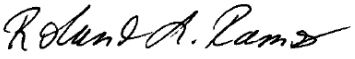
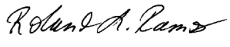
ROBSTOWN UTILITY SYSTEMS

DISTRIBUTED GENERATION GUIDELINES MANUAL

Approval and Version History

The Robstown Utility Systems Distributed Generation Guidelines Manual (DG Guidelines) have been developed and implemented in accordance with the City of Robstown Distributed Generation Ordinance, which was adopted on March 20, 2023.

Below is the version history of the DG Guidelines Manual:

Version	Effective Date	Approval By	Approval Signature / Description of Changes
2023.1	4/17/23	Roland L. Ramos Superintendent of Utilities Robstown Utility Systems	
2023.2	9/6/23	Roland L. Ramos Superintendent of Utilities Robstown Utility Systems	 1) Updated DG Diagrams

Introduction

Distributed Generation (DG) technologies continue to develop and have reached a level of cost-effectiveness that has led an increasing number of energy consumers to consider the installation of DG systems, especially renewable DG systems. Robstown Utility Systems (RUS) has developed the policies and procedures contained in this Guidelines Manual to ensure DG installations in the RUS service area **meet procedural, technical, and operational requirements for the safe interconnection and parallel operation of these systems on the RUS electric distribution system**.

This Distributed Generation Guidelines Manual (DG Guidelines Manual) is intended to provide customers with accurate procedural, technical and policy information that will assist and guide customers through the interconnection process and support informed decisions at every stage or phase of this process.

The DG Guidelines Manual is organized in the following manner:

Section	Purpose
Overview - Q&A	Answer basic questions that customers will likely ask / need to know prior to starting on a DG project.
Definitions	Define the main terms associated with DG to ensure customers understand the terms that are associated with RUS's DG policies, procedures, and requirements.
Technical Requirements	Provide the engineering-based technical requirements and specifications that all DG systems must meet prior to installation / interconnection of the DG system.
Procedural and Policy Requirements	Identify the process and policy requirements that must be satisfied to interconnect a DG system.
Application Form	The form that must be completed and submitted prior to a customer beginning the process to install a DG system.
DG Agreement	The agreement between RUS and a customer that desires to install, interconnect and operate a DG system in parallel with the distribution system.
DG Interconnection Diagrams	Diagrams that illustrates key installation and interconnection requirements for standard configurations of DG systems.

Section 1: Distributed Generation Overview - Q&A

What is the purpose of the Robstown Utility Systems Distributed Generation (DG) Guidelines Manual?

Robstown Utility Systems (RUS) Distribution Generation Guidelines Manual (DG Guidelines) was developed to establish the requirements and procedures for the safe installation, interconnection, and parallel operation of distributed generation facilities within the RUS electric service area.

The RUS DG Guidelines are 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 RUS's customers that are interested and/or considering the installation of interconnected distributed generation. RUS wants to ensure that our customers 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 RUS customers regarding the rate that RUS has put in place regarding the purchase of any energy that is generated by a DG system and delivered to the RUS distribution system.

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

I am a Robstown electric customer, and I am considering installing a DG system - where should I start?

Robstown Utility System (RUS) customers should contact RUS very early in the "DG decision-making" process. RUS representatives will be available to answer questions and provide both technical and procedural information regarding potential DG installations. **The RUS DG Policy is clear: DG systems <u>will not</u> be allowed to interconnect and/or operate until the following steps have occurred and been verified:**

1. **<u>Customer must submit information and application to RUS</u>** for the proposed DG system(s). The RUS DG Application Form is included in the RUS DG Guidelines Manual and is also available on the RUS website (www.robstownutilitysystems.com) and at the RUS office.
2. The **<u>DG application must be reviewed and approved by RUS, prior to installation</u>** of the DG system. RUS 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. DG Application review and DG engineering studies may also result in the denial of a DG application.
3. Once the DG system is installed RUS will confirm the installation is consistent with the DG Application and meets all RUS requirements. This **<u>inspection must take place prior to interconnecting the DG system</u>** with the RUS distribution system.
4. The **<u>customer must execute a DG Agreement with RUS</u>**. This agreement is required prior to interconnecting the DG system with the RUS distribution system. The DG Agreement confirms that the system meets all technical requirements and sets forth the rate at which RUS will purchase any energy that is delivered to RUS (energy in excess of the DG output that is used by the customer).

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:

- ✓ RUS 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 RUS 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. RUS 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.

Are there any DG system size restrictions or size thresholds to consider?

- ✓ Yes. The Public Utility Commission of Texas (PUCT) defines DG as "10 MW or less". While this definition is utilized by the PUCT and RUS, RUS has developed a policy that sets a threshold of 50 kW AC for several requirements and policies that are provided in this DG Guidelines Manual.
- ✓ For customers considering the interconnection of DG systems larger than 50 kW AC, RUS will utilize the technical requirements and certain other requirements in this manual but will likely require an engineering study to determine if a large DG system will be allowed to interconnect to the RUS distribution system. Furthermore, RUS will consider purchases and reimbursements for energy delivered to the system on a case-by-case basis for DG systems larger than 50 kW.
- ✓ RUS encourages customers considering the installation and interconnection of DG system to "right-size" these systems. A good rule to consider is to size DG systems at not larger than 30% of the premise (residence or business) peak demand. For most houses, this means a "right-sized DG system would be in the 2-5 kW AC range.

Does RUS sell and/or install DG systems? Does RUS have listed DG vendors or contractors?

RUS <u>does not</u> sell and/or install DG systems. RUS is committed to the safe and reliable operation and maintenance of the RUS distribution system.

