or regional transmission organization having responsibility for the operation of any part of the System.

**14. Dispute Resolution** - Each Party agrees to attempt to resolve any and all disputes arising hereunder promptly, equitably and in good faith. If a dispute arises under this Agreement that cannot be resolved by the Parties within forty-five (45) working days after written notice of the dispute, the Parties agree to submit the dispute to mediation by a mutually acceptable mediator. The Parties agree to participate in good faith in the mediation for thirty (30) days. If the parties are unsuccessful in resolving their dispute through mediation, then the Parties shall submit to arbitration pursuant to the Commercial Arbitration Rules of the American Arbitration Association. The venue of such arbitration shall be **VICTORIA COUNTY**.

**15. 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.

**16. Severability** - If any portion or provision of this Agreement is held or adjudged for any reason to be invalid or illegal or unenforceable by any court of competent jurisdiction, such portion shall be deemed separate and independent, and the remainder of this Agreement shall remain in full force and effect.

- a. **Amendment** - This Agreement may be amended only upon mutual agreement of the Parties, which amendment will not be effective until reduced to writing and executed by the Parties.

**17. Entirety of Agreement and Prior Agreements Superseded** - This Agreement, including the Rules and all attached Exhibits and Facilities Schedules, which are expressly made a part hereof for all purposes, constitutes the entire agreement and understanding between the Parties with regard to the interconnection of the facilities of the Parties at the Points of Interconnection expressly provided for in this Agreement. The Parties are not bound by or liable for any statement, representation, promise, inducement, understanding, or undertaking of any kind or nature (whether written or oral) with regard to the subject matter hereof not set forth or provided for herein or in the DG Owner/Operator application, or other written information provided by the DG Owner/Operator in compliance with the Rules. It is expressly acknowledged that the Parties may have other agreements covering other services not expressly provided for herein, which agreements are unaffected by this Agreement.

18. **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, lighting, 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.

19. **Assignment** - At any time during the term of this Agreement, the DG Owner/Operator may assign this Agreement to a corporation, an entity with limited liability or an individual (the "Assignee"), provided that the DG Owner/Operator obtains the consent of the Cooperative in advance of the assignment. The Cooperative's consent will be based on a determination that the Assignee is financially and technically capable to assume ownership and/or operation of the DG unit. The company or individual to which this Agreement is assigned will be responsible for the proper operation and maintenance of the unit, and will be a Party to all provisions of this Agreement.

20. **Permits, Fees and Approvals** - The Cooperative will have responsibility for the review, approval or rejection of the DG Interconnection Application. The approval process is intended to ensure that the implementation of the applicant's DG unit will not adversely affect the safe and reliable operation of the Cooperative's System. The fees associated with the Application are listed in the most current fee schedule issued by the Cooperative. All fees are to be submitted in the form of a Bank Cashier's check along with the Application, unless other payment terms have been approved in advance by the Cooperative.

21. **Notices** - Notices given under this Agreement are deemed to have been duly delivered if hand delivered or sent by United States certified mail, return receipt requested, postage prepaid, to:

(a) If to Cooperative:

Victoria Electric Cooperative, Inc.  
\_\_\_\_\_  
Attn: General Manager  
\_\_\_\_\_  
5502 US Hwy 59 N  
\_\_\_\_\_  
Victoria, TX 77902  
\_\_\_\_\_

(b) If to DG Owner/Operator:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The above-listed names, titles, and addresses of either Party may be changed by written notification to the other, notwithstanding Section 17.

**22. Invoicing and Payment** - Invoicing and payment terms for services associated with this Agreement shall be consistent with applicable Rules of the Cooperative.

**23. Limitations (No Third-Party Beneficiaries, Waiver, etc.)** - This Agreement is not intended to, and does not create, rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties. This Agreement may not be assigned by the DG Owner/Operator without the prior written consent of the Cooperative as specified in Section 20. The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered to waive the obligations, rights, or duties imposed upon the Parties.

**24. Headings** - The descriptive headings of the various articles and sections of this Agreement have been inserted for convenience of reference only and are to be afforded no significance in the interpretation or construction of this Agreement.

**25. Multiple Counterparts** - This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

**IN WITNESS WHEREOF**, the Parties have caused this Agreement to be signed by their respective duly authorized representatives.

VICTORIA ELECTRIC COOPERATIVE, INC.

[DG OWNER/OPERATOR NAME]

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

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

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.*



**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 / \_\_\_\_\_ No
- 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 / \_\_\_\_\_ No

[VICTORIA ELECTRIC COOPERATIVE, INC.]

[DG OWNER/OPERATOR NAME]

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

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

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

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

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

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



VICTORIA ELECTRIC COOPERATIVE, INC.

