



PentTex
ENERGY

**DISTRIBUTED GENERATION
MANUAL**

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DISTRIBUTED GENERATION MANUAL

INTRODUCTION

INTRODUCTION

PenTex Energy (the “Cooperative”) developed the **Distributed Generation Guidelines Manual** to provide accurate and helpful information for PenTex Energy members that are considering the installation of a distributed generation (“DG”) system (typically solar photovoltaic or wind renewable energy systems). To successfully install, interconnect and operate a DG system, there are system requirements, procedural steps, and approvals necessary to ensure DG installations meet the technical and operational standards for the safe interconnection and parallel operation of these systems on PenTex Energy electric distribution system.

It is very important that PenTex Energy members that are considering the installation of a DG system understand the following:

1. **PenTex Energy is here to guide and assist our members** through the entire process (pre-installation to operational system).
2. **Please contact PenTex Energy before you start your project** to be sure your system meets all technical requirements and the application, installation and interconnection process goes well.

PenTex Energy DG Manual is organized in the following manner:

Section	Purpose
1. FAQs	Answer basic questions that members will ask / need to know prior to starting on a DG project.
2. Definitions	Define the main terms associated with DG.
3. Policies and Procedures / Obtaining an DG Interconnection	The policy and procedural requirements for all DG systems to interconnect with PenTex Energy distribution system.
4. Operational Requirements	The policy and procedural requirements related to the operation of the interconnected DG system.
5. Technical Engineering Requirements	The engineering-based technical requirements and specifications that all DG systems must meet prior to installation / interconnection.
6. Appendix-1: DG Interconnection / Application Form	The form that must be completed and provided to PenTex Energy prior to a member beginning the process to install a DG system.
7. Appendix-2: DG Agreement	The agreement between PenTex Energy and a member that desires to install, interconnect, and operate a DG system in parallel with the PenTex distribution system.
8. Appendix-3: DG Interconnection Diagram	A simple diagram that illustrates key installation and interconnection requirements for all DG systems.



DISTRIBUTED GENERATION MANUAL

FREQUENTLY ASKED QUESTIONS

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Q1: What is the purpose of PenTex Energy Distributed Generation (DG) Interconnection Manual?

Distribution Generation Interconnection Manual was developed to establish the PenTex Energy requirements and procedures for the safe installation, interconnection, and parallel operation of distributed generation facilities within the PenTex Energy electric service area.

The PenTex Energy DG Interconnection Manual is aligned with the Texas Public Utility Commission's (PUC) DG rules and regulations (P.U.C. SUBST. R. 25.211, 25.212 and 25.217) as well as other statutory guidelines, including the Texas Public Utilities Regulatory Act (PURA), which provides for the interconnection and parallel operation of Distributed Renewable Generation with electric utilities in Texas.

The information contained in this Manual has been developed for PenTex Energy members that are interested and/or considering the installation of interconnected distributed generation. PenTex Energy strives to ensure that our members have all the technical and procedural information needed to have a full understanding of the requirements involved with this process in advance of any decision to install a DG system.

This Manual also provides information for PenTex Energy members regarding the rate (tariff) that the Cooperative has put in place regarding the purchase of any energy that is generated by a DG system and delivered to the Cooperative distribution system.

The bottom line: PenTex Energy is committed to the safe interconnection and operation of all DG installations on the Cooperative electric distribution system.

Q2: I am a PenTex Energy member and I'm considering installing a DG system - where should I start?

PenTex Energy members should contact the Cooperative very early in the "DG decision-making" process. Our representatives will be glad to take time to answer questions and provide both technical and procedural information regarding your potential DG installation. PenTex Energy DG Policy is clear – DG systems will not be allowed to interconnect and/or operate until the following steps have occurred:

1. Member must submit information and application to PenTex Energy for the proposed DG system(s). PenTex Energy DG Application Form is included in PenTex Energy DG Interconnection Guidelines Manual – and is also available on the Cooperative website (www.pentex.com) and at PenTex Energy office.
 2. The DG application must be reviewed and approved by PenTex Energy, prior to installation of the DG system. PenTex Energy must confirm that the proposed system meets the technical requirements and specifications and determine if the proposed DG installation requires an engineering study. In some cases, engineering studies are essential to ensure the safe and proper operation of the DG system. Engineering studies may also result in the denial of a DG application.
 3. Once the DG system is installed PenTex Energy will confirm the installation is consistent with the DG Application and meets all PenTex Energy requirements. This inspection must take place prior to interconnecting the DG system with the Cooperative distribution system.
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There is no cost for the Inspection, however, if the DG system or system installation does not pass the initial inspection, PenTex Energy will charge a trip fee based on time and mileage to conduct additional inspection(s).

4. The member must execute a DG Agreement with PenTex Energy. This agreement is required prior to interconnecting the DG system with the Cooperative distribution system. The DG Agreement provides all DG system technical requirements as well as providing clarification to the kwh purchasing rate that the Cooperative uses in the event any excess energy delivered onto our system.

Q3: Does PenTex Energy sell and/or install DG systems?

Through our subsidiary PenTex Energy Solutions LLC, we do sell and install DG systems. Please contact our Energy Management Advisors for more information.

Q4: Are Solar PV systems cost-effective?

PenTex Energy will provide firm estimates for the cost of an installed solar PV (DG) system along with estimates of energy output and the associated costs savings for the proposed system. In general, the installed cost of solar DG has decreased significantly over the past several years as the industry realizes economies of scale in the purchase of the main system elements (PV panels and inverters). That said, the return-on-investment (ROI) for these systems is based on the size, typical output, location of the system and the avoided costs to purchase energy from PenTex Energy. There are excellent tools available to consider ROI on solar.

PenTex Energy utilizes meter data and information specific to the Member's account / premise and can incorporate this information in the proposal for the Member. The Cooperative also recommends the "[PV Watts Calculator](#)" that has been developed by National Renewable Energy Laboratory (NREL) to Members that are interested in obtaining information about the cost effectiveness and financial analysis for solar DG systems.

Q5: What are the technical specifications and requirements for the interconnection of a DG system?

The term "technical requirements" can be a little confusing in terms of the DG application, installation and agreement process. Here are some key things to know and consider regarding technical requirements:

- ✓ PenTex Energy has adopted the technical requirements and specifications that are aligned and consistent with the Texas Public Utility Commission (PUC) DG Rule. These specifications set forth the requirements for the safe interconnection and operation of DG systems. These requirements also establish the criteria used to determine if an engineering study is needed.
- ✓ Many technical requirements are addressed / covered by having "pre-certified" equipment with appropriate IEEE, UL and other "stamps of approval" from the DG system manufacturer. For most systems, these certifications signal to PenTex that the system being installed meets and/or exceeds technical engineering requirements for the major components of the system (e.g., the solar panels and inverter(s)).

- ✓ There are also technical requirements related to the installation. PenTex Energy has provided the requirements (technical and procedural) in this Manual. Several of these requirements are included in the DG Application Form and the DG Agreement. These documents are included in this Manual.
 - ✓ The DG Applicant shall install a secondary meter base for a “DG Output Meter” to measure the output of the DG system. The DG meter will be supplied by PenTex Energy. DG Applicant is responsible for the cost of the secondary meter base and the DG meter.
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Q6: How will PenTex Energy account for (and reimburse) for energy that my DG system sends to the electric grid?

PenTex Energy will reimburse members for energy “delivered to” the Cooperative distribution system at the avoided cost of energy rate (ACER). The ACER is calculated based on the Cooperative’s wholesale electric energy provider’s monthly invoices. The Member’s compensation for the excess energy supplied to the Cooperative during the monthly billing period shall accumulate as a monetary credit to be applied to energy purchases by Member.

