Summary of Interconnection Requirements

Trico Electric Cooperative, Inc., Single-Phase 120 V or 120/240 V PV Interconnection Requirements

1.0 GENERATION REQUIREMENTS

1.1 The following renewable energy generation system interconnection requirements summary (“Interconnection Requirements Summary”) for Trico Electric Cooperative, Inc., (Trico) are the minimum requirements to ensure proper interface of single-phase 120 V of 120/240 V, renewable energy generation system (“System”) with Trico. These minimum requirements are based on the IEEE Recommended Practice for Utility Interface of Residential and Intermediate Photovoltaic Systems (American National Standard Institute/Institute of Electrical & Electronic Engineers Standard 929). The customer is responsible for complying with Trico’s Rules, Regulations and Line Extension Policy approve by the Arizona Corporation Commission and all other applicable technical standards, safety codes, Article 690 of the National Electric Code, equipment manufacturers’ specifications related to the design, installation, operation and maintenance of the customer’s entire electrical installation including the System, not specifically mentioned in this document. The System and its Components must be Listed and Tested by a National Recognized Testing Laboratory (NRTL) to Underwriters Laboratory (UL) Standard 1741.

2.0 AGREEMENT PROCESS

2.1 The customer shall contact Trico and request the Interconnection Requirements for Distributed Generation.

2.2 The customer shall review the Interconnection Requirements and return the signed and completed Interconnection Agreement to Trico. Trico will verify that the customer’s System appears to be in compliance with the Interconnection Requirements.

2.3 Trico will approve the Interconnection Agreement only if the customer has submitted the correct information/documentation and the customer as signed the Interconnection Agreement. Trico will notify the customer permission to proceed with the System. The customer shall not proceed with the System installation until Trico approves the Interconnection Agreement and contacts the customer.

2.4 The customer shall install a Trico-accessible, outdoor-mounted, load-break disconnect switch with a visible open that is capable of being padlocked in the open position by Trico personnel. The disconnect switch shall be mounted in proximity to the service entrance. It shall be properly grounded and clearly labeled “CO-GENERATION SYSTEM UTILITY DISCONNECT SWITCH” (label provided and installed by Trico). The disconnect switch shall be installed on the alternating current (AC) circuit between the utility and the inverter. The purpose of the disconnect switch is for Trico, or other personnel, to disconnect the System from Trico to eliminate all potential sources of back-feed onto Trico’s system when it is necessary to safely work on local area power lines or equipment. The customer understands that Trico has the right to padlock the disconnect switch in the open position at any time without notice to the customer. The customer also understand not to tamper with or remove the padlock if the disconnect switch is padlocked in the open position by Trico. The disconnect switch must be installed by a licensed electrician and inspected as set forth in this document.

2.5 The customer shall obtain all permits and inspections required by town, city, county, and state agencies for the installation of the System and submit to Trico the original permits and proof of inspections for Trico’s examination. The System shall be certified to meet the ANSI/IEEE Standards by a licensed engineer and installed by a qualified licensed contractor.

2.6 After the System has been installed and has been inspected and approved by the town, city, county, or state inspectors, the customer shall contact Trico. Trico will inspect the installation to confirm it complies with the Interconnection Requirements. Trico recommends the licensed contractor be on site when Trico inspects the installation to answer any questions that Trico may have.

2.7 After the customer has complied with the foregoing provisions, Trico has inspected the installation and has confirmed that it meets the Interconnection Requirements; Trico then authorizes the customer to operate the System in parallel with Trico’s distribution system. Note: Trico will not approve interconnection until steps 2.1 through 2.6 are complete. Trico will send copies of all completed and approved documents to the customer.

3.0 POWER QUALITY REQUIREMENTS

3.1 Power quality at the customer’s meter must be within published national voltage (e.g. ANSI/IEEE Standard C84.1) and harmonic (e.g. ANSI/IEEE Standard 519) standards. The System must operate in synchronism with Trico’s electric distribution system at 60 Hz. The System shall not inject direct current (DC) in Trico’s alternation current (AC) system. In addition to these standards, the customer’s System shall not cause any noticeable interference with telephone, radio, computer or other communication systems of Trico or any of Trico’s other customers. If the customer’s power quality does not meet these standards or the System interferes with the power quality of other Trico customers, Trico reserves the right to disconnect the System from its electric distribution system.

