

# Electric Cooperative

## Application for Operation of Customer-Owned Generation

**This application should be completed and returned to the Cooperative Customer Service Representative in order to begin processing the request.**

*INFORMATION: This application is used by the cooperative to determine the required equipment configuration for the Customer interface. Every effort should be made to supply as much information as possible.*

**\* After completion of Part 1 make sure to sign and date page 4 of this application.**

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### **PART 1 OWNER/APPLICANT INFORMATION**

Owner/Customer

Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ County: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Phone Number (Day): \_\_\_\_\_ Phone Number (Evening): \_\_\_\_\_

Email Address: \_\_\_\_\_ Account Number: \_\_\_\_\_

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### **TYPE OF GENERATOR (as applicable)**

Photovoltaic \_\_\_\_\_ Wind \_\_\_\_\_ Microturbine \_\_\_\_\_

Diesel Engine \_\_\_\_\_ Gas Engine \_\_\_\_\_ Combustion Turbine \_\_\_\_\_

Other \_\_\_\_\_

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### **ESTIMATED LOAD, GENERATOR RATING AND MODE OF OPERATION INFORMATION**

The following information is necessary to help properly design the Cooperative customer interconnection. This information is not intended as a commitment or contract for billing purposes.

Total Site Load \_\_\_\_\_ (kW)

Residential \_\_\_\_\_ Commercial \_\_\_\_\_ Industrial \_\_\_\_\_

Generator Rating \_\_\_\_\_ (kW) Annual Estimated Generation \_\_\_\_\_ (kWh)

### **Mode of Operation**

Isolated \_\_\_\_\_ Paralleling \_\_\_\_\_ Power Export \_\_\_\_\_

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

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

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**ELECTRICAL CONTRACTOR/ELECTRICIAN (as applicable)**

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

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**DESCRIPTION OF PROPOSED INSTALLATION AND OPERATION**

Give a general description of the proposed installation, including a detailed description of its planned location, the date you plan to operate the generator, the frequency with which you plan to operate it and whether you plan to operate it during on or off-peak hours.

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## PART 2

(Complete all applicable items. Copy this page as required for additional generators)

### SYNCHRONOUS GENERATOR DATA

Unit Number: \_\_\_\_\_ Total number of units with listed specifications on site: \_\_\_\_\_  
Manufacturer: \_\_\_\_\_  
Type: \_\_\_\_\_ Date of manufacture: \_\_\_\_\_  
Serial Number (each): \_\_\_\_\_  
Phases: Single Three R.P.M.: \_\_\_\_\_ Frequency (Hz): \_\_\_\_\_  
Rated Output (for one unit): \_\_\_\_\_ Kilowatt \_\_\_\_\_ Kilovolt-Ampere  
Rated Power Factor (%): \_\_\_\_\_ Rated Voltage (Volts): \_\_\_\_\_ Rated Amperes: \_\_\_\_\_  
Field Volts: \_\_\_\_\_ Field Amps: \_\_\_\_\_ Motoring power (kW): \_\_\_\_\_  
Synchronous Reactance ( $X_d$ ): \_\_\_\_\_ % on \_\_\_\_\_ KVA base  
Transient Reactance ( $X'_d$ ): \_\_\_\_\_ % on \_\_\_\_\_ KVA base  
Subtransient Reactance ( $X''_d$ ): \_\_\_\_\_ % on \_\_\_\_\_ KVA base  
Negative Sequence Reactance ( $X_s$ ): \_\_\_\_\_ % on \_\_\_\_\_ KVA base  
Zero Sequence Reactance ( $X_o$ ): \_\_\_\_\_ % on \_\_\_\_\_ KVA base  
Neutral Grounding Resistor (if applicable): \_\_\_\_\_  
\_\_\_\_\_  
 $I_2^2t$  or K (heating time constant): \_\_\_\_\_  
Additional information: \_\_\_\_\_

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### INDUCTION GENERATOR DATA