RUS understands that our customers look to the utility for sound and unbiased information related to electric energy topics and issues. And with that in mind, RUS can provide general industry information to our customers regarding distributed generation. However, ***RUS <u>will not</u> endorse or recommend systems, vendors, or contractors for DG system installations***.

How will RUS account for (and reimburse) for energy that my DG system sends to the electric grid?

RUS will reimburse customers for energy "delivered to" the RUS distribution system at the "avoided cost of generation" rate (ACGR). The ACGR was established in the City of Robstown DG Ordinance and is determined by the average per kWh cost of wholesale generation costs for electric energy purchased by RUS from its wholesale electric energy provider(s). RUS reserves the right to amend the ACGR at any time. Reimbursements will likely take the form of a credit on the customer's monthly bill; however, RUS may make other arrangements for reimbursement based on the amount of energy that is delivered to RUS from the DG system.

Does RUS require any DG fees?

City of Robstown permits are required (see City of Robstown Building & Development Department) and RUS requires an Application Fee of $200 for all DG installations. The DG Application Fee is not refundable, even if the DG system application is denied, or the RUS customer does not install the approved DG system.

For Permitting – Contact:

Building & Development Department
Physical Address: 101 E Main St. Robstown, TX 78380
Mailing Address: P.O. Box 872 Robstown, TX 78380
Phone: 361-387-4589
Hours: 8a.m.-5p.m.
Permitting Hours: 8:00a.m.-5:00p.m.
Email: qc_hub@cityofrobstown.com

For DG Application Fee – Contact:

Provide Application Fee payment at the time the DG Application is submitted.
Submit DG Application to:
Robstown Utility Systems
101 E Main Street Robstown, TX 78380
Email: utilitiessupport@robstownutilities.com

Section 2: Distributed Generation Definitions

DG Definitions

- **Automatic Disconnect Device:** A switch that is capable of opening and closing automatically at the Point of Interconnection that provides clear indication of the switch position, and when in the open position isolates the distributed generation Battery Storage System.
- **Battery Storage System:** Technology developed for storing electric charge by using specially developed batteries so the stored energy can be utilized at a later time. The system typically utilizes an electro-chemical solution and includes batteries, inverters, and disconnect switches. The system may be connected to and serve critical loads when utility power is unavailable.
- **Commission:** The Public Utility Commission of Texas or its successor organization having jurisdiction over the matters herein contained.
- **Customer:** A person or entity interconnected or seeking interconnection to the Robstown electric system for the purpose of receiving or exporting electric power from or to the Robstown electric system.
- **DG Agreement:** An agreement between a customer and the Utility that sets forth the contractual conditions under which a company and a customer agree that one or more facilities may be interconnected with the Utility's electric system.
- **DG Application:** The form of application of a customer seeking interconnection and parallel operation of distributed generation with the Utility's electric system.
- **DG Contact Person:** The person or persons designated by the Superintendent of Utilities to serve as the Utility's contact for all matters related to distributed generation interconnection.
- **Distributed Generation:** An electrical generating facility located at a customer's point of delivery (point of common coupling) of ten (10) megawatts (MW) or less and connected at a voltage less than sixty (60) kilovolts (kV) which may be connected in parallel operation to the Robstown Utility Systems electric system.
- **Distributed Generation Owner:** An owner of distributed generation, the customer on whose side of the meter distributed generation is installed and operated, regardless of whether the customer 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 customer on the customer's side of the meter.
- **Energy Delivered:** Electric energy, measured in kWh, sent / delivered to the Customer (premise) by the Robstown Utility Systems.
- **Energy Received:** Electric energy, measured in kWh, sent / delivered to the Robstown Utility Systems distribution system by the DG customer.
- **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 Robstown Utility Systems electric system is connected.
- **Interconnection:** The physical connection of distributed generation to the utility system in accordance with the requirements of this ordinance so that parallel operation can occur.
- **Interconnection Study:** A study or studies that may be undertaken by the Utility 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.

- **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.
- **Networked Services:** two or more utility primary distribution feeder sources electrically tied together on the secondary (low voltage) side to form one power source for one or more customers. The service is designed to maintain service to the customers even after the loss of one of these primary distribution feeder sources.
- **Parallel Operation:** The operation of distributed generation by a customer while the customer is connected to the Robstown electric system.
- **Point of Interconnection (Point of Service, Point of Common Coupling):** The point where the electrical conductors of the Robstown Utility Systems utility system are connected to the customer's conductors and where any transfer of electric power between the customer and the Robstown Utility Systems utility system takes place, such as switchgear near the meter.
- **Pre-certified Equipment:** A specific generating and protective equipment system or systems that have been certified as meeting the applicable parts of this ordinance relating to safety and reliability by an entity approved by the Commission.
- **Stabilized:** The Robstown electric system shall be considered stabilized when, following a disturbance, the system returns to the normal range of voltage and frequency for a duration of two minutes.
- **Superintendent of Utilities** The person responsible for the administration and management of the Robstown Utility Systems and/or his/her duly authorized representative.

Section 3: Distributed Generation Technical Requirements

Technical Requirements for the Installation and Parallel Operation of a DG System

1. General Requirements

1.1. 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.

1.2. All interconnections shall comply with local building and electric codes as adopted by the City of Robstown / Robstown Utility Systems (RUS). Installation of all interconnections shall be inspected by RUS. Inspection and approval of the installation by RUS is a prerequisite and a continuing condition of interconnection and parallel operation of distributed generation.

1.3. Variations from the Technical Requirements herein must be reviewed and approved by RUS prior to implementation. Variations in the point of interconnection must be approved by the Robstown Utility Systems Superintendent of Utilities (or designee) and included in the executed DG Agreement.