Q7: Will securitization charges apply to solar systems?

Yes, the Securitized Cost Recovery Factor (SCRF) is applied to all Kwh’s that are consumed by a location. The PV system meter will be used to calculate the proper number of kilowatt hours subject to the SCRF. Total system output minus the Kwh’s purchased from the member at the avoided cost (DG credit) plus the Kwh’s delivered to the member equals the total Kwh’s subject to the charge.



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DEFINITIONS

DEFINITIONS

1. Avoided Cost of Energy: The embedded purchased cost portion of the Cooperative's retail energy rate under which the member is billed applicable for the month. The avoided cost shall be developed by the Cooperative.
2. Distributed Generation Agreement: An agreement between a Member-Producer and the Cooperative that sets forth the contractual conditions under which a company and a Member-Producer agree that one or more facilities may be interconnected with the Cooperative's electric system.
3. Distributed Generation Application: The form of application of a Member-Producer seeking interconnection and parallel operation of distributed generation with the Cooperative's electric system.
4. DG Meter Base: The meter base for the DG Output Meter. This meter base must be supplied and installed by the DG Applicant.
5. Distributed Generation Output Meter (PV Meter): A meter to measure the output of the DG system. Meter will be configured to have the DG output directed to the "top" of the meter (see attached DG Diagrams).
6. Distributed Generation System: Shall mean an electrical generating facility located at a Member-Producer's point of delivery (point of common coupling) of one (1) megawatt (MW) or less and connected at a voltage less than sixty (60) kilovolts (kV) which may be connected in parallel operation to the Cooperative of Cooperative's electric system.
7. ERCOT: The Electric Reliability Council of Texas, Inc. or successor independent organization under Public Utility Regulatory Act ("PURA") §39.151 for the power region to which the Cooperative's electric system is connected.
8. Interconnection: The physical connection of distributed generation to the Cooperative system in accordance with the requirements of the tariff so that parallel operation can occur.
9. Interconnection Study: A study or studies that may be undertaken by the Cooperative in response to its receipt of a completed DG Application. Pre-interconnection studies may include, but are not limited to, service studies, coordination studies and utility system impact studies.
10. Manual Disconnect Device: A manual switch at the Point of Interconnection that provides clear indication of the switch position, and when in the open position isolates the distributed generation from load unrelated to generation of electricity or operation of the facility.
11. Member-Producer: Means any person, firm, corporation, partnership, or other entity owning or operating a distributed generation system. An owner of distributed generation, the Member-Producer on whose side of the meter distributed generation is installed and operated, regardless of whether or not the Member-Producer takes ownership of the distributed generation, or a person who by contract is assigned ownership rights to energy produced from distributed generation located at the premises of the Member-Producer on the Member-Producer's side of the meter.
12. Parallel Operation: The operation of distributed generation by a Member-Producer while the Member-Producer is connected to the Cooperative's electric system.

13. Point of Interconnection (Point of Service, Point of Common Coupling): The point where the electrical conductors of the Cooperative's utility system are connected to the Member-Producer's conductors and where any transfer of electric power between the Member-Producer and the Cooperative's utility system takes place, such as switchgear near the meter.



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PROCEDURES AND POLICIES / OBTAINING AN INTERCONNECTION

PenTex Energy DISTRIBUTED GENERATION INTERCONNECTION PROCEDURES

- 1) The Member-Producer shall:
 - a) Apply for interconnection, provide an easement satisfactory to the Cooperative, and otherwise comply with the tariff of the Cooperative.
 - b) At least thirty (30) days in advance of interconnection, Member-Producer shall make application and provide technical information for the distributed generation installation. Member-Producer shall also provide such additional information as may be required by the Cooperative.
- 2) Prior to interconnection Member-Producer shall have:
 - a) Fulfilled all requisites for the provision of electric utility service contained in the Agreement;
 - b) Provide required information (see DG Application) regarding the DG system;
 - c) Comply with conditions for line extension (if required);
 - d) Provide satisfactory liability insurance (if required);
 - e) Sign and deliver DG Agreement;
 - f) Complete construction / comply with applicable laws, codes and industry practices; and
 - g) Give notice of intent to energize and notify Cooperative to schedule inspection;

PenTex Energy DISTRIBUTED GENERATION INTERCONNECTION POLICY REQUIREMENTS

- 1) The DG System will be installed at Member-Producer's premises, shall not have a generation capacity greater than 50 KW and must be connected at the Cooperative's determined voltage.
- 2) Any DG system larger than 50 KW will be considered as a special situation and will require an assessment to determine if the system may be connected to a PenTex Energy distribution system.
- 3) The Cooperative and Member-Producer may establish additional or different terms, conditions, or rates for the sale or purchase of electricity.
- 4) Member-Producer shall install, operate and maintain the DG System in full and faithful compliance with all applicable federal, state and local laws, ordinances, rules and regulations, and generally accepted industry codes and standards, including, but not limited to the National Electrical Safety Code and the National Electrical Code.
- 5) Member-Producer shall be solely responsible for the design, installation, operation, maintenance, and repair of the DG System and Member-Producer's interconnection facilities. The interconnection of the DG System to the Cooperative electrical system shall comply with the Public Utility Commission of Texas Substantive Rules §25.212 relating to Technical Requirements for Interconnection and Parallel Operation of On-Site Distributed Generation, (16 Texas administrative Code §25.212) or any successor rule addressing distributed generation.
- 6) Cooperative shall inspect the DG System and the interconnection equipment prior to interconnection.
- 7) All costs to interconnect with the Cooperative electric system shall be the responsibility of Member-Producer. Cooperative shall not be required to take or pay for any energy generated by the DG System until the DG System successfully passes Cooperative's Field Inspection and Member-Producer shall have reimbursed Cooperative for all its interconnection costs.
- 8) Member-Producer must maintain the DG System in accordance with the applicable manufacturer's recommended maintenance schedule.
- 9) Member-Producer must promptly notify Cooperative upon receipt of any citation or other official notice of alleged violation of laws, ordinances, rules and regulations concerning the DG System.
- 10) Insurance Recommendations:
The Member-Producer is recommended to have insurance coverage 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-Producer's generating equipment.
- 11) Installation and Information Warranty
 - a) Member-Producer must confirm to Cooperative that Member-Producer's power generating installation (DG System) is constructed and will be maintained in a safe and reliable condition and will comply with the latest applicable codes.
 - b) Member-Producer must warrant and represents that:
 - i) The information regarding the characteristics of the DG System is as specified in the Application for Interconnection and Parallel Operation of Distributed Generation with the Cooperative's Electric System filed by the Member-Producer with Cooperative;
 - ii) The DG System and associated other electrical components and devices meet National Electrical

Code standards;

- iii) All permits, inspections, approvals, and/or licenses necessary for the installation or operation of the DG System have been obtained. The DG System has been successfully tested to UL 1741 and IEEE 1547 standards or has been satisfactorily tested by an independent laboratory with published results.
- c) Member-Producer shall provide manufacturer's data or other written proof acceptable to Cooperative to verify the accuracy of the foregoing warranties and representations. If any of foregoing warranties and representations are inaccurate, Cooperative may, without waiver of or prejudice to any other remedy, immediately disconnect the DG system from the Cooperative's electric system and terminate this agreement.