**Application for Operation of Member-Owned Generation**

**This application should be completed as soon as possible and returned to the Cooperative Engineering Department 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 VEC 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**

Owner/Operator Name: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City: \_\_\_\_\_ County: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
Phone Number: \_\_\_\_\_ Email Address: \_\_\_\_\_  
VEC Account Number: \_\_\_\_\_

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

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

**ELECTRICAL CONTRACTOR (as applicable)**

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

**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-Member 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 ( $X_s$ ): \_\_\_\_\_ % on \_\_\_\_\_ KVA base

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

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

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

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

**INDUCTION GENERATOR DATA**

Rotor Resistance ( $R_r$ ): \_\_\_\_\_ ohms      Stator Resistance ( $R_s$ ): \_\_\_\_\_ ohms

Rotor Reactance ( $X_r$ ): \_\_\_\_\_ ohms      Stator Reactance ( $X_s$ ): \_\_\_\_\_ ohms

Magnetizing Reactance ( $X_m$ ): \_\_\_\_\_ ohms Short Circuit Reactance ( $X''_d$ ): \_\_\_\_\_ ohms  
Design letter: \_\_\_\_\_ Frame Size: \_\_\_\_\_  
Exciting Current: \_\_\_\_\_ Temp Rise ( $^{\circ}C$ ): \_\_\_\_\_

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.-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 manufacture: \_\_\_\_\_  
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: \_\_\_\_\_



## **Distributed Generation Rider Application**

Applicable to Qualifying Distributed Generation Facilities smaller than 700 kW of connected generation, rated to produce an amount of electricity less than or equal to the amount of electricity the Member for whom the DG is installed is reasonably expected to consume and connected in parallel operation to the Cooperative's electric system in accordance with the Cooperative's service rules and regulations and VEC's *Distributed Generation Procedures and Guidelines Manual for Members* (available on request). This rate is not applicable to temporary, shared, or resale service. This rate is applicable to service supplied at one point of delivery.

### Sales to Member

Sales to a Distributed Generation Member shall be consistent with the applicable retail rate tariff established by the Cooperative and in use by the Customer as if there were no Distributed Generation installation.

### Purchases from a Member

- 1) Determination of billing shall be accomplished by metering that can identify both all energy supplied by the Cooperative and all energy supplied by the Member in excess of the Member's on-site consumption.
- 2) For power produced in excess of on-site requirements, the Member shall be compensated at the Cooperative's avoided cost which will be provided monthly by the Cooperative's power supplier.
- 3) The Cooperative may, at its sole discretion, purchase power from non-qualifying Members on a non-discriminatory basis under the terms of this section.

### Monthly Rate

Each billing period the Member shall be obligated to pay the following charges in addition to all charges indicated on his/her base rate:

### Member Charge

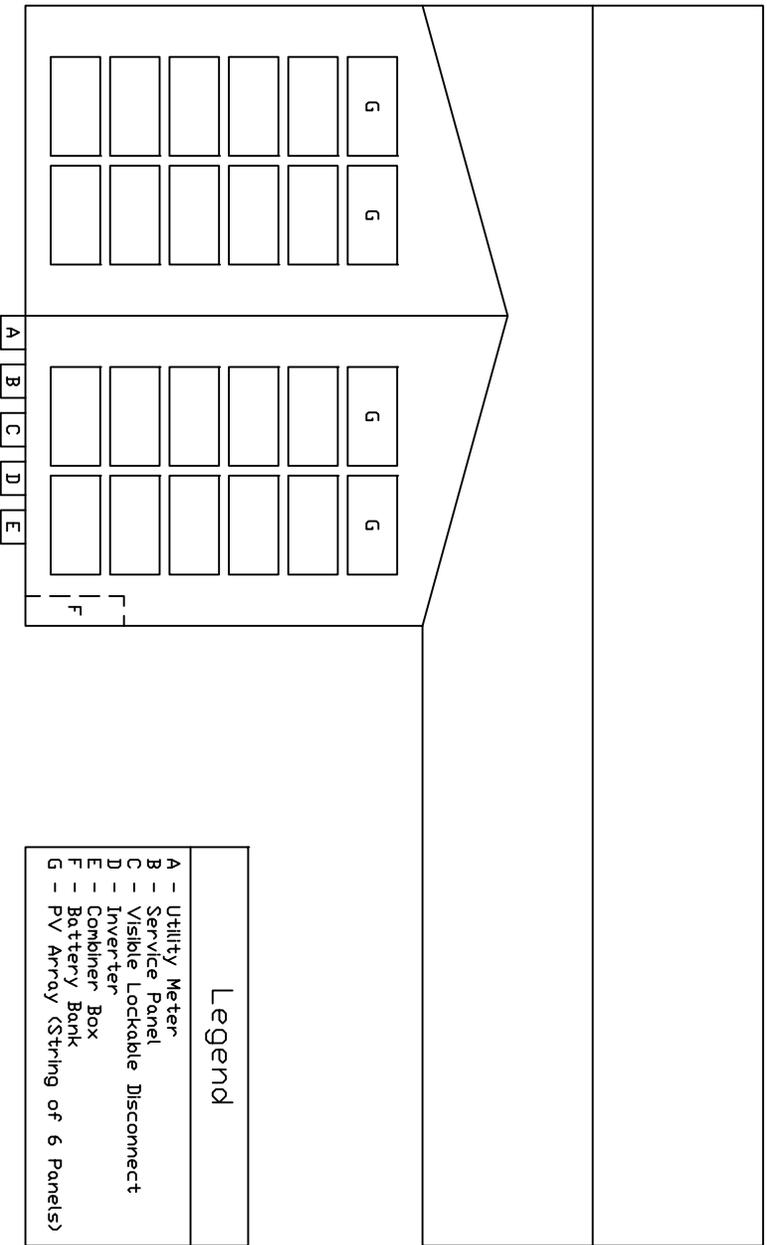
For additional metering and billing costs at \$10 per meter per month.