Rotor Resistance ( $R_r$ ): \_\_\_\_\_ ohms Stator Resistance ( $R_s$ ): \_\_\_\_\_ ohms  
Rotor Reactance ( $X_r$ ): \_\_\_\_\_ ohms Stator Reactance ( $X_s$ ): \_\_\_\_\_ ohms  
Magnetizing Reactance ( $X_m$ ): \_\_\_\_\_ ohms Short Circuit Reactance ( $X_d''$ ): \_\_\_\_\_ ohms  
Design letter: \_\_\_\_\_ Frame Size: \_\_\_\_\_  
Exciting Current: \_\_\_\_\_ Temp Rise (deg C°): \_\_\_\_\_  
Reactive Power Required: \_\_\_\_\_ Vars (no load), \_\_\_\_\_ Vars (full load)  
Additional information: \_\_\_\_\_  
\_\_\_\_\_

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### PRIME MOVER (Complete all applicable items)

Unit Number: \_\_\_\_\_ Type: \_\_\_\_\_  
Manufacturer: \_\_\_\_\_  
Serial Number: \_\_\_\_\_ Date of manufacture: \_\_\_\_\_  
H.P. Rated: \_\_\_\_\_ H.P. Max.: \_\_\_\_\_ Inertia Constant: \_\_\_\_\_ lb.-ft.<sup>2</sup>  
Energy Source (hydro, steam, wind, etc.) \_\_\_\_\_

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**GENERATOR TRANSFORMER** (Complete all applicable items)

TRANSFORMER (between generator and utility system)

Generator unit number: \_\_\_\_\_ Date of manufacturer: \_\_\_\_\_

Manufacturer: \_\_\_\_\_

Serial Number: \_\_\_\_\_

High Voltage: \_\_\_\_\_ KV, Connection: delta wye, Neutral solidly grounded? \_\_\_\_\_

Low Voltage: \_\_\_\_\_ KV, Connection: delta wye, Neutral solidly g rounded? \_\_\_\_\_

Transformer Impedance(Z): \_\_\_\_\_ % on \_\_\_\_\_ KVA base.

Transformer Resistance (R): \_\_\_\_\_ % on \_\_\_\_\_ KVA base.

Transformer Reactance (X): \_\_\_\_\_ % on \_\_\_\_\_ KVA base.

Neutral Grounding Resistor (if applicable): \_\_\_\_\_  
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**INVERTER DATA** (if applicable)

Manufacturer: \_\_\_\_\_ Model: \_\_\_\_\_

Rated Power Factor (%): \_\_\_\_\_ Rated Voltage (Volts): \_\_\_\_\_ Rated Amperes: \_\_\_\_\_

Nameplate Rating: \_\_\_\_\_ (kW) \_\_\_\_\_ (kVA) \_\_\_\_\_ (AC Volts)

Single Phase \_\_\_\_\_ Three Phase \_\_\_\_\_

System Design Capacity: \_\_\_\_\_ (kW) \_\_\_\_\_ (kVA)

Is the equipment UL1741 Listed? Yes \_\_\_\_\_ No \_\_\_\_\_

(If Yes, attach manufacturer's cut-sheet showing UL1741 listing)

Estimated Installation Date: \_\_\_\_\_ Estimated In-Service Date: \_\_\_\_\_

The Inverter Process is available only for inverter-based Generation Facilities no larger than 50 kW that meet the codes, standards, and certification requirements of Exhibits 1 and 2, or if the Cooperative has reviewed the design or tested the proposed Generation Facility and is satisfied that it is safe to operate.  
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**POWER CIRCUIT BREAKER** (if applicable)

Manufacturer: \_\_\_\_\_ Model: \_\_\_\_\_

Rated Voltage (*kilovolts*): \_\_\_\_\_ Rated ampacity (*Amperes*) \_\_\_\_\_

*Interrupting rating (Amperes)*: \_\_\_\_\_ BIL Rating: \_\_\_\_\_

Interrupting medium / insulating medium (ex. Vacuum, gas, oil ) \_\_\_\_\_ / \_\_\_\_\_