12) Interconnection Studies

- a) Cooperative may perform interconnection studies, which shall include service study, coordination study, and utility system impact study, as needed and determined in the sole discretion of the Cooperative. In instances where such studies are deemed necessary, the scope of such studies shall be based on the characteristics of the particular distributed generation facility to be interconnected and the Cooperative's distribution system at the specific proposed location.
- b) Cooperative may charge Member fees for Interconnection Studies that recover the costs of performing such studies. Any modifications or additions to the Cooperative's Electric system identified through the interconnection study as required for the safe and reliable interconnection of Member's facility shall be solely at the Member's expense. Member shall not acquire any ownership in such modifications or additions to Cooperative's electric distribution system.

13) Metering Equipment

- a) The actual metering equipment required, its voltage rating, number of phases and wires, size, current transformers, number of input and associated memory is dependent upon the type, size and location of the electric service provided. For all approved DG installations, PenTex Energy will provide a meter that can measure the "Delivered KWh" (energy delivered by the Cooperative); the "Received KWh" (energy delivered to the Cooperative by the Member-Producer).
- b) DG applicant shall install a Secondary (PV Meter base) meter base for a meter to measure the output of the DG system. Applicant shall pay for the DG meter base and the installation of the DG meter base.
- c) The DG meter will be supplied by PenTex Energy. DG Applicant responsible for cost of the DG meter.
- d) DG output meter will be installed in a forward energy configuration (input to the top of the meter).

14) Manual Safety Disconnect

- a) The Member-Producer shall provide and install a manual load break switch that provides clear indication of the switch position at the Point of Interconnection to provide separation between the Cooperative electrical system and the Member-Producer's electrical generation system. The location of the disconnect switch must be approved by the Cooperative.
- b) The disconnect switch shall be easily visible, mounted separately from metering equipment, readily accessible to Cooperative personnel at all times, and capable of being locked in the open position with a Cooperative padlock. The Cooperative reserves the right to open the disconnect switch

isolating the Member-Producer's electrical generating system (which may or may not include the Member-Producer's load) from Cooperative electrical system for any of the following reasons:

- i) To facilitate maintenance or repair of the Cooperative electrical system, or
- ii) When emergency conditions exist on the Cooperative electrical system, or
- iii) When the Member-Producer's electrical generating system is determined to be operating in a hazardous or unsafe manner or is or potentially can unduly affect the Cooperative electrical system waveform, or
- iv) When the Member-Producer's electrical generating system is determined to be adversely affecting other electric consumers on the Cooperative electrical system, or
- v) Failure of the Member-Producer to comply with applicable codes, regulations and standards in effect at the time, or
- vi) Failure of the Member-Producer to abide by any contractual arrangement or operating agreement with the Cooperative.
- vii) The Cooperative reserves the right to operate the disconnect for the protection of the Cooperative's system even if it affects Member-Producer's distributed generation system. In the event the Cooperative opens and closes the disconnect switch it shall not be responsible for energization or restoration of parallel operation of the generating installation. The Cooperative will make reasonable efforts to notify the Member-Producer in the event the disconnect switch has been operated. The Member-Producer will not bypass the disconnect switch at any time for any reason.

15) Cooperative Right to Disconnect

- a) Cooperative shall not be obligated to accept and shall have the right to require Member-Producer to temporarily curtail, interrupt, or reduce, deliveries of energy in order to construct, install, maintain, repair, replace, remove, investigate, inspect, or test any part of the interconnection facilities, equipment, or any part of the Cooperative's electric system.
- b) Cooperative may disconnect, without notice, the DG System from the electric distribution system, if, in the Cooperative's opinion, a hazardous condition exists and such immediate action is necessary to protect persons, or Cooperative's facilities or other member's facilities from damage or interference caused by Member-Producer's DG System or lack of properly operating protective devices.



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OPERATIONAL REQUIREMENTS

DISTRIBUTED GENERATION OPERATIONS POLICIES AND PROCEDURES

- 1) Member-Producer is responsible for installation, safe operation, protection, and maintenance of all equipment and wiring at and beyond the point where Member-Producer's conductors contact the Cooperative's conductors.
- 2) The electrical power generated shall be compatible with Cooperative's standard distribution system at the point of delivery and of such quality that Cooperative's system is not adversely affected.
- 3) Purchases of Electricity from Member-Producer
 - a) As provided for in the Cooperative's Tariff,
 - i) Member-Producer and the Cooperative agree that the Member-Producer will sell exclusively to the Cooperative the electrical output from the DG system.
 - ii) the Cooperative shall pay Member for the "KWh Received" (energy received by the Cooperative's Distribution System) at the Avoided Cost of Power Rate (ACPR).
 - iii) The ACPR is calculated based on the Cooperative's wholesale electric energy provider(s) yearly invoices. The Cooperative will update the ACPR yearly. The Cooperative reserves the right to amend the ACPR at any time.
 - iv) Member-Producer shall exclusively purchase from the Cooperative its requirements of electric energy above the amounts generated by the DG system at the applicable tariff rate. If any tariff or rate is changed by the Cooperative, or by order or consent of any regulatory authority having a jurisdiction thereof whether or not at the request of the Cooperative, such changed tariff, rate/or redefined class of service shall be applicable to service provided hereunder from and after the effective date of such change.
- 4) Payment / Reimbursement for Energy
 - a) The Cooperative will credit the monthly amounts due for all output measured, received, and purchased from the Member-Producer's generating installation against the monthly bill for service rendered to the Member-Producer for the Member-Producer's consumption.
 - b) The Cooperative, at its sole discretion, may also render a check at any time to the Member-Producer for the cumulative balance of credits.
- 5) Access to Premise and DG System Interconnection
 - a) Member-Producer hereby grants Cooperative access on and across its property at any reasonable time to inspect the DG System and the interconnection equipment, to read or test meters and metering equipment, and to operate, maintain and repair Cooperative's facilities. No inspection by Cooperative of the DG System or the interconnection facilities shall impose on Cooperative any liability or responsibility for the operation, safety or maintenance of the DG system or Member-Producer's interconnection facilities.



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TECHNICAL / ENGINEERING REQUIREMENTS

1) General Requirements

- a) All interconnections shall comply with P.U.C. SUBST. R. 25.212 and successors. In addition, all interconnections shall comply with applicable state and federal laws and regulations.
- b) All interconnections shall comply with local building and electric codes.
- c) Installation of all interconnections shall be inspected by PenTex Energy. Inspection and approval of the installation by the Cooperative is a prerequisite and a continuing condition of interconnection and parallel operation of distributed generation.
- d) Variations from the Technical Requirements herein must be reviewed and approved by PenTex Energy prior to implementation. Variations in the point of interconnection must be approved by PenTex Energy and included in the Distributed Generation Agreement between Member-Producer and PenTex Energy.

2) Protection of line workers and PenTex system

- a) The distributed generation facility must have an interrupting device capable of interrupting the maximum available fault current, an interconnection 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).

3) Manual Disconnect

- a) The customer shall provide and install a manual load break switch that provides clear indication of the switch position at the Point of Interconnection to provide separation between PenTex Energy electrical system and the customer's electrical generation system. The location of the disconnect switch must be approved by PenTex Energy. The disconnect switch shall be easily visible, mounted separately from metering equipment, readily accessible to Cooperative personnel at all times, and capable of being locked in the open position with a Cooperative padlock. PenTex Energy reserves the right to open the disconnect switch isolating the customer's electrical generating system (which may or may not include the customer's load) from the Cooperative electrical system for any of the following reasons:
 - i) To facilitate maintenance or repair of PenTex Energy electrical system, or
 - ii) When emergency conditions exist on PenTex Energy electrical system, or
 - iii) When the customer's electrical generating system is determined to be operating in a hazardous or unsafe manner or is or potentially can unduly affect PenTex Energy electrical system waveform, or
 - iv) When the customer's electrical generating system is determined to be adversely affecting other electric consumers on PenTex Energy electrical system, or
 - v) Failure of the customer to comply with applicable codes, regulations, and standards in effect at the time, or
 - vi) Failure of the customer to abide by any contractual arrangement or operating agreement with PenTex Energy.

