

# FIRSTENERGY INTERCONNECTION APPLICATION

For an Expedited Level 2 and Standard Level 3 Review - Generation Up To 20 MW <sup>1</sup>

(To be filled out and submitted prior to installation)

## CUSTOMER GENERATOR CONTACT INFORMATION

### Legal Name and Mailing Address of Customer-Generator: (if an Individual, Individual's Name)

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

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

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

Contact Person (If other than Above): \_\_\_\_\_

Mailing Address (If other than Above): \_\_\_\_\_

Telephone (Daytime): \_\_\_\_\_ (Evening): \_\_\_\_\_

Facsimile Number: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

### Alternative Contact Information: (if different from Customer-Generator above)

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

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

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

Telephone (Daytime): \_\_\_\_\_ (Evening): \_\_\_\_\_

Facsimile Number: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

### The Customer-Generator Facility's Information:

Facility Address: \_\_\_\_\_

City: \_\_\_\_\_ State: OH Zip Code: \_\_\_\_\_

Nearest Crossing Street: \_\_\_\_\_

Electric Distribution Company ("EDC"): Select Utility \_\_\_\_\_

Account #: \_\_\_\_\_ Meter #: \_\_\_\_\_

Existing Service Voltage: \_\_\_\_\_ VAC Existing Service Capacity: \_\_\_\_\_ Amps Select Phase

Current Annual Energy Consumption: \_\_\_\_\_ kWh Est. In-service Date: \_\_\_\_\_

Do you plan to export power? <sup>2</sup> \_\_\_\_\_

If Yes, Estimated Maximum: \_\_\_\_\_ kW<sub>AC</sub> Estimate. Gross Annual Energy Production: \_\_\_\_\_ kWh

One-line Diagram Attached (Required): \_\_\_\_\_ Site Plan Attached (Required): \_\_\_\_\_

Energy Source: \_\_\_\_\_ Gross Generator Rating: \_\_\_\_\_ kW<sub>AC</sub>

Utility Accessible Disconnect: \_\_\_\_\_

Type of Generation Equipment: \_\_\_\_\_

### Requested Level of Review: Select Level

Level 2: Expedited Review - Certified, Inverter-based generation, Up to 2 MW - Page No 3

Level 3: Standard Review - Rotating Equipment or Inverter based generation that does not meet the requirements for Level 2 Review (Page Number 3 or 4)

**Equipment Installation Contractor:** Indicate by owner if applicable

Name: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
Contact Person (If other than Above): \_\_\_\_\_  
Telephone (Daytime): \_\_\_\_\_ (Evening): \_\_\_\_\_  
Facsimile Number: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

**Electrical Contractor:** (If Applicable) Indicate if not applicable

Name: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
Contact Person (If other than Above): \_\_\_\_\_  
Telephone (Daytime): \_\_\_\_\_ (Evening): \_\_\_\_\_  
Facsimile Number: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

**Consulting Engineer:** (If Applicable) Indicate if not applicable

Name: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
Contact Person (If other than Above): \_\_\_\_\_  
Telephone (Daytime): \_\_\_\_\_ (Evening): \_\_\_\_\_  
Facsimile Number: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

**Application Fee:**

The Applicant shall deposit a not refundable application fee which is approved by the Commission and is listed on the EDC's Website<sup>3</sup>. Depending on the level of review and nature of the energy generating equipment, additional study and review fees, as permitted by Ohio regulations may be required and are not a part of the aforementioned application fee. Application Fee Enclosed: Amount: \$\_\_\_\_\_

(Checks should be made out to FirstEnergy Corporation and include Customer Name and Account Number on the For/Memo line of the check.)

**Customer-Generator Signature:**

I hereby certify that to the best of my knowledge, all of the information provided in this Application is accurate.

Legal Name of Customer-Generator: \_\_\_\_\_

Customer-Generator Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_

<sup>1</sup> Customers proposing to install generation greater than 2,000 kW are required to contact their EDC for the appropriate application procedures.

<sup>2</sup> If net-metering is anticipated, a Net Energy Metering Rider – Application for Service should be submitted with this application.