2. Protection of line workers and RUS system

2.1. 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

3.1. The customer shall provide and install a manual load break switch that provides clear indication of the switch position to provide separation between the RUS electrical system and the customer's electrical generation system. The location of the disconnect switch must be approved by RUS. The disconnect switch shall be easily visible, mounted separately from metering equipment, readily accessible to RUS personnel at all times, and capable of being locked in the open position with a RUS padlock. RUS 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 RUS electrical system for any of the following reasons:

3.1.1. To facilitate maintenance or repair of the RUS electrical system, or

3.1.2. When emergency conditions exist on the RUS electrical system, or

3.1.3. 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 the RUS electrical system waveform, or

3.1.4. When the customer's electrical generating system is determined to be adversely affecting other electric consumers on the RUS electrical system, or

3.1.5. Failure of the customer to comply with applicable codes, regulations, and standards in effect at the time, or

3.1.6. Failure of the customer to abide by any contractual arrangement or operating agreement with RUS.

4. Power Quality

4.1. Voltage: RUS 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 RUS 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.

4.2. Frequency: RUS shall endeavor to maintain a 60-hertz nominal frequency on the electrical system. The customer shall provide an automatic method of disconnecting generation equipment from the Robstown Utility Systems electrical system within 15 cycles should a deviation in frequency of +0.5Hz or -0.7Hz from normal occur.

4.3. 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 the RUS 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.

4.4. Flicker: The distributed generation facility shall not cause excessive voltage flicker on the Robstown Utility Systems 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.

4.5. 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. The Robstown Utility Systems 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

5.1. The customer shall provide approved protective equipment necessary to immediately, completely, and automatically disconnect the customer's electrical generation equipment from the RUS electrical system in the event of a fault on the customer's system, a fault on the RUS system or loss of source on the RUS system. Such protective equipment shall conform to the criteria specified in UL 1741 and IEEE 1547.

5.2. 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 the RUS service voltage and frequency are restored to within the normal operating range and the system is stabilized.

5.3. DG systems equipped with battery storage systems may be equipped with an automatic disconnect switch to isolate from the utility system. Subpanels isolated by the automatic disconnect switch may be energized from the battery storage system. Returning to utility power will be according to section 12.1.

6. Coordination and Synchronization

6.1. The customer shall be solely responsible for coordination and synchronization of the customer's electrical generating system with all aspects of the RUS 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 the RUS electrical system.

7. Metering

7.1. At the point of customer / premise interconnection, RUS will provide a standard data recorder (meter) that can measure the "kWh Delivered" and the "kWh Received" in intervals established by the Robstown Utility Systems. If special (non-standard) metering is required, RUS will identify this requirement and any cost to the customer prior to approval of the DG Application.

8. **Interconnection Study**

8.1. RUS 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 RUS distribution system factors. Interconnection studies, include service study, coordination study, and utility system impact study, as needed, and determined in the sole discretion of RUS. If the interconnection study is deemed necessary, RUS shall perform the study under reasonable terms and conditions agreed upon by both the customer and RUS and at the customer's sole expense.

8.2. Any modifications or additions to the RUS Electric 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 RUS distribution system.

8.3. The interconnection study may conclude the proposed system may not be approved / authorized by RUS. In such cases, RUS 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.

8.4. No study fee will be charged if the proposed generation site is not on a networked secondary and if all of the following apply:

8.4.1. 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

8.4.2. The proposed generation system does not expect to export more than 15% of total load on the feeder, and

8.4.3. 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.**

    10.1. Synchronous machines:

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

        10.1.2. The Customer is solely responsible for proper synchronization of its generator with the RUS system.

            10.1.2.1. The excitation system response ratio shall not be less than 0.5.

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

    10.2. 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:**

    11.1. Line-commutated inverters do not require synchronizing equipment.

    11.2. 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.

Section 4: Distributed Generation Procedural and Policy Requirements

Process Overview

- **Customer must submit information and application to RUS** for the proposed DG system(s). The RUS DG Application Form is included in the RUS DG Guidelines Manual – and is also available on the RUS website (www.robstownutilitysystems.org) and at the RUS office.
- The **DG application must be reviewed and approved by RUS, prior to installation** of the DG system. RUS 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.
- Once the DG system is installed RUS will confirm the installation is consistent with the DG Application and meets all RUS requirements. This **inspection must take place prior to interconnecting the DG system** with the RUS distribution system.
- The **customer must execute a DG Agreement with RUS**. This agreement is required prior to interconnecting the DG system with the RUS distribution system. The DG Agreement confirms that the system meets all technical requirements and sets forth the rate at which RUS will purchase any energy that is delivered to RUS (in excess of the DG output that is used by the customer).

Customer Provided Information

- 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 RUS electric system filed by the Customer with RUS;
- 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.
- Customer shall provide manufacturer's data or other written proof acceptable to Robstown Utility Systems to verify the accuracy of the foregoing warranties and representations. If any of foregoing warranties and representations are inaccurate, RUS may, without waiver of or prejudice to any other remedy, immediately disconnect the DG system from the RUS electric system and terminate this agreement.

Energy Purchases

- RUS will purchase from Customer and Customer will sell exclusively to RUS the electrical output from the DG system that is "received" by the RUS Distribution System. During the term of this Agreement, Customer shall exclusively purchase from RUS its requirements of electric energy above the amounts generated by the DG system.
- RUS shall pay Customer for the "kWh Received" (energy received by the RUS Distribution System) at the "Avoided Cost of Generation Rate" (ACGR). The ACGR is determined by the average per kWh cost of wholesale generation costs for electric energy purchased by RUS from its wholesale electric energy provider(s). RUS reserves the right to amend the ACGR at any time.