4) Power Quality

- a) Voltage: PenTex Energy shall endeavor to maintain the distribution voltages on the electrical system but shall not be responsible for factors or circumstances beyond its control. The customer shall provide an automatic method of disconnecting generation equipment from the Cooperative electrical system within 10 cycles should a voltage deviation greater than +5% or -10% from normal be sustained for more than 30 seconds (1800 cycles) or a voltage deviation greater than +10% or -30% from normal be sustained for more than 10 cycles. If high or low voltage complaints or flicker complaints result from the operation of the customer's electrical generation, the customer's generating system shall be disconnected until the problem is resolved.
- b) Frequency: PenTex Energy shall provide an automatic method of disconnecting generation equipment from PenTex Energy electrical system within 15 cycles should a deviation in frequency of +0.5Hz or -0.7Hz from normal occur.
- c) Harmonics: In accordance with IEEE 519, the total harmonic distortion (THD) of voltage shall not exceed 5% of a pure sine wave of 60-hertz frequency or 3% of the 60-hertz frequency for any individual harmonic when measured at the point of interconnection with PenTex Energy electrical system. Also, the total current distortion shall not exceed 5% of the fundamental frequency sine wave. If harmonics beyond the allowable range result from the operation of the customer's electrical generation, the customer's generating system shall be disconnected until the problem is resolved.
- d) Flicker: The distributed generation facility shall not cause excessive voltage flicker on PenTex Energy electrical system. This flicker shall not exceed 3% voltage dip, in accordance with IEEE 519 (Section 10.5), as measured at the point of interconnection.
- e) Power factor: The customer's electrical generation system shall be designed, operated and controlled at all times to provide reactive power requirements at the point of interconnection from 0.97 lagging to 0.97 leading power factor. Induction generators shall have static capacitors that provide at least 97% of the magnetizing current requirements of the induction generator field. PenTex Energy may, in the interest of safety, authorize the omission of capacitors. However, where capacitors are used for power factor correction, additional protective devices may be required to guard against self-excitation of the customer's generator field.

5) Loss of Source

- a) The customer shall provide approved protective equipment necessary to immediately, completely and automatically disconnect the customer's electrical generation equipment from PenTex Energy electrical system in the event of a fault on the customer's system, a fault on the Cooperative system or loss of source on the Cooperative system. Such protective equipment shall conform to the criteria specified in UL 1741 and IEEE 1547.
- b) The customer's generating system shall automatically disconnect from the grid within 10 cycles if the voltage on one or more phases falls and stays below 70% of nominal voltage for at least 10 cycles. The automatic disconnecting device may be of the manual or automatic reclose type and shall not be capable of reclosing until after PenTex Energy service voltage and frequency are restored to within the normal operating range and the system is stabilized.

6) Coordination and Synchronization

- a) The customer shall be solely responsible for coordination and synchronization of the customer's electrical generating system with all aspects of PenTex Energy electrical system, and the customer assumes all responsibility for damage or loss that may occur from improper coordination and synchronization of its generating system with PenTex Energy electrical system.

7) Metering

- a) The actual metering equipment required, its voltage rating, number of phases and wires, size, current transformers, number of input and associated memory is dependent upon the type, size and location of the electric service provided. For all approved DG installations, PenTex Energy will provide a meter that can measure the "Delivered KWh" (energy delivered by the Cooperative); the "Received KWh" (energy delivered to the Cooperative by the Member-Producer).
- b) DG applicant shall install a Secondary (PV Meter base) meter base for a meter to measure the output of the DG system. Applicant shall pay for the DG meter base and the installation of the DG meter base.
- c) The DG meter will be supplied by PenTex. DG Applicant responsible for cost of the DG meter.
- d) DG output meter will be installed in a forward energy configuration (input to the top of the meter).

8) Interconnection Study

- a) PenTex Energy will determine whether an interconnection study is necessary, based on relevant engineering factors including the output of the system, the location of the system and other Cooperative distribution system factors. Interconnection studies, include service study, coordination study, and utility system impact study, as needed and determined in the sole discretion of PenTex Energy. If the interconnection study is deemed necessary, the Cooperative shall perform the study under reasonable terms and conditions agreed upon by both the customer and the Cooperative and at the customer's sole expense.
- b) Any modifications or additions to PenTex Energy's system identified through the interconnection study as required for the safe and reliable interconnection of Customer's facility shall be solely at the Customer's expense. Customer shall not acquire any ownership in such modifications or additions to PenTex Energy distribution system.
- c) The interconnection study may conclude the proposed system may not be approved / authorized by the PenTex Energy. In such cases, the Cooperative will make the study available to the customer and may also offer recommendations for modifications that could result in authorization to proceed with a revised system.
- d) No study fee will be charged if the proposed generation site is not on a networked secondary and if all of the following apply:
 - i) The proposed generation equipment is pre-certified. Generation equipment that are less than 20 kW AC shall be considered pre-certified if a UL 1741 listed inverter that also meets IEEE 1547 specifications is used. For solar PV installations, to be pre-certified system must have UL 1703 listed PV modules, and
 - ii) The proposed generation system does not expect to export more than 15% of total load on the feeder, and

iii) The proposed generation system does not contribute more than 25% of the maximum possible short circuit current of the feeder.

9) Protection. The distributed generation facility must have interrupting devices capable of interrupting the maximum available fault current, an interconnection 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 standalone capability). Facilities rated over 10kW, three-phase, must also have reverse power sensing and either a ground over-voltage or a ground over-current trip depending on the grounding system. Grounding shall be done in accordance with UL 1741, IEEE 1547 and NEC Article 250.

10) Three-Phase Generators.

a) Synchronous machines:

i) The distributed generation facility's circuit breakers shall be three-phase devices with electronic or electromechanical control.

ii) The Customer is solely responsible for proper synchronization of its generator with PenTex Energy system.

(1) The excitation system response ratio shall not be less than 0.5.

(2) The generator's excitation system shall conform to the field voltage versus time criteria specified in ANSI Standard C50. 13-1989.

b) Induction machines: The induction machines used for generation may be brought up to synchronous speed if it can be demonstrated that the initial voltage drop at the point of interconnection is within the flicker limits specified in this document.

11) Inverters:

a) Line-commutated inverters do not require synchronizing equipment.

b) Self-commutated inverters require synchronizing equipment.