<sup>3</sup> The currently approved fees are:

Level 2 - \$50 + \$1 per kW of the nameplate rating of the inverter(s)

Level 3 – 100 + \$2 per kW of the gross nameplate rating of the generating equipment

**FIRSTENERGY INTERCONNECTION APPLICATION**  
**Customer-Generator Equipment Information for Inverter Based Systems**  
**(May be applicable to a Level 2 or 3 Review)**

**DC Source information:**

Energy Source:

DC Source Rating: \_\_\_\_\_ kW<sub>DC</sub>

Nominal DC Voltage: \_\_\_\_\_ V<sub>DC</sub>

Ampere Rating: \_\_\_\_\_ Amps<sub>DC</sub>

**Inverter Information:**

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

Inverter Type: \_\_\_\_\_

Type Model Number of Inverter: \_\_\_\_\_

Number of Units: \_\_\_\_\_

Inverter Rating \_\_\_\_\_ kW<sub>AC</sub>

Voltage Rating: \_\_\_\_\_ Volts<sub>AC</sub>

Ampere Rating: \_\_\_\_\_ Amps<sub>AC</sub>

Power Factor: \_\_\_\_\_ %,

Number of Phases:

Frequency: \_\_\_\_\_ Hz,

IEEE1547/UL1741 Certification<sup>2</sup>:

Evidence of Certification attached:

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<sup>1</sup> Attach additional sheets as necessary in the event of multiple units of various types/sizes

<sup>2</sup> The applicant is encouraged to provide evidence of IEEE1547/UL1741 Test Certification with this application, and may be required to do so in the event such evidence is not readily accessible to the EDC.

## FIRSTENERGY INTERCONNECTION APPLICATION

### Customer-Generator Equipment Information for Parallel Rotating Equipment Based Systems (May be applicable to a Level 3 Review)

It is anticipated that many projects proposing to utilize directly coupled rotating generation may not have the specific information necessary for the EDC to adequately evaluate the impact of the proposed facility on the EDC's electrical distribution system at the time of the initial application. Often times the equipment for which this information is needed hasn't been specified. The type information necessary may be conveyed during a scoping meeting or other correspondence early on during the project development. Depending on the nature of the project, this is often an iterative process. Different EDC's analytical systems may require that data be provided conforming to specific standard formats which will be conveyed by the EDC. While not all inclusive, examples of the information commonly required are as follows:

**For Synchronous Machines:** Copies of the Saturation Curve and the Vee Curve - Salient vs. Non-Salient - Torque: (lb-ft) - Rated RPM - Field Amperes at rated generator voltage and current and % PF over-excited - Maximum Leading and Lagging Reactive Output Power - Type of Exciter - Output Power of Exciter - Type of Voltage Regulator - Direct-axis Synchronous Reactance ( $X_d$ ) ohms - Direct-axis Transient Reactance ( $X'd$ ) ohms - Direct-axis Sub-transient Reactance ( $X''d$ ) ohms - Rated Nominal Frequency

**For Induction Machines:** Rotor Resistance ( $R_r$ ) ohms - Exciting Current (Amps) - Rotor Reactance ( $X_r$ ) (ohms) - VARs (No Load) - Magnetizing Reactance ( $X_m$ ) - Stator Resistance ( $R_s$ ) - VARs (Full Load) - Stator Reactance ( $X_s$ ) – Short Circuit Reactance ( $X''d$ ) - Number of Phases - Frame Size - Design Letter - Temp. Rise °C

**Protective Equipment:** The Customer Generator shall design a protective scheme that will provide the protective functions specified in IEEE 1547 and submit it to the EDC for review & acceptance. The submittal shall include a single line drawing showing the location of instrument transformers (current and voltage) and the location of the relays, breakers and fuses. Indicate the manufacturer and model number of each type of device. Breaker data shall include continuous and interrupting ampere ratings. If relays are used, indicate function, the tripping source and its voltage.

**Isolation Transformer:** Manufacturer - Manufacturer reference number - Nominal Voltage Ratio – High / Low Voltage Taps - Number of Units - Rated kVA – Percentage Impedance @ kVA base – High / Low Voltage Winding Configuration