### Agreements

An Interconnection Agreement between the Member and the Cooperative shall be required.

## **Drawing Examples**

The following drawings are for illustrative purposes only. The Member's drawings shall reflect the actual design and layout.

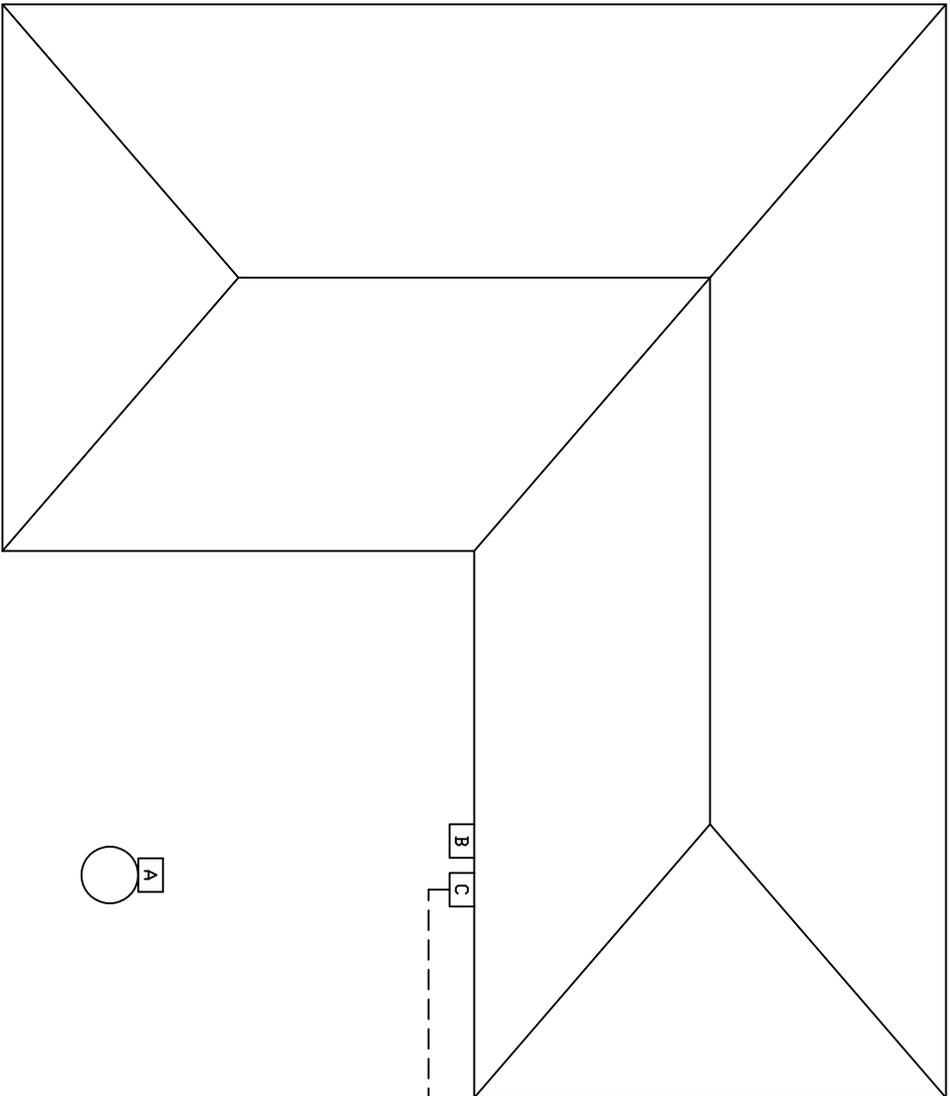


Legend	
A	- Utility Meter
B	- Service Panel
C	- Visible Lockable Disconnect
D	- Inverter
E	- Combiner Box
F	- Battery Bank
G	- PV Array (String of 6 Panels)