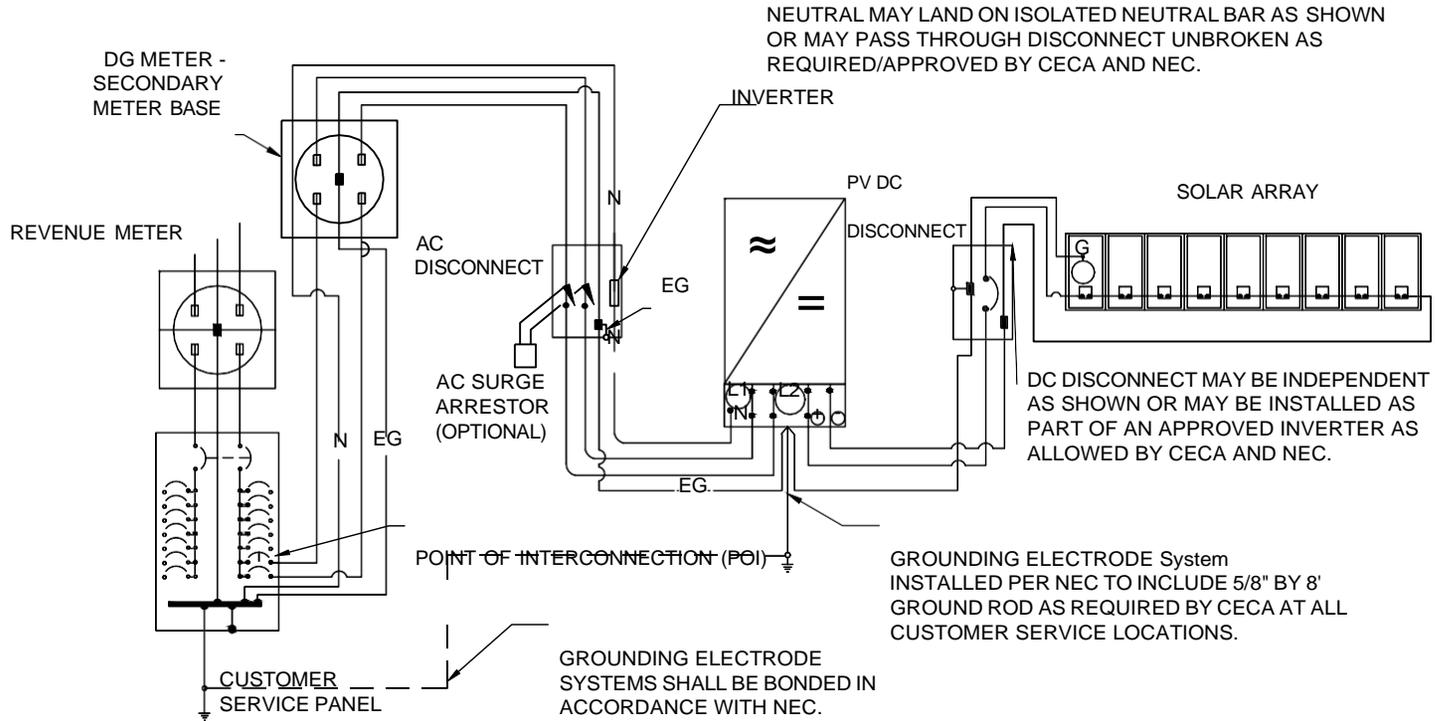
12) Standards. The distributed generation equipment shall be designed, installed, operated and maintained in accordance with, but not limited to, ANSI standards, UL standards, IEEE standards, the National Electrical Code, ERCOT Operating Guides and any other applicable local, state or federal codes and statutes. In the case of a conflict between the requirements in this document and any of those standards or codes, this document shall prevail.



DISTRIBUTED GENERATION MANUAL

INTERCONNECTION DIAGRAMS

(LOAD SIDE POINT OF INTERCONNECTION)



NOTES:

1. TYPICAL INTERACTIVE PV SYSTEM WIRING DIAGRAM, FOR ILLUSTRATION PURPOSES ONLY. REFER TO EQUIPMENT MANUFACTURER LITERATURE FOR ACTUAL EQUIPMENT WIRING RECOMMENDATIONS. INSTALLATION SHALL COMPLY WITH CECA ELECTRIC SERVICE STANDARDS AND NATIONAL (NEC, UL AND IEEE) CODES.
2. INVERTER OUTPUT CIRCUIT CONDUCTORS SHALL BE INSTALLED IN CONTINUOUS METAL RACEWAYS.
3. THE PV DC GROUNDING SYSTEM SHALL NOT BE BONDED TO THE AC GROUNDING SYSTEM BY USING A COMBINED DC GROUNDING ELECTRODE CONDUCTOR AND AC EQUIPMENT GROUNDING CONDUCTOR. CONTRACTOR MAY CHOOSE TO USE THE OPTION SHOWN ABOVE OR MAY INSTALL A GROUNDING ELECTRODE CONDUCTOR FROM THE INVERTER DIRECTLY TO THE SERVICE GROUNDING ELECTRODE SYSTEM.
4. WHERE THE POINT OF INTERCONNECTION IS TO BE MADE AHEAD OF THE SERVICE EQUIPMENT, IT SHALL BE MADE AFTER THE CECA REVENUE METER. SUCH INSTALLATION MUST BE PRE-APPROVED BY CECA. (REFER TO FIGURE 3 AND 4).

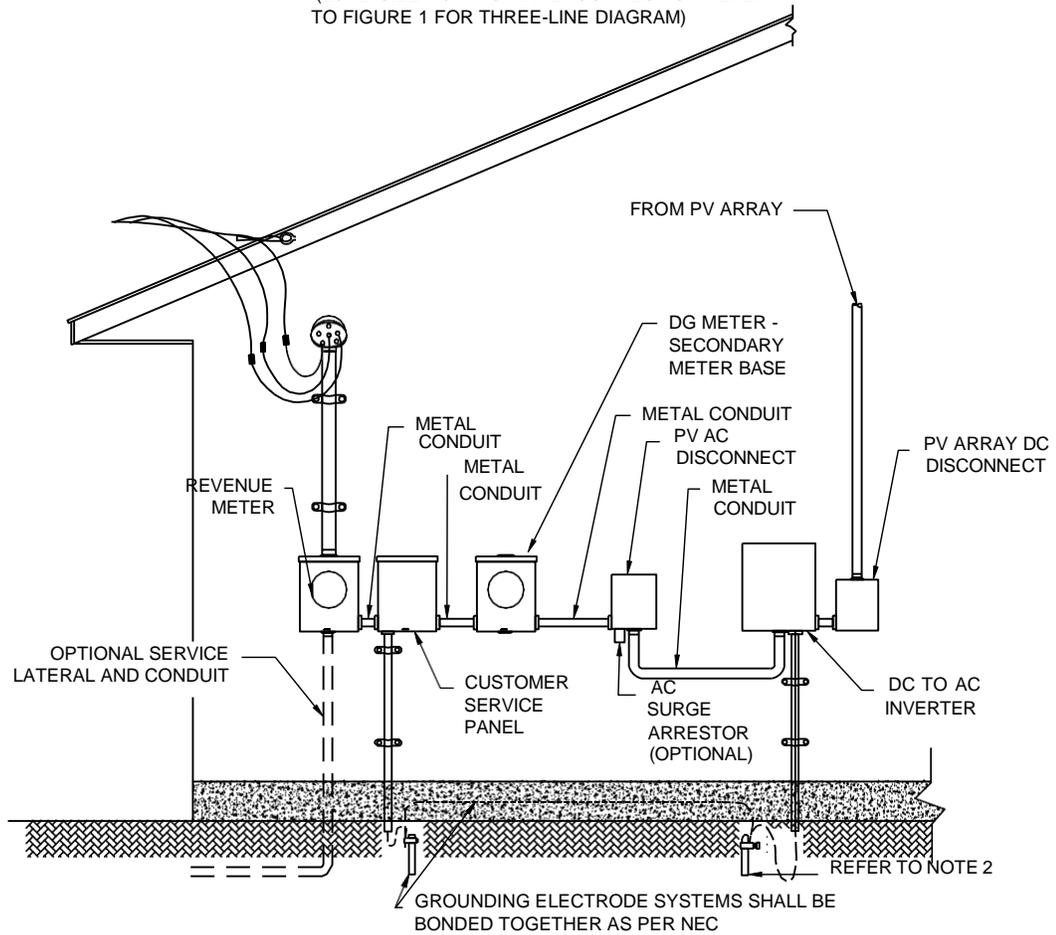
FIGURE 1
 TYPICAL PHOTOVOLTAIC (PV) SYSTEM
 120/240-VOLT SINGLE-PHASE THREE-WIRE DIAGRAM

