Y-W ELECTRIC ASSOCIATION, INC.
P.O. BOX Y • 26862 U.S. HWY 34 • AKRON • COLORADO • 80720
(970) 345-2291 • 800-660-2291 • Fax (970) 345-2154 • www.ywelectric.coop
A Touchstone Energy ® Cooperative

# ATTACHMENT 16:

# APPLICATION FOR OPERATION OF CUSTOMER-OWNED GENERATION

Last Reviewed: September 19, 2017
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# Application for Operation of Customer-Owned Generation

**This application should be completed and returned to the Y-W Electric Association's Engineer in order to begin processing the request. See *Generator Interconnection Procedure* for additional information.**

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

## PART 1
### OWNER/APPLICANT INFORMATION

Owner/Customer

Name:_____

Mailing Address:_____

City:_____County:_____State:_____Zip Code:_____

Phone Number:_____Representative:_____

Email Address:_____ Fax Number:_____

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

Company:_____

Mailing Address:_____

City:_____County:_____State:_____Zip Code:_____

Phone Number:_____Representative:_____

Email Address:_____ Fax Number:_____

### ELECTRICAL CONTRACTOR (as applicable)

Company:_____

Mailing Address:_____

City:_____County:_____State:_____Zip Code:_____

Phone Number:_____Representative:_____

Email Address:_____ Fax Number:_____

## TYPE OF APPLICATION

□ Proposed New Generating Facility

□ Increase in the generating capacity or a Material Modification of an existing Generating Facility

## TYPE OF INTERCONNECTION SERVICE REQUESTED

□ Transmission System Interconnection Service

□ Distribution System Interconnection Service

□ Transmission Network Resource Interconnection Service

□ Distribution Network Resource Interconnection Service

## TYPE OF GENERATOR (as applicable)

□ Photovoltaic □ Wind □ Microturbine □ Steam Turbine

□ Diesel Engine □ Gas Engine □ Combustion Turbine □ Biomass/Digester

□ Other: _____

## 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 Nameplate Rating _____ (kVA) Annual Estimated Generation _____ (kWh)

Generator Maximum Expected Output _____ (kW)

**Mode of Operation**

Isolated _____ Paralleling _____ Power Export _____

## 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.

_____

_____

_____

_____

_____

_____

_____

_____

_____

# PART 2

(Complete all applicable items. Copy these pages as required for additional generators)

Location (if different from above):_____

Account Number (if applicable):_____

Evidence of Site Control: □ Is attached to this application

□ Is not provided. Interconnection customer elects to provide an additional deposit per the Generator Interconnection Procedure

**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): _____

Reactances – Direct Axis
Synchronous saturated ($X_{dv}$): _____% on _____KVA base
Synchronous unsaturated ($X_{di}$): _____% on _____KVA base
Transient saturated ($X'_{dv}$): _____% on _____KVA base
Transient unsaturated ($X'_{di}$): _____% on _____KVA base
Subtransient saturated ($X''_{dv}$): _____% on _____KVA base
Subtransient unsaturated ($X''_{di}$): _____% on _____KVA base
Negative Sequence saturated ($X2_v$): _____% on _____KVA base
Negative Sequence unsaturated ($X2_i$): _____% on _____KVA base
Zero Sequence saturated ($X0_v$): _____% on _____KVA base
Zero Sequence saturated ($X0_i$): _____% on _____KVA base
Leakage Reactance ($Xl_m$): _____% on _____KVA base

Reactances – Quadrature Axis
Synchronous saturated ($X_{qv}$): _____% on _____KVA base
Synchronous unsaturated ($X_{qi}$): _____% on _____KVA base
Transient saturated ($X'_{qv}$): _____% on _____KVA base
Transient unsaturated ($X'_{qi}$): _____% on _____KVA base
Subtransient saturated ($X''_{qv}$): _____% on _____KVA base
Subtransient unsaturated ($X''_{qi}$): _____% on _____KVA base

| Field Time Constant Data (sec) | Direct Axis | Quadrature Axis |
|---|---|---|
| Open Circuit | $T'_{do}$ = _____ | $T'_{qo}$ = _____ |
| Three-Phase Short Circuit Transient | $T'_{d3}$ = _____ | $T'_{q}$ = _____ |
| Line to Line Short Circuit Transient | $T'_{d2}$ = _____ | |
| Line to Neutral Short Circuit Transient | $T'_{d1}$ = _____ | |
| Short Circuit Subtransient | $T''_{d}$ = _____ | $T''_{q}$ = _____ |
| Open Circuit Subtransient | $T''_{do}$ = _____ | $T''_{qo}$ = _____ |

Armature Time Constant Data (sec)
Three-Phase Short Circuit $T_{a3}$ = _____
Line to Line Short Circuit $T_{a2}$ = _____
Line to Neutral Short Circuit $T_{a1}$ = _____

Armature Winding Resistance Data (per uni)
Positive $R_1$ = _____
Negative $R_2$ = _____
Zero $R_0$ = _____

Neutral Grounding Resistor (if applicable):_____
_____
$I_2^2t$ or K (heating time constant): _____
Three Phase Armature Winding Capacitance_____
Field Winding Resistance: _____ ohms at _____°C
Armature Winding Resistance: _____ ohms at _____°C
Additional information: _____
_____
Provide Saturation, Vee, Reactive Capability, and Capacity Temperature Correction curves.

**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 manufacture: _____
H.P. Rated: _____ H.P. Max.: _____Inertia Constant: H=_____ kW sec/kVA
Moment of Intertia: $WR^2$=_____lb-$ft^2$
Energy Source (hydro, steam, wind, etc.) _____
_____
_____
Identify appropriate IEEE model block diagrams of (i) excitation system and power system stabilizer, and (ii) governor system for computer representation in power system stability simulations and the corresponding excitation system, power system stability, and governor system constants for use in the model.

**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): _____
_____

**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.

**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) _____

**WIND GENERATORS** (if applicable)

Number of generators to be interconnected pursuant to this Interconnection Request: _____
Elevation*:* _____
Note: A completed General Electric Company Power Systems Load Flow (PSLF) data sheet or other compatible formats, such as IEEE and PTI power flow models, must be supplied with the Interconnection Request. If other data sheets are more appropriate to the proposed device, then they shall be provided and discussed at the Scoping Meeting.

**ADDITIONAL INFORMATION**

*In addition to the items listed above, please attach a detailed one-line diagram of the proposed facility, three-line diagram(s) showing connectivity of all protective relays, DC schematic drawings showing tripping schemes, all other 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

**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

_____ _____
Name (type or print) Title

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

| | | | |
|---|---|---|---|
| Information Contact: | Andy Molt | Applications Contacts: | James A. Ziebarth |
| Title: | Director of Member Services | | Justin Wert |
| | | Title: | System Engineers |

E-mail: interconnections@ywelectric.coop
Address: 26862 US Hwy 34
PO Box Y
Akron, CO 80720
Phone: (970) 345-2291