Control Voltage (Closing): \_\_\_\_\_ (Volts) AC DC

Control Voltage (Tripping): \_\_\_\_\_ (Volts) AC DC Battery Charged Capacitor

Close energy: Spring Motor Hydraulic Pneumatic Other: \_\_\_\_\_  
Trip energy: Spring Motor Hydraulic Pneumatic Other: \_\_\_\_\_  
Bushing Current Transformers: \_\_\_\_\_ (Max. ratio) Relay Accuracy Class: \_\_\_\_\_  
Multi ratio? No Yes: (Available taps) \_\_\_\_\_

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**ADDITIONAL INFORMATION**

*In addition to the items listed above, please attach a detailed one-line diagram of the proposed facility, all applicable elementary diagrams, major equipment, (generators, transformers, inverters, circuit breakers, protective relays, etc.) specifications, test reports, etc., and any other applicable drawings or documents necessary for the proper design of the interconnection. Also describe the project's planned operating mode (e.g., combined heat and power, peak shaving, etc.), and its address or grid coordinates.*

**END OF PART 2**

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The customer agrees to provide "cooperative" with any additional information required to complete the interconnection. The customer shall operate his equipment within the guidelines set forth by the cooperative.

\_\_\_\_\_  
Applicant

\_\_\_\_\_  
Date

**ELECTRIC COOPERATIVE CONTACT FOR APPLICATION SUBMISSION AND FOR MORE INFORMATION:**

Cooperative contact:  
Title:  
Address:  
Phone:  
e-mail:

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## **EXHIBIT 1 CERTIFICATION CODES AND STANDARDS**

*When the stated versions of the following codes and standards are superseded by an approved revision, that revision shall apply.*

IEEE1547 Standard for Interconnecting Distributed Resources with Electric Power Systems (including use of IEEE 1547.1 testing protocols to establish conformity)

UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems

IEEE Standard 929-2000, IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems

NFPA 70 (2014), National Electrical Code

ANSI C2-2012, National Electric Safety Code, published by IEEE

IEEE Standard C37.90.1-2012, IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems

IEEE Standard C37.90.2-2004, IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

IEEE Standard C37.108-2002, IEEE Guide for the Protection of Network Transformers

IEEE Standard C57.12.44-2005, IEEE Standard Requirements for Secondary Network Protectors

IEEE Standard C62.41.2-2002, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits

IEEE Standard C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits

ANSI C84.1-1995, Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)

IEEE Standard 100-2000, IEEE Standard Dictionary of Electrical and Electronic Terms

NEMA MG 1-1998, Motors and Small Resources, Revision 3

IEEE Standard 519-1992, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

NEMA MG 1-2003 (Rev 2004), Motors and Generators, Revision 1

## **EXHIBIT 2 CERTIFICATION**

These interconnection procedures recognize the efficiency of “certification” of Generation Facility equipment packages that will help streamline the design and installation process.

Generation Facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if all of the following conditions are met:

- 1) It has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in Attachment C;
- 2) It has been labeled and is publicly listed by such NRTL at the time of the Interconnection Application; and
- 3) Such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer’s literature accompanying the equipment.

Additional requirements related to Certification include the following:

- 1) The Interconnection Customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.
- 2) Certified equipment shall not require further type-test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for on-site commissioning and acceptance testing by the parties to the interconnection nor follow-up production testing by the NRTL.
- 3) If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.
- 4) Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL and does not violate the interface components’ labeling and listing performed by the NRTL, no further design review, testing, or additional equipment on the customer side of the Point of Interconnection shall be required to meet the requirements of this interconnection procedure.
- 5) An equipment package does not include equipment provided by the Cooperative.

The use of certified equipment does not automatically qualify the Interconnection Customer to be interconnected to the Cooperative Distribution System. An application will still need to be submitted and an interconnection review may still need to be performed to determine the compatibility of the Generation Facility with the Cooperative Distribution System.