ELECTRICAL DISTRIBUTION
CONSTRUCTION SPECIFICATIONS

TYPICAL
PHOTOVOLTAIC SYSTEM

APPROVED	BY
UNIT NUMBER	FIGURE 1

FIGURE 2
 TYPICAL 120/240-VOLT, SINGLE-PHASE PHOTOVOLTAIC (PV) SYSTEM
 (LOAD-SIDE POINT OF INTERCONNECTION REFER
 TO FIGURE 1 FOR THREE-LINE DIAGRAM)



NOTES:

1. INVERTER OUTPUT CIRCUIT CONDUCTOR SHALL BE INSTALLED IN METAL RACEWAYS FROM INVERTER TO POINT OF INTERCONNECTION.
2. GROUNDING ELECTRODE SYSTEM INSTALLED AS PER NEC TO INCLUDE 5/8-INCH X 8-FOOT GROUND ROD AS REQUIRED BY CECA AT ALL CUSTOMER SERVICE LOCATIONS.
3. THE PV DC GROUNDING SYSTEM SHALL NOT BE BONDED TO THE AC GROUNDING SYSTEM BY USING A COMBINED DC GROUNDING ELECTRODE CONDUCTOR AND AC EQUIPMENT GROUNDING CONDUCTOR. CONTRACTOR MAY CHOOSE TO USE THE OPTION SHOWN ABOVE OR MAY INSTALL A GROUNDING ELECTRODE CONDUCTOR DIRECTLY FROM THE INVERTER GROUNDING ELECTRODE TERMINAL TO THE MAIN SERVICE GROUNDING ELECTRODE SYSTEM.
4. THE PV AC DISCONNECT SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE REVENUE METER.
5. LABELING AND IDENTIFICATION OF ALL PV RELATED EQUIPMENT SHALL BE DONE IN ACCORDANCE WITH THE NEC.
6. WHERE THE POINT OF INTERCONNECTION IS TO BE MADE AHEAD OF THE SERVICE EQUIPMENT, IT SHALL BE MADE AFTER THE CECA REVENUE METER. SUCH INSTALLATIONS MUST BE PRE-APPROVED.

TYPICAL
 PHOTOVOLTAIC SYSTEM



WWW.SE-TEXAS.COM
 TEXAS REGISTRATION
 NUMBER F-1594

APPROVED	BY
UNIT NUMBER	
FIGURE 2	



PentTex
ENERGY

INTERCONNECTION APPLICATION

APPLICATION AND MEMBER INFORMATION

This application is for the coordination of interconnection of a distributed generation (DG system) and associated / required metering equipment between "Member", PenTex Energy and [redacted] the electrician / contractor doing the proposed work. The following needs to be filled out completely and clearly.

Date	
First Name (Member)	
Last Name (Member)	
Account Number	Account#:
Meter Number	Meter#
Premise Type	<input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Other
Phone	
Email	
Installation Address (physical address)	

DG SYSTEM INFORMATION

Total Nameplate Rating (kW)		Over 50 kW?	Yes	No
(If Solar DG) Panel Manufacturer				
Inverter Manufacturer				
Does system have a battery backup?				
IEE and/or UL Certification(s) (List all or attach documentation)				
Please provide the system engineering and/or manufacturers drawings and specifications	<input type="checkbox"/> System one-line diagram <input type="checkbox"/> Additional system documentation			

INFORMATION PREPARED AND SUBMITTED BY

License Number (Master Electrician, Electrical Engineer, or Homestead Owner)	
Company Name	
Phone	
Email	
Project Contact Person	
Signature	
Date	

NOTES TO MEMBER / APPLICANT

General:

1. The Member must meet all PenTex Energy membership and service requirements, in addition to the requirements in the Distributed Generation Manual **BEFORE** a Solar PV meter will be set.
2. Member is responsible for relaying and enforcing all PenTex Energy rules and regulations regarding solar installation to DG Installer.
3. A signed copy of the PenTex Energy DG Solar Application along with DG plans must be submitted for approval. Once plans are approved and payment is made, construction may begin.

Requirements:

4. **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. An additional meter base(s) to record the total DG production of the system will be installed between the system and member's load by the solar installer.
5. After Solar DG Application the Member shall submit a plan detailing the electrical design, interconnections, size, and operational plans for the DG facility (the "DG plan").
6. Solar installers will adhere to all PenTex Energy Solar DG installation requirements listed in Distributed Generation Procedures and Guidelines manual. PenTex Energy reserves the right to demand additional engineering and requirements at cost of member.
7. Yearly onsite solar system inspections may be performed by PenTex Energy.

Application & Meter Fees:

- 8. After approval of the DG plan by the Cooperative, the Member shall pay a non-refundable application fee as indicated below. A separate fee must be submitted for each DG facility.
Up to 50 KW: \$300
Over 50 KW is not covered by this form.
- 9. PV Meter Cost is \$150 per meter required and will be determined after review of DG plans. Solar application & PV Meter payment is due after DG plan approval and signing contract. Prior to setting PV meters.

Solar Process:

- 10. Member shall contact our Energy Management Advisors.
- 11. Fill out PenTex Solar Application form.
- 12. Submit Solar DG plan to solar@pentex.com.
- 13. Upon PenTex approval, payment shall be made, contract signed by member, and solar system may be installed.
- 14. Contact PenTex Energy to schedule an onsite solar system inspection before putting solar system online.
- 15. Any charges related to the interconnection of a DG system must be paid in accordance with PenTex Energy Distributed Generation Manual.
- 16. If work has not been completed within a 180-day period – the application will be voided.
- 17. If additional work is required of PenTex Energy, there will be additional charges that will need to be paid to PenTex Energy.
- 18. PenTex Energy will not charge for DG inspection / system verification. If inspection does not pass and additional trips are required, the Cooperative will charge for time and mileage for additional inspections / trips.
- 19. ALLOW A MINIMUM OF FIVE WORKING DAYS FOR PROCESSING**
- 20. Return to [PenTex Energy, PO Box 530, Muenster, TX 76252](#)

INTERNAL / OFFICE USE ONLY:



PentTex **ENERGY**

DISTRIBUTED GENERATION MANUAL

AGREEMENT

**DISTRIBUTED GENERATION AGREEMENT
FOR THE INTERCONNECTION AND PARALLEL OPERATION OF
DISTRIBUTED GENERATION SYSTEMS**

THIS AGREEMENT made this _____ day of _____, 20___, by and between _____, hereinafter referred to as the "Member-Producer," and PenTex Energy, hereinafter referred to as the "Cooperative" is as follows:

Purpose

This agreement defines the relationship between the Cooperative and Member-Producer including pricing and other terms affecting the purchase and sale of electricity as well as reasonable conditions for interconnection and parallel operation.

Cooperative owns and operates an electric utility engaged in the distribution of electricity serving portions of Cooke, Wise, Montague, Denton and Grayson Counties; and Member-Producer owns or intends to own, operate and maintain a Distributed Generation System (DG System) of 50 KW or less and desires to interconnect and operate such installation in parallel with Cooperative's electric distribution system at address:

_____ ; and the parties hereto wish to contract for the purchase and sale of the electrical output from the DG System, and the terms of its interconnection with the Cooperative electric distribution system. THEREFORE, in consideration of the mutual covenants and agreements herein contained, the parties hereby contract and agree with each other as follows:

Article 1 | Effective Date

This Agreement shall be effective as of the date of execution by the latter of the two parties (the Effective Date) and, subject to the other terms of this Agreement, shall continue in effect for a period of one year, and month to month thereafter.