For Illustrative Purposes Only.  
Not Meant as a Formal Design Standard

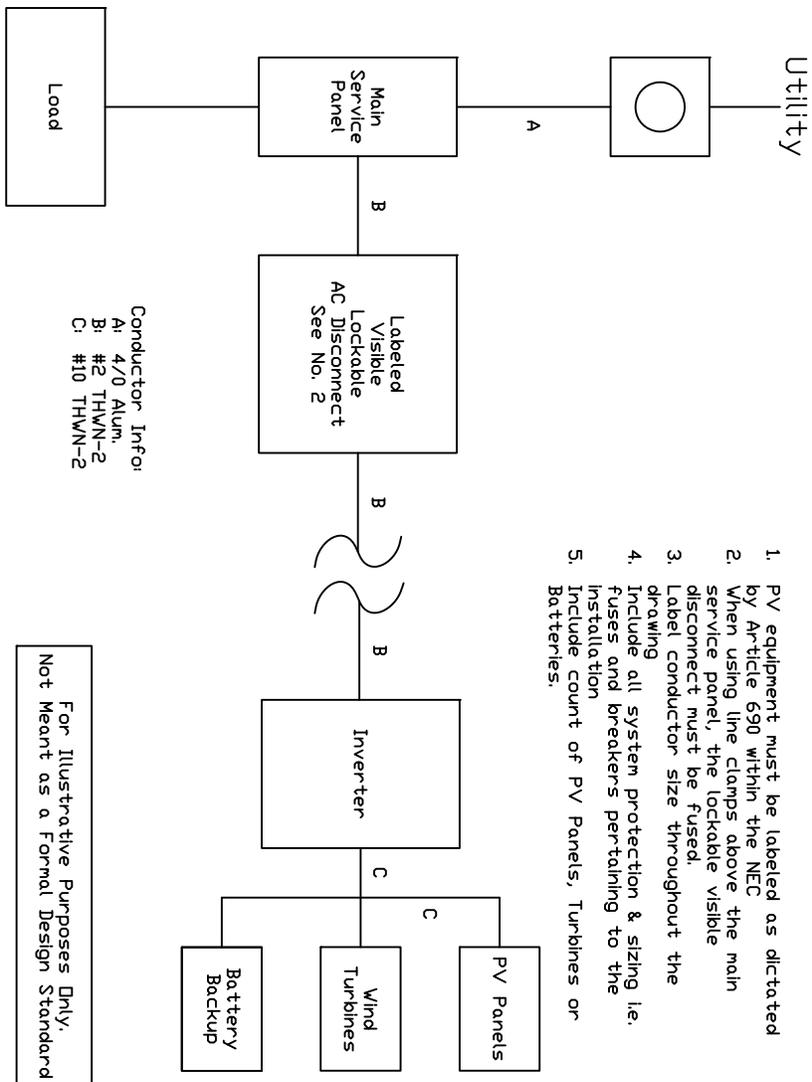
NOV 2020	Victoria Electric Cooperative	Drawn:	JBB	 Victoria Electric Cooperative
Rev 1	VEC Example DG Site Plan	Approved:	RSF	

For Illustrative Purposes Only,  
Not Meant as a Formal Design Standard



Legend	
A	- Utility Meter
B	- Service Panel
C	- Visible Lockable Disconnect
D	- Inverter
E	- Combiner Box
F	- Underground Conductor
G	- PV Array (String of 6 Panels)

NOV 2020	Victoria Electric Cooperative	Drawn: JBB	 Victoria Electric Cooperative
Rev 1	VEC Example DG Free-Standing Site Plan	Approved: RSF	



1. PV equipment must be labeled as dictated by Article 690 within the NEC
2. When using line clamps above the main service panel, the lockable visible disconnect must be fused.
3. Label conductor size throughout the drawing
4. Include all system protection & sizing i.e. fuses and breakers pertaining to the installation
5. Include count of PV Panels, Turbines or Batteries.

Conductor Info:  
 A: 4/0 Alum.  
 B: #2 THWN-2  
 C: #10 THWN-2

For Illustrative Purposes Only.  
 Not Meant as a Formal Design Standard

PV Array Info:  
 # of Modules: 20  
 # Parallel Circuits  
 # Panels per Circuit  
 Circuit Voltage: 24V

Battery Bank Info:  
 # of Batteries: 16  
 Nominal Voltage: 6V  
 Combined Capacity: 860AH  
 Combined Voltage: 48V

OCT 2020	Victoria Electric Cooperative	Drawn: JBB
Rev 1	Example One-Line for Small Distributed Generation Installations	Approved: RSF