Metering

At the point of customer / premise interconnection, RUS will provide a standard data recorder (meter) that can measure the "kWh Delivered" and the "kWh Received" in intervals established by RUS. If special (non-standard) metering is required, the cost of the non-standard meter will be paid by the DG customer. If a non-standard meter is required:

- RUS will identify the meter cost in advance and provide this cost to the DG customer.
- Customer must pay for the non-standard meter prior to approval of the DG Application.

Interconnection Study

RUS 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 RUS distribution system factors. Interconnection studies, include service study, coordination study, and utility system impact study, as needed, and determined in the sole discretion of RUS. If the interconnection study is deemed necessary, RUS shall perform the study under reasonable terms and conditions agreed upon by both the customer and RUS and at the customer's sole expense.

Any modifications or additions to the RUS Electric 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 the RUS distribution system.

The interconnection study may conclude the proposed system may not be approved / authorized by RUS. In such cases, RUS 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.

No study fee will be charged if the proposed generation site is not on a networked secondary and if all of the following apply:

1) 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

2) The proposed generation system does not expect to export more than 15% of total load on the feeder, and

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

DG System - Customer Responsibilities

Customer shall be solely responsible for the design, installation, operation, maintenance, and repair of the DG System and Customer's interconnection facilities. The interconnection of the DG System to the RUS 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. RUS shall inspect the DG System and the interconnection equipment. All costs to interconnect with the RUS electric system shall be the responsibility of Customer. RUS shall not be required to take or pay for any energy

generated by the DG System until the DG System successfully passes RUS Field Inspection and Customer shall have reimbursed RUS for all its interconnection costs. Maintenance of the DG System shall be performed in accordance with the applicable manufacturer's recommended maintenance schedule.

Right to Temporarily Curtail and/or Interrupt

RUS shall not be obligated to accept and shall have the right to require Customer 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 RUS electric system. RUS may disconnect, without notice, the DG System from the electric distribution system, if, in RUS's opinion, a hazardous condition exists, and such immediate action is necessary to protect persons, or RUS's facilities or other customers' facilities from damage or interference caused by Customer's DG System or lack of properly operating protective devices.

Utility Access

Customer hereby grants RUS 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 RUS facilities. No inspection by RUS of the DG System or the interconnection facilities shall impose on RUS any liability or responsibility for the operation, safety or maintenance of the DG system or Customer's interconnection facilities.

Liability Insurance Requirements

For Facilities 50 kW and Smaller: The Customer is not required to provide a certificate of insurance coverage to RUS. It is recommended, however, that the Customer carry liability insurance coverage which insures the Customer 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 Customer's generating equipment.

For Facilities Larger than 50 kW: Prior to installation / interconnection, the Customer must provide a certificate of insurance showing satisfactory liability insurance including contractual liability insurance covering indemnity obligations which insures the Customer 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 Customer's DG Facility.

1) The amount of such insurance coverage shall be not less than $2,000,000 per occurrence and name RUS as an additional insured. This amount may be increased at the sole discretion of RUS 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 RUS. 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 Customer shall provide proof of such insurance to RUS at least annually and on request by Robstown Utility Systems.

Section 5: Distributed Generation Interconnection Application

APPLICATION AND CUSTOMER INFORMATION

This application is for the coordination of interconnection of a distributed generation (DG system) between "Customer", Robstown Utility Systems and the electrician / contractor doing the proposed work. The following needs to be filled out completely and clearly.

Date	
First Name (Customer)	
Last Name (Customer)	
Account Number	
Premise Type	❑ Residential ❑ Commercial ❑ Industrial ❑ 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			
Do you plan to export power?	**Yes** **No** (please circle one)		
Does system have a battery backup?			
IEEE and/or UL Certification(s) **(list all or attach documentation)**			
Please provide the system engineering and/or manufacturers drawings and specifications	❑ System one-line diagram ❑ 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 APPLICANT

1. It is understood that permit charges must be paid in accordance with City of Robstown permit requirements.
2. **DG Application Fees of $200** must be paid when DG Application is submitted. This fee is not refundable.
3. If work has not been completed within a 180-day period – the application will be voided, and application review fees will not be refunded.
4. If additional work is required by the City of Robstown and/or Robstown Utility Systems – there will be additional charges that will need to be paid.
5. **ALLOW A MINIMUM OF TEN WORKING DAYS FOR PROCESSING**
6. Return to Robstown Utility Systems | 101 E Main Street Robstown, TX 78380 or email to utilitiessupport@robstownutilities.com

INTERNAL / OFFICE USE ONLY:

Section 6: Distributed Generation Customer Agreement

FOR THE INTERCONNECTION AND PARALLEL OPERATION OF DISTRIBUTED GENERATION IN THE ROBSTOWN UTILTY SYSTEMS

THIS AGREEMENT is entered into by and between the City of Robstown Utility Systems (RUS) and _____Customer (CUSTOMER).

RUS owns and operates a municipal electric utility engaged in the distribution of electricity serving the City of Robstown and portions of Nueces County, Texas; and CUSTOMER intends to construct, own, operate, maintain, and connect to the Robstown Utility Systems electric distribution system, a Distributed Generation system less than 50kW in size (the DG 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 RUS's 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 1.0 | 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 2.0 | The DG System will be installed at CUSTOMER's premises at the address specified above. The DG System shall not have a generation capacity greater than 50 kW. CUSTOMER 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. Customer shall promptly notify Robstown Utility Systems upon receipt of any citation or other official notice of alleged violation of laws, ordinances, rules, and regulations concerning the DG System.

Article 3.0 | CUSTOMER warrants and represents that:

3.01 | 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 RUS Electric system filed by the CUSTOMER with RUS;

3.02 | The DG System and associated other electrical components and devices meet National Electrical Code standards;

3.03 | 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.