Article 2 | General Terms

The DG System will be installed at Member-Producer's premises at the address specified above. The DG System shall not have a generation capacity greater than 50 KW and be connected on the Cooperative's distribution at a voltage of 60KV or lower. Member-Producer shall install, operate and maintain the DG System in full and faithful compliance with all applicable federal, state and local laws, ordinances, rules and regulations, and generally accepted industry codes and standards, including, but not limited to the National Electrical Safety Code and the National Electrical Code. Member-Producer shall promptly notify Cooperative upon receipt of any citation or other official notice of alleged violation of laws, ordinances, rules and regulations concerning the DG System.

The Cooperative agrees to use reasonable diligence to provide simultaneous electric service. Interconnection, parallel operation, sales and purchases of electricity will be governed by the Cooperative's Distributed Generation Interconnection Manual that includes the technical, interconnection, parallel operations and other procedural requirements and the Cooperative's Tariff including any and all amendments that may hereafter be approved or ordered by any regulatory authority having

jurisdiction, SAID TARIFF including all service rules, regulations, and rates IS A PART OF THIS AGREEMENT TO THE SAME EXTENT AS IF FULLY SET OUT HEREIN AND IS ON FILE AND AVAILABLE AT THE COOPERATIVE'S OFFICE.

Article 3 | Interconnection Process and Requirements

Prior to interconnection Member-Producer shall have:

- (1) fulfilled all requisites for the provision of electric utility service contained in the Agreement;
- (2) provide required information (see DG Application) regarding the DG system;
- (3) comply with conditions for line extension (if required);
- (4) provide satisfactory liability insurance (if required);
- (5) sign and deliver this Agreement;
- (6) complete construction / comply with applicable laws, codes and industry practices; and
- (8) give notice of intent to energize and notify Cooperative to schedule inspection;

Member-Producer shall be solely responsible for the design, installation, operation, maintenance, and repair of the DG System and Member-Producer's interconnection facilities. The interconnection of the DG System to the Cooperative electrical system shall comply with the Public Utility Commission of Texas Substantive Rules §25.212 relating to Technical Requirements for Interconnection and Parallel Operation of On-Site Distributed Generation, (16 Texas administrative Code §25.212) or any successor rule addressing distributed generation. Cooperative shall inspect the DG System and the interconnection equipment.

All costs to interconnect with the Cooperative electric system shall be the responsibility of Member-Producer. Cooperative shall not be required to take or pay for any energy generated by the DG System until the DG System successfully passes Cooperative's Field Inspection and Member-Producer shall have reimbursed Cooperative for all its interconnection costs. Maintenance of the DG System shall be performed in accordance with the applicable manufacturer's recommended maintenance schedule.

Article 4 | Insurance Requirements

For Facilities Less than 50 KW AC: The Member-Producer is not required to provide a certificate of insurance coverage to Cooperative. It is recommended, however, that the Member-Producer carry liability insurance coverage which insures the Member-Producer 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-Producer's generating equipment.

For Facilities 50 KW AC and Larger: Prior to installation / interconnection, the Member-Producer must provide a certificate of insurance showing satisfactory liability insurance including contractual liability insurance covering indemnity obligations which insures the Member-Producer 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-Producer's DG Facility.

- (1) The amount of such insurance coverage shall be not less than \$2,000,000 per occurrence and name Cooperative as an additional insured. This amount may be increased at the sole discretion of Cooperative if the nature of the project so requires.

- (2) The certificate of insurance 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 installation / interconnection contract or shall be specified to renew throughout the length of the Installation / Interconnection Contract.
- (3) The Cooperative reserves the right to request a Member-Producer provide proof of such insurance at any time.

Article 5 | Indemnification

THE COOPERATIVE'S LIABILITY IS LIMITED IN ACCORDANCE WITH THIS AGREEMENT AND MEMBER-PRODUCER SHALL INDEMNIFY, DEFEND AND SAVE HARMLESS COOPERATIVE, ITS ELECTED AND NON-ELECTED OFFICIALS, OFFICERS, AGENTS AND EMPLOYEES FROM AND AGAINST ANY AND ALL LIABILITIES, LOSSES, CLAIMS, DAMAGES, ACTIONS, SUITS OR DEMANDS FOR DAMAGES (INCLUDING COSTS AND ATTORNEY'S FEES, BOTH AT TRIAL AND ON APPEAL) ARISING OUT OF, RESULTING FROM, OR IN ANY MANNER CONNECTED WITH THE BREACH OF ANY WARRANTY OR REPRESENTATION MADE BY MEMBER-PRODUCER IN THIS AGREEMENT, OR IN ANY MANNER CONNECTED WITH THE DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE OR REPAIR OF ANY PART OF MEMBER-PRODUCER'S DG SYSTEM OR INTERCONNECTION FACILITIES, INCLUDING, WITHOUT LIMITATION LIABILITIES, LOSSES, CLAIMS, DAMAGES, ACTIONS, SUITS OR DEMANDS FOR DAMAGES FOR OR ON ACCOUNT OF PERSONAL INJURY TO, OR DEATH OF, ANY PERSON, OR DAMAGE TO, OR DESTRUCTION OR LOSS OF, PROPERTY BELONGING TO MEMBER-PRODUCER, COOPERATIVE OR ANY THIRD PERSON.

Article 6 | Installation and Information Warranty

Member-Producer warrants to Cooperative that Member-Producer's power generating installation (DG System) is constructed and will be maintained in a safe and reliable condition and will comply with the latest applicable codes.

Member-Producer warrants and represents that:

- The information regarding the characteristics of the DG System are as specified in the Application for Interconnection and Parallel Operation of Distributed Generation with the Cooperative's Electric System filed by the Member-Producer with Cooperative;
- The DG System and associated other electrical components and devices meet National Electrical Code standards;
- All permits, inspections, approvals, and/or licenses necessary for the installation or operation of the DG System have been obtained. The DG System has been successfully tested to UL 1741 and IEEE 1547 standards or has been satisfactorily tested by an independent laboratory with published results.

Member-Producer shall provide manufacturer's data or other written proof acceptable to Cooperative to verify the accuracy of the foregoing warranties and representations. If any of foregoing warranties and representations are inaccurate, Cooperative may, without waiver of or prejudice to any other remedy, immediately disconnect the DG system from the Cooperative's electric system and terminate this agreement.

Article 7 | Interconnection Studies

Cooperative may perform interconnection studies, which shall include service study, coordination study, and utility system impact study, as needed and determined in the sole discretion of the Cooperative. In instances

where such studies are deemed necessary, the scope of such studies shall be based on the characteristics of the particular distributed generation facility to be interconnected and the Cooperative's distribution system at the specific proposed location. Cooperative may charge Member fees for Pre-Interconnection Studies that recover the costs of performing such studies. Any modifications or additions to the Cooperative's Electric system identified through the interconnection study as required for the safe and reliable interconnection of Member's facility shall be solely at the Member's expense. Member shall not acquire any ownership in such modifications or additions to Cooperative's electric distribution system.

Article 8 | Metering Equipment

- 1) The actual metering equipment required, its voltage rating, number of phases and wires, size, current transformers, number of input and associated memory is dependent upon the type, size and location of the electric service provided. For all approved DG installations, PenTex; the "Received KWh" (energy delivered to the Cooperative by the Member-Producer).
- 2) DG applicant shall install a Secondary (PV Meter base) meter base for a meter to measure the output of the DG system. Applicant shall pay for the DG meter base and the installation of the DG meter base.
- 3) The DG meter will be supplied by PenTex. DG Applicant responsible for cost of the DG meter.
- 4) DG output meter will be installed in a forward energy configuration (input to the top of the meter).