3.2 Trico’s flicker standard is defined as: Any system or load shall not affect the voltage of other Trico customers to such an extent that the disturbance is perceived and irritating to other customers. This is approximately a 2-3 volt dip on a 120 volt basis for a very short period of time.
4.0 PROTECTION REQUIREMENTS

4.1 The inspections in sections 2.4, 2.5, 2.6 and 2.7 are intended to ensure that the System shall automatically disconnect from Trico’s distribution system is Trico or other personnel open an upstream breaker, fuse or switch to de-energize the utility power source. Without automatic disconnection, the System could potentially back-feed and energize Trico’s distribution power lines. This condition is called “islanding” and is extremely dangerous because Trico or other personnel will have assumed that they have isolated Trico’s power source and could potentially be electrocuted by the customer’s System back-feeding Trico’s system. It is the customer’s responsibility to ensure that the System will automatically disconnect from Trico’s distribution system under these conditions. The customer is liable for any damages or injuries should this condition occur. Trico recommends that the customer secure liability insurance to protect them from potential financial risk.

4.2 Trico transmission and distribution protective devised will automatically trip open due to temporary or permanent faults (lightning strikes, etc.) and may automatically re-close. It’s the customer’s responsibility to ensure that the System has automatically disconnected from the utility before a Trico distribution or transmission protective device automatically recloses onto the System out of synchronism. Trico is not responsible for any damage caused by its protective device automatically opening, or reclosing on the customer’s System out of synchronism.

4.3 The following minimum protection is required by Trico to prevent the System from islanding. The System must automatically disconnect from the utility within two seconds (120 cycles) after the voltage deviates outside a voltage range of 88-100 percent of nominal 120/240 volts. The System must automatically disconnect from the utility within 0.1 second (6 cycles) after the frequency deviates outside the frequency range of 59.3-60.5 Hz. After the System has disconnected form the utility, it shall remain disconnected until voltage and frequency is within the normal voltage and frequency ranges for a minimum of 60 seconds.

4.4 In addition to the minimum protection required by Trico, it is the customer’s responsibility to ensure that all additional personnel safety and equipment protection devised required by all other applicable technical standards, safety codes and equipment manufacturers’ specifications are properly installed and operational. Trico is not responsible for the protection of the customer’s System.

5.0 INSPECTIONS

5.1 The customer shall furnish, install, operate and maintain in good working order and repair without cost to Trico: the said System, in compliance with the plans and specifications as furnished and/or defined by the Interconnection Agreement.

5.2 Trico may conduct an inspection at least once per year or as needed at no cost to the customer. The customer will provide Trico personnel with reasonable access to the System to conduct inspections. The inspections will consist, at minimum, of a visual inspection of required equipment and a test to certify that the System will disconnect properly from the utility when the utility power is disconnected.

6.0 EQUIPMENT PROVIDED BY THE CUSTOMER

6.1 The System provided by the customer shall be in compliance with Trico’s Rules, Regulations and Line Extension Policies and Tariffs as approved by the Arizona Corporation Commission.

7.0 SURVEYS AND RESEARCH

7.1 Trico may install service equipment and metering for surveys and research, at Trico’s cost, on the customer’s premises providing notification, plans and specifications or such revisions to the customer’s plan and specifications.

8.0 INDEMNIFICATION

8.1 The customer hereby agrees to indemnify and hold harmless Trico, its directors, officers, employees, agents, and representatives and its indemnitors against and from any and all loss, damage, demands, claims or actions, including but not limited to any expenses, costs and attorneys’ fees, for or on account of injury, bodily or otherwise, to or death of any persons, or damage to or destruction of property belonging to Trico or others, in any manner resulting from, or arising out of, any operations by the customer’s facilities.

Trico hereby agrees to indemnify and hold harmless the customers, its directors, officers, employees, agents and representatives and its indemnitors against and from any and all loss, damage, demands, claims, or actions, including but not limited to any expenses, costs and attorneys’ fees, for or on account of injury, bodily or otherwise, to or death of any persons, or damage to or destruction of property belonging to Trico or others, in any manner resulting from, or arising out of any operations by Trico or its facilities.

9.0 LIMITATION OF LIABILITY

9.1 TRICO SHALL NOT BE LIABLE FOR ANY ACTIONS OR OMISSIONS IN ITS PERFORMANCE OF THESE INTERCONNECTION REQUIREMENTS UNLESS CAUSED BY TRICO’S GROSS NEGLIGENCE OR WILLFUL MISCONDUCT. IN NO EVENT SHALL TRICO, ITS OFFICERS, DIRECTORS, EMPLOYEES OR AGENTS BE LIABLE TO THE CUSTOMER FOR LOSS OF PROFITS OR ANY OTHER SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGE, HOWEVER CAUSED, RESULTING FROM TRICO’S PERFORMANCE HEREUNDER.

*Please see Trico Electric Cooperative, Inc. Interconnection Requirements for Distributed Generation document for complete interconnection requirements