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

Article 4.0 | RUS will purchase from Customer and Customer will sell exclusively to RUS the electrical output from the DG system that is "received" by the RUS's Distribution System. During the term of this Agreement, Customer shall exclusively purchase from RUS its requirements of electric energy above the amounts generated by the DG system.

Article 5.0 | RUS shall pay Customer for the "kWh Received" (energy received by the RUS's Distribution System) at the "Avoided Cost of Generation Rate" (ACGR). The ACGR is determined by the average per kWh cost of wholesale generation costs for electric energy purchased by RUS from its wholesale electric energy provider(s). RUS reserves the right to amend the ACGR at any time.

Article 6.0 | At the point of customer / premise interconnection, RUS will provide a standard data recorder (meter) that can measure the "kWh Delivered" and the "kWh Received" in intervals established by RUS. If special (non-standard) metering is required, the cost of the non-standard meter will be paid by the DG customer. If a non-standard meter is required:

- RUS will identify the meter cost in advance and provide this cost to the DG customer.
- Customer must pay for the non-standard meter prior to approval of the DG Application.

Article 7.0 | RUS 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 Robstown Utility Systems distribution system factors. Interconnection studies, include service study, coordination study, and utility system impact study, as needed, and determined in the sole discretion of RUS. If the interconnection study is deemed necessary, RUS shall perform the study under reasonable terms and conditions agreed upon by both the customer and RUS and at the customer's sole expense.

Any modifications or additions to the RUS's Electric 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 RUS's distribution system.

The interconnection study may conclude the proposed system may not be approved / authorized by the Robstown Utility Systems. In such cases, RUS 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.

No study fee will be charged if the proposed generation site is not on a networked secondary and if all of the following apply:

1) 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

2) The proposed generation system does not expect to export more than 15% of total load on the feeder, and

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

Article 8.0 | Customer shall be solely responsible for the design, installation, operation, maintenance, and repair of the DG System and Customer's interconnection facilities. The interconnection of the DG System to the RUS 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. Robstown Utility Systems shall inspect the DG System and the interconnection equipment. All costs to interconnect with the RUS electric system shall be the responsibility of Customer. RUS shall not be required

to take or pay for any energy generated by the DG System until the DG System successfully passes RUS's Field Inspection and Customer shall have reimbursed RUS for all its interconnection costs. Maintenance of the DG System shall be performed in accordance with the applicable manufacturer's recommended maintenance schedule.

Article 9.0 | RUS shall not be obligated to accept and shall have the right to require Customer 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 RUS's electric system. RUS may disconnect, without notice, the DG System from the electric distribution system, if, in RUS's opinion, a hazardous condition exists, and such immediate action is necessary to protect persons, or RUS's facilities or other customers' facilities from damage or interference caused by Customer's DG System or lack of properly operating protective devices.

Article 10.0 | Customer hereby grants RUS 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 RUS's facilities. No inspection by RUS of the DG System or the interconnection facilities shall impose on UTLITY any liability or responsibility for the operation, safety or maintenance of the DG system or Customer's interconnection facilities.

Article 11.0 | **CUSTOMER SHALL INDEMNIFY, DEFEND AND SAVE HARMLESS UTILTIY, 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 CUSTOMER IN THIS AGREEMENT, OR IN ANY MANNER CONNECTED WITH THE DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE OR REPAIR OF ANY PART OF CUSTOMER'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 CUSTOMER, RUS OR ANY THIRD PERSON.**

Article 12.0 | For Facilities 50 kW and Smaller: The Customer is not required to provide a certificate of insurance coverage to RUS. It is recommended, however, that the Customer carry liability insurance coverage which insures the Customer 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 Customer's generating equipment.

Article 13.0 | After the initial term of 12 months, this agreement shall continue in force thereafter unless terminated by either party giving at least thirty (30) days written notice to the other.

Article 14.0 | 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 RUS:
Robstown Utility Systems

Attn: RUS Superintendent of Utilities

If to CUSTOMER:

_____

_____

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

Article 15.0 | 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. **If** CUSTOMER is in breach of this Agreement, and such breach continues for thirty (30) days after written notice from RUS, RUS may disconnect the DG System or otherwise suspend taking energy from CUSTOMER. 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 RUS Utilities Rules and Regulations.

Article 16.0 | This Agreement shall inure to the benefit of and by binding upon the heirs, successors, or assigns of each of the parties hereto. CUSTOMER may not assign this Agreement without the prior written consent of RUS. Any assignment without such consent shall be null and void.

Article 17.0 | This Agreement constitutes the entire agreement and understanding between the parties hereto and can be amended only by agreement between the parties in writing. In the event any provision of this Agreement, or any part or portion thereof, shall be held to be invalid, void or otherwise unenforceable, the obligations of the parties shall be deemed to be reduced only as much as may be required to remove the impediment.

Article 18.0 | 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 19.0 | 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 Nueces County, Texas.