Article 9 | Manual Safety Disconnect

The Member-Producer shall provide and install a manual load break switch that provides clear indication of the switch position at the Point of Interconnection to provide separation between the Cooperative electrical system and the Member-Producer's electrical generation system. The location of the disconnect switch must be approved by the Cooperative.

The disconnect switch shall be easily visible, mounted separately from metering equipment, readily accessible to Cooperative personnel at all times, and capable of being locked in the open position with a Cooperative padlock. The Cooperative reserves the right to open the disconnect switch isolating the Member-Producer's electrical generating system (which may or may not include the Member-Producer's load) from Cooperative electrical system for any of the following reasons:

- 1) To facilitate maintenance or repair of the Cooperative electrical system, or
- 2) When emergency conditions exist on the Cooperative electrical system, or
- 3) When the Member-Producer's electrical generating system is determined to be operating in a hazardous or unsafe manner or is or potentially can unduly affect the Cooperative electrical system waveform, or
- 4) When the Member-Producer's electrical generating system is determined to be adversely affecting other electric consumers on the Cooperative electrical system, or
- 5) Failure of the Member-Producer to comply with applicable codes, regulations and standards in effect at the time, or

- 6) Failure of the Member-Producer to abide by any contractual arrangement or operating agreement with the Cooperative.
- 7) The Cooperative reserves the right to operate the disconnect for the protection of the Cooperative's system even if it affects Member-Producer's distributed generation system. In the event the Cooperative opens and closes the disconnect switch it shall not be responsible for energization or restoration of parallel operation of the generating installation. The Cooperative will make reasonable efforts to notify the Member-Producer in the event the disconnect switch has been operated. The Member-Producer will not bypass the disconnect switch at any time for any reason.

Article 10 | Cooperative Right to Disconnect

Cooperative shall not be obligated to accept and shall have the right to require Member-Producer to temporarily curtail, interrupt, or reduce, deliveries of energy in order to construct, install, maintain, repair, replace, remove, investigate, inspect, or test any part of the interconnection facilities, equipment, or any part of the Cooperative's electric system. Cooperative may disconnect, without notice, the DG System from the electric distribution system, if, in the Cooperative's opinion, a hazardous condition exists and such immediate action is necessary to protect persons, or Cooperative's facilities or other member's facilities from damage or interference caused by Member-Producer's DG System or lack of properly operating protective devices.

Article 11 | Parallel Operation

Member-Producer is responsible for installation, safe operation, protection, and maintenance of all equipment and wiring at and beyond the point where Member-Producer's conductors contact the Cooperative's conductors. The electrical power generated shall be compatible with Cooperative's standard distribution system at the point of delivery and of such quality that Cooperative's system is not adversely affected.

Article 12 | Purchases of Electricity from Member-Producer

As provided for in the Cooperative's Distributed Generation Tariff,

- 1) Member-Producer and the Cooperative agree that the Member-Producer will sell exclusively to the Cooperative the electrical output from the DG system.
- 2) the Cooperative shall pay Member for the "KWh Received" (energy received by the Cooperative's Distribution System) at the Avoided Cost of Energy Rate (ACER).
- 3) The ACER is calculated based on the Cooperative's wholesale electric energy provider's yearly invoices. The Cooperative reserves the right to amend the ACER at any time.
- 4) Member-Producer shall exclusively purchase from the Cooperative its requirements of electric energy above the amounts generated by the DG system at the applicable tariff rate. If any tariff or rate is changed by the Cooperative, or by order or consent of any regulatory authority having a jurisdiction thereof whether at the request of the Cooperative, such changed tariff, rate/or redefined class of service shall be applicable to service provided hereunder from and after the effective date of such change.

Article 13 | Payment / Reimbursement for Energy

The Member's compensation for the excess energy supplied to the Cooperative during the monthly billing period shall be credited on that monthly bill, if the credit is in excess of the monthly bill it will be credited on the next billing period. If the credited amount is in excess of \$100.00 the member will receive a check for the credit.

Article 14 | Access to Premise and DG System Interconnection

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

Article 15 | Breach

A material failure of either party to fully, faithfully, and timely perform its obligations under this Agreement shall be a breach of this Agreement. In the event of a breach which is not cured within thirty (30) days after receipt of written notice to the party in default, the party not in default may terminate this Agreement. Notwithstanding any other provision of this agreement, Cooperative may discontinue service or may disconnect the DG System or otherwise suspend taking energy from Member-Producer. All rights granted under this section are in addition to all other rights or remedies available at law or under this Agreement or the applicable Rules and Regulations of the Cooperative.

Article 16 | Entire Agreement

This agreement constitutes the entire agreement between the parties and supersedes all prior agreements between Member-Producer and Cooperative for the service herein described, and the Cooperative, its agents and employees have made no representations, promises, or made any inducements, written or verbal, which are not contained herein. Member-Producer agrees that it is not relying on any statements not herein contained.

Article 17 | Notice

After the initial term, this agreement shall continue in force thereafter unless terminated by either party giving at least thirty (30) days written notice to the other. 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:

If to Company:

PenTex Energy
PO Box 530, Muenster, TX 76252

If to Member-Producer:

Article 19 | Termination

Termination of this agreement will result in the disconnection of the distributed generation facility from the Cooperative's distribution system in accordance with good utility practice.

Article 20 | Assignments

This Agreement shall inure to the benefit of and by binding upon the heirs, successors, or assigns of each of the parties hereto. Member-Producer may not assign this Agreement without the prior written consent of the Cooperative. Any assignment without such consent shall be null and void.

Article 21 | Waiver

The failure of either party to insist in anyone or more instances upon strict performance of any provisions of this Agreement, or to take advantage of any of its rights hereunder, shall not be construed as a waiver of any such provision or the relinquishment of any such right or any other right hereunder.

Article 22 | Interconnection Costs

Member-Producer agrees to pay for extension of Cooperative's facilities and other interconnection costs as follows:

\$ _____ in advance of any work by the Cooperative.

Article 23 | Other Costs

Member-Producer agrees to reimburse Cooperative for all future costs, including:

- b. Costs required to correct the quality of service provided by Member-Producer,
- c. Costs of modification to Cooperative's system in order to purchase or continue to purchase Member-Producer's output, costs associated with meter reading, billing or other activities engaged in by Cooperative as a result of the purchase of the Member-Producer's output, or other costs that may be assessed to the Cooperative by ERCOT, the Public Utility Commission, or other agencies and their successors that are attributable to distributed generation systems.

These costs may include, but are not limited to, the costs of special interconnection equipment, protective devices, control devices, upgrading of distribution system components; associated engineering and general and administrative expenses, maintenance and repair costs of the modifications and equipment, and other just and reasonable costs which are allocable to the Member-Producer's small power generating installation.

Article 24 | Review of Distributed Generation Tariff

Member-Producer acknowledges it has reviewed the Cooperative's Distributed Generation Tariff.

Article 25 | Disputes This Agreement and all disputes arising hereunder shall be governed by the laws of the State of Texas. Venue for all such disputes shall be proper and lie exclusively in Cooke County, Texas.

Article 26 | Approvals

IN WITNESS WHEREOF, the parties hereto have caused their names to appear below, signed by authorized representatives.

PenTex Energy	
By (Signature):	_____
Name (Print):	_____
Title:	_____
Date:	_____

Member-Producer	
By (Signature):	_____
Name (Print):	_____
Date:	_____