



## **Distributed Energy Resource (DER) Interconnection Application Form**

All Interconnection Customer requests to interconnect a Distributed Energy Resource (DER) with the City of Sturgis electric distribution system, must complete and submit this Interconnection Application Form to the City along with a \$\_\_\_\_\_ non-refundable Processing Fee. Each proposed DER interconnection requires a separate Interconnection Application Form and Processing Fee.

Following the receipt of the Interconnection Application Form and Processing Fee, the City will determine if the application is complete. If not complete, the City will return the Interconnection Application Form to the applicant indicating which additional items are needed to process the application. Based on the proposed DER size, type, and interconnection location with the electric distribution system, the City will determine if the application will proceed to a Fast Track process or a System Impact Study process. Engineering study fees may apply.

If the Interconnection Application Form is submitted solely due to a transfer of ownership or change of control of the DER facility, the Interconnection Customer shall submit a \$\_\_\_\_\_ processing fee.

### **I. Interconnection Customer Information**

Legal Name of the Interconnection Customer (*or, if an individual, individual's name*)

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

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

Title: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

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

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

Telephone (Day): \_\_\_\_\_ (Evening): \_\_\_\_\_

Facility Location (*if different from above*)

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

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

Alternative Contact Information/Owner/Lessor (*if different from the Interconnection Customer*)

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

Title: \_\_\_\_\_

Company: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

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

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

Telephone (Day): \_\_\_\_\_ (Evening): \_\_\_\_\_

Application is for:

- ☐ New DER facility
- ☐ Capacity change to a proposed or existing DER facility
- ☐ Change of ownership of a proposed or existing DER facility to a new legal entity
- ☐ Change of control of a proposed or existing DER facility of the existing legal entity

If capacity addition to an existing DER Facility, please describe: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Will the Generating Facility be used for any of the following?

- |   |                              |                             |
|---|------------------------------|-----------------------------|
| Distributed Generation Program – Category 1 | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Distributed Generation Program – Category 2 | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Other Purchase Power Agreement              | <input type="checkbox"/> Yes | <input type="checkbox"/> No |



**STOP:** Continue with Sections II and III for a new DER facility or a capacity change to a proposed or existing DER facility. Otherwise skip to Section X.

## II. Point of Interconnection Information

Requested point of interconnect: \_\_\_\_\_

Requested in-service date: \_\_\_\_\_

For installations at locations with existing electric service to which the proposed DER Facility will interconnect, provide:

Existing account number: \_\_\_\_\_

Service address: \_\_\_\_\_

Billing Address (if different from Service Address): \_\_\_\_\_

## III. General DER Information

Information applies only to the DER Facility, not the Interconnection Facilities.

Prime Mover:

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Photovoltaic (Fixed Axis) | <input type="checkbox"/> Gas Turbine   | <input type="checkbox"/> Reciprocating Engine |
| <input type="checkbox"/> Photovoltaic (1-Axis)     | <input type="checkbox"/> Fuel Cell     | <input type="checkbox"/> Micro-turbine        |
| <input type="checkbox"/> Battery                   | <input type="checkbox"/> Steam Turbine | <input type="checkbox"/> Other: _____         |

Energy Source:

Renewable

- ☐ Solar – Photovoltaic
- ☐ Solar – Thermal
- ☐ Biomass – Landfill Gas
- ☐ Biomass – Digester Gas
- ☐ Biomass – Solid Waste
- ☐ Biomass – Wood

Renewable

- ☐ Hydro – Run of River
- ☐ Hydro – Storage
- ☐ Wind
- ☐ Geothermal
- ☐ Other/Specify \_\_\_\_\_

Non-Renewable

- ☐ Fossil Fuel – Diesel
- ☐ Fossil Fuel – Natural Gas
- ☐ Fossil Fuel – Oil
- ☐ Fossil Fuel – Coal
- ☐ Other/Specify \_\_\_\_\_

Energy Reuse

- ☐ Battery Storage

Type of DER:   ☐ Synchronous   ☐ Induction   ☐ DFIG   ☐ Inverter-based

Total DER nameplate output rating: \_\_\_\_\_kW-AC   \_\_\_\_\_kW-DC   \_\_\_\_\_kVAR

Is the DER facility package certified?   ☐ Yes   ☐ No

List components of the DER Facility equipment package that are currently certified:

	Quantity	Equipment Type	Certification
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____



**STOP:** Continue with Sections IV through IX for a DER facility package that is not UL-1741 certified or has a nameplate output rating greater than 20 kW. Otherwise skip to Section X.

#### IV. Load and Export Information

Interconnection Customer or customer-side peak load: \_\_\_\_\_ kW-AC (*state if none*)

Interconnection Customer or customer-side minimum load: \_\_\_\_\_ kW-AC (*state if none*)

Interconnection Customer DER auxiliary load: \_\_\_\_\_ kW-AC (*state if none*)

Expected reactive load (*if known*): \_\_\_\_\_ kVAR

Maximum export capabilities requested: \_\_\_\_\_ kW-AC

#### V. Inverter-Based Solar Facility Characteristics (*if applicable*)

##### Solar Panel Information

	Quantity	Manufacturer	Model
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____

##### Individual Photovoltaic Panel

Current at maximum power point