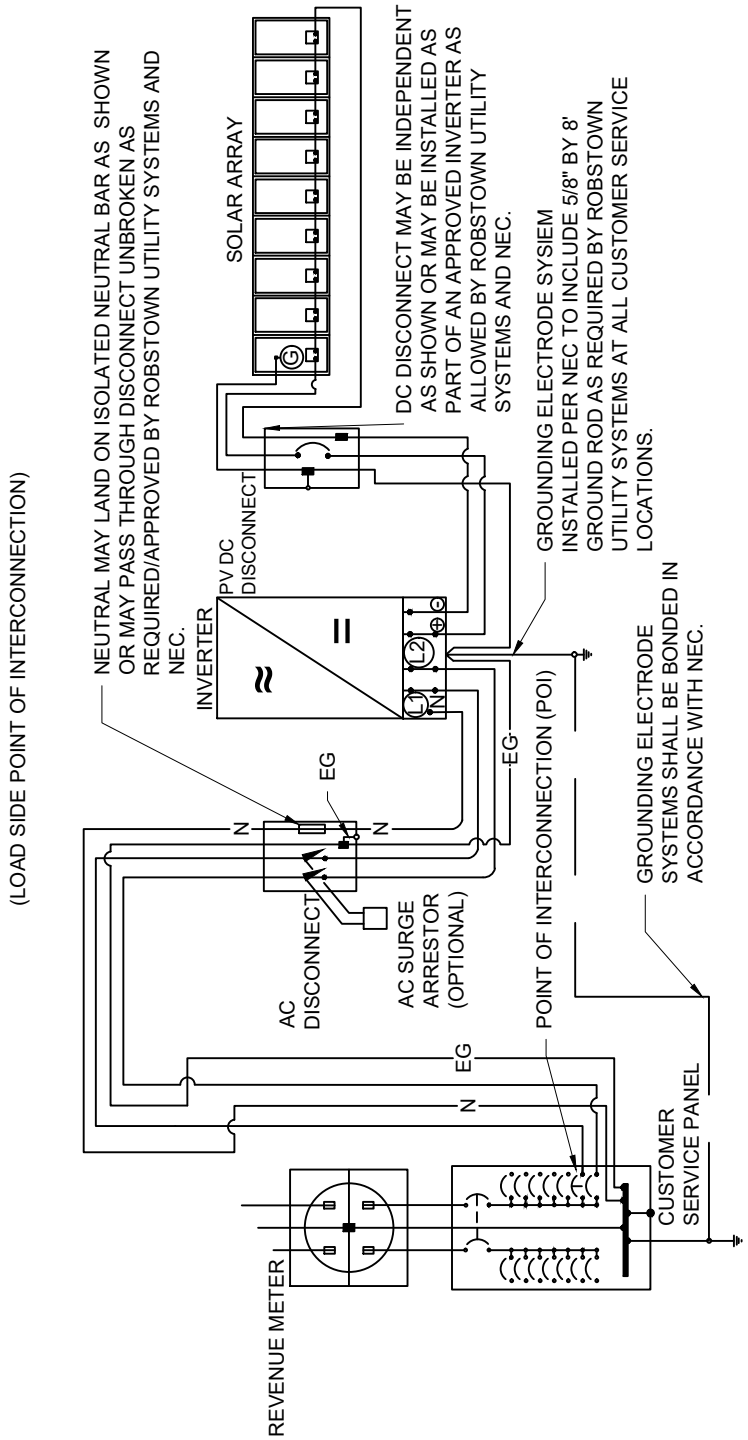
IN WITNESS WHEREOF, the parties hereto have caused their names to appear below, signed by authorized representatives.

Robstown Utility Systems
By (Signature): _____
Name (Print): _____
Title: _____
Date: _____

CUSTOMER
By (Signature): _____
Name (Print): _____
Date: _____

Section 7: Distributed Generation Interconnection Diagrams

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

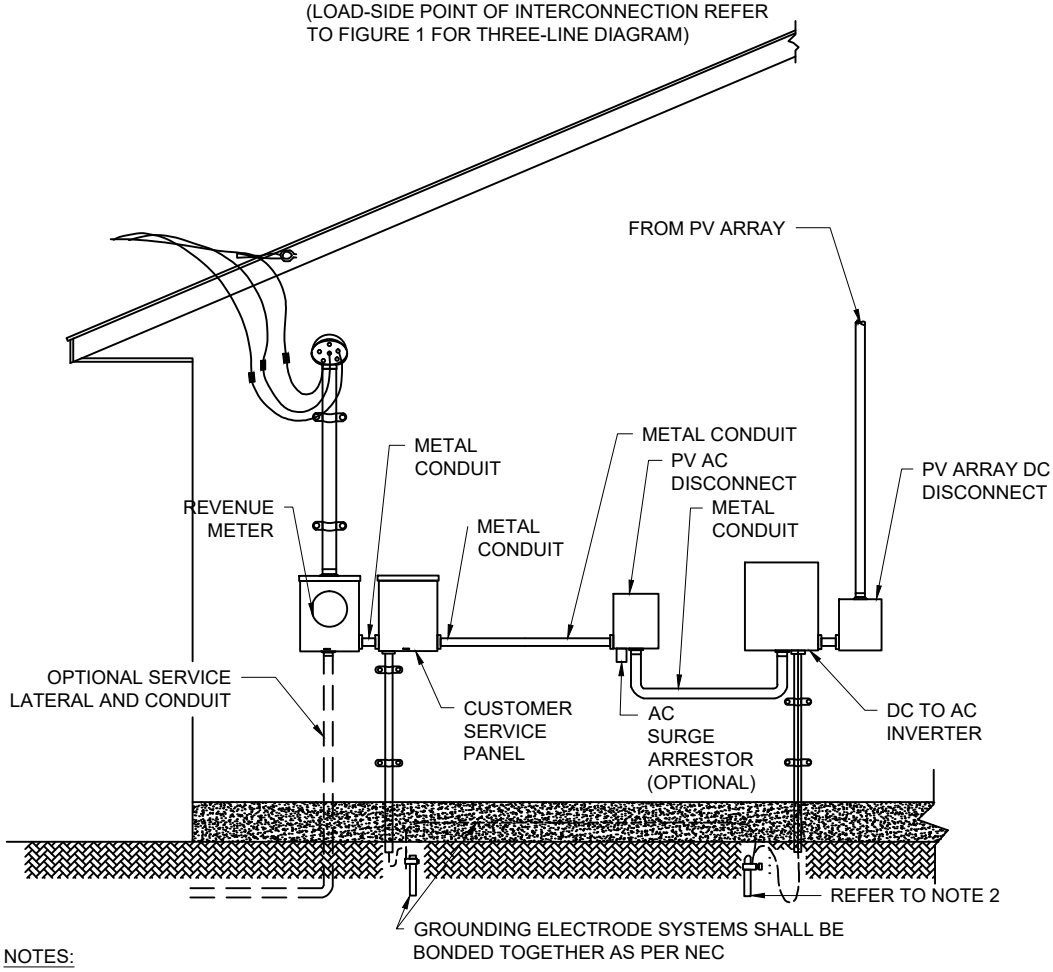


NOTES:

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 ROBSTOWN UTILITY SYSTEMS ELECTRIC SERVICE STANDARDS AND NATIONAL (NEC, UL AND IEEE) CODES.
2. INVERTER OUTPUT CIRCUIT CONDUCTORS SHALL BE INSTALLED IN 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 ROBSTOWN UTILITY SYSTEMS REVENUE METER. SUCH INSTALLATION MUST BE PRE-APPROVED BY ROBSTOWN UTILITY SYSTEMS. (REFER TO FIGURE 3 AND 4).

ROBSTOWN UTILITIES	ELECTRICAL DISTRIBUTION CONSTRUCTION SPECIFICATIONS	TYPICAL PHOTOVOLTAIC SYSTEM	APPROVED / BY
	SCHNEIDER ENGINEERING — WWW.SE-TEXAS.COM — TEXAS REGISTRATION NUMBER F-1594		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 ROBSTOWN UTILITY SYSTEMS AT ALL CUSTOMER SERVICE LOCATIONS.

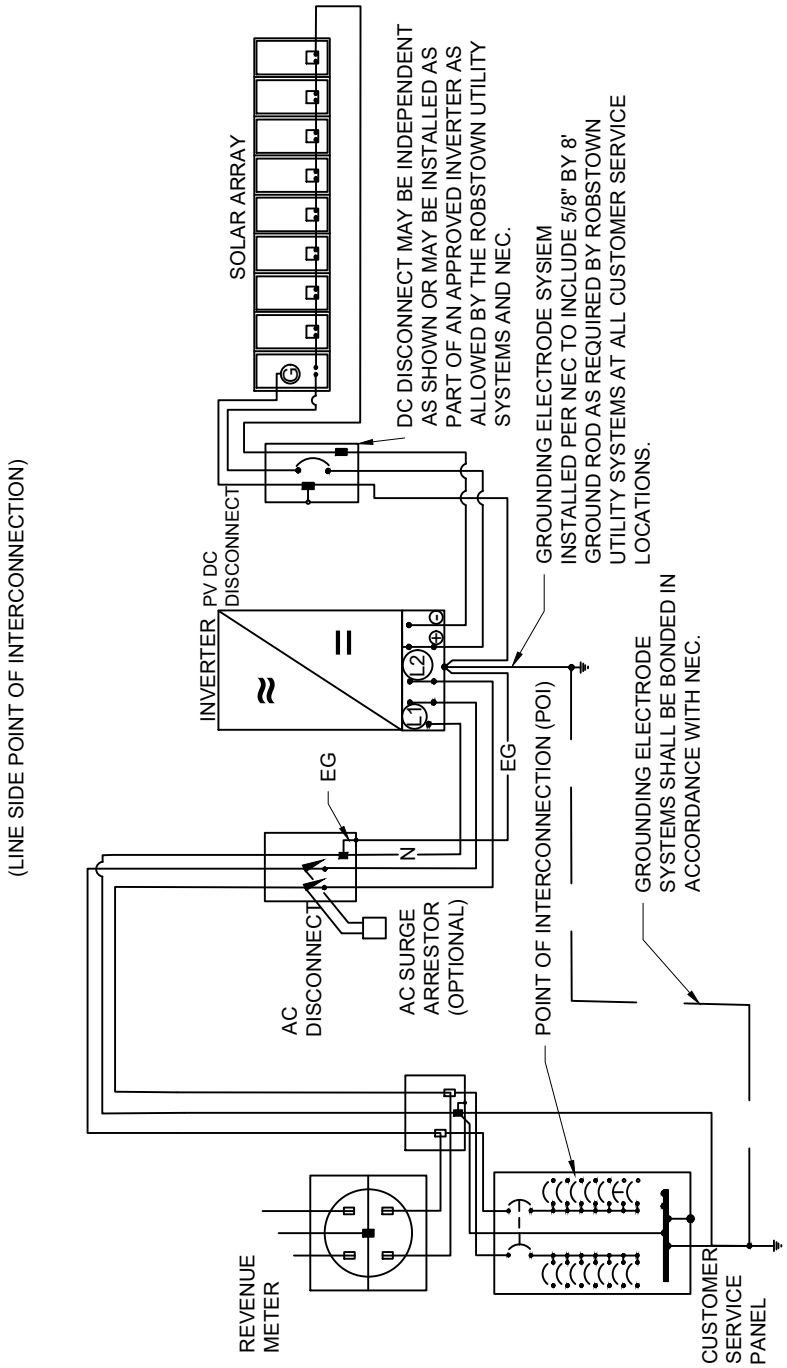
3. THE PV DC GROUNDING SYSTEM SHALL NOT BE BONDED TO THE AC GROUNDING SYSTEM BY USING A COMBINED DC GROUNDING ELECTRODE CONDUCTOR AND AC EQUIPMENT GROUNDING CONDUCTOR. CONTRACTOR MAY CHOOSE TO USE THE OPTION SHOWN ABOVE OR MAY INSTALL A GROUNDING ELECTRODE CONDUCTOR DIRECTLY FROM THE INVERTER GROUNDING 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 ROBSTOWN UTILITY SYSTEMS REVENUE METER. SUCH INSTALLATIONS MUST BE PRE-APPROVED.

FIGURE 3
TYPICAL PHOTOVOLTAIC (PV) SYSTEM
120/240-VOLT SINGLE-PHASE THREE-WIRE DIAGRAM

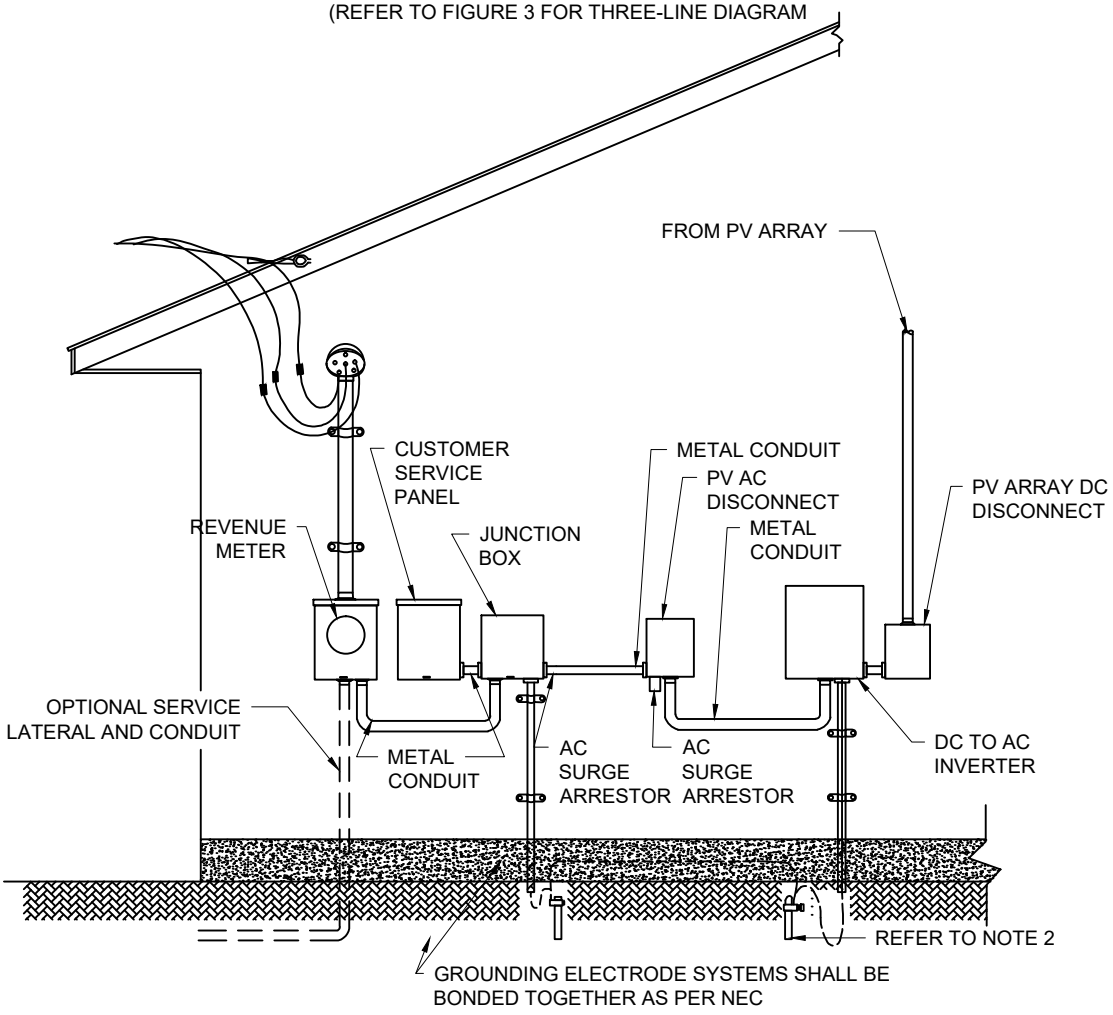


NOTES:

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 ROBSTOWN UTILITY SYSTEMS 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(S).
4. THE POINT OF INTERCONNECTION SHALL BE MADE AFTER THE ROBSTOWN UTILITY SYSTEMS REVENUE METER IN A JUNCTION BOX SUITABLE FOR THE CONDITIONS AND PROVIDED WITH LOCKING PROVISIONS. SUCH INSTALLATION MUST BE PRE-APPROVED BY ROBSTOWN UTILITY SYSTEMS.

ROBSTOWN UTILITIES	ELECTRICAL DISTRIBUTION CONSTRUCTION SPECIFICATIONS	TYPICAL PHOTOVOLTAIC SYSTEM	APPROVED / BY
	SCHNEIDER ENGINEERING — WWW.SE-TEXAS.COM — TEXAS REGISTRATION NUMBER F-1594		UNIT NUMBER: FIGURE 3

FIGURE 4
TYPICAL 120/240-VOLT, SINGLE- PHASE PHOTOVOLTAIC (PV) SYSTEM
(LINE-SIDE POINT OF INTERCONNECTION)
(REFER TO FIGURE 3 FOR THREE-LINE DIAGRAM



NOTES:

1. INVERTER OUTPUT CIRCUIT CONDUCTORS 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 ROBSTOWN UTILITY SYSTEMS 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 AN 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 SERVICE 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. THE POINT OF INTERCONNECTION SHALL BE MADE AFTER THE REVENUE METER IN A JUNCTION BOX SUITABLE FOR THE CONDITIONS AND PROVIDED WITH LOCKING PROVISIONS. SUCH INSTALLATIONS MUST BE PRE-APPROVED.