

# VERENDRYE ELECTRIC COOPERATIVE

## Application for Operation of Customer-Owned Generation

This application should be completed as soon as possible and returned to the Cooperative Customer Service representative in order to begin processing the request. See Customer Guidelines for Electric Power Generator Installation and Interconnection for additional information.

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.*

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### PART 1 OWNER/APPLICANT INFORMATION

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

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

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

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### ELECTRICAL CONTRACTOR (as applicable)

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

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### TYPE OF GENERATOR (as applicable)

Photovoltaic \_\_\_\_\_ Wind \_\_\_\_\_ Microturbine \_\_\_\_\_  
Diesel Engine \_\_\_\_\_ Gas Engine \_\_\_\_\_ Turbine \_\_\_\_\_  
Other \_\_\_\_\_

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

The following information will be used 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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**DESCRIPTION OF PROPOSED INSTALLATION AND OPERATION**

Give a general description of the proposed installation, including a detailed description of its planned location and when you plan to operate the generator.

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

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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 (Xd): \_\_\_\_\_ % on \_\_\_\_\_ KVA base

Transient Reactance (X'd): \_\_\_\_\_ % on \_\_\_\_\_ KVA base

Subtransient Reactance (X''d): \_\_\_\_\_ % on \_\_\_\_\_ KVA base

Negative Sequence Reactance (Xs): \_\_\_\_\_ % on \_\_\_\_\_ KVA base

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

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

I<sub>2</sub><sup>2</sup>t or K (heating time constant): \_\_\_\_\_

Additional information: \_\_\_\_\_

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**INDUCTION GENERATOR DATA**

Rotor Resistance (Rr): \_\_\_\_\_ ohms Stator Resistance (Rs): \_\_\_\_\_ ohms

Rotor Reactance (Xr): \_\_\_\_\_ ohms      Stator Reactance (Xs): \_\_\_\_\_ ohms  
Magnetizing Reactance (Xm): \_\_\_\_\_ ohms      Short Circuit Reactance (Xd''): \_\_\_\_\_ ohms  
Design letter: \_\_\_\_\_      Frame Size: \_\_\_\_\_  
Exciting Current: \_\_\_\_\_      Temp Rise (deg C°): \_\_\_\_\_  
Reactive Power Required: \_\_\_\_\_ Vars (no load), \_\_\_\_\_ Vars (full load)  
Additional information: \_\_\_\_\_  
\_\_\_\_\_

**PRIME MOVER** (Complete all applicable items)

Unit Number: \_\_\_\_\_ Type: \_\_\_\_\_  
Manufacturer: \_\_\_\_\_  
Serial Number: \_\_\_\_\_ Date of manufacturer: \_\_\_\_\_  
H.P. 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 grounded? \_\_\_\_\_  
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: \_\_\_\_\_  
Inverter Type (ferroresonant, step, pulse-width modulation, etc): \_\_\_\_\_

Type commutation:      forced      line  
Harmonic Distortion: Maximum Single Harmonic (%) \_\_\_\_\_  
   Maximum Total Harmonic (%) \_\_\_\_\_

Note: Attach all available calculations, test reports, and oscillographic prints showing inverter output voltage and current waveforms.  
\_\_\_\_\_

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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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**SIGN OFF AREA**

The customer agrees to provide the 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

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

Cooperative contact: Randy Hauck \_\_\_\_\_  
Title: Member Services Manager \_\_\_\_\_  
Address: 615 Hwy 52 West \_\_\_\_\_  
Velva, ND 58790 \_\_\_\_\_  
\_\_\_\_\_  
Phone: 701-338-2855 \_\_\_\_\_  
Fax: 701-624-0353 \_\_\_\_\_  
e-mail: randyjh@verendrye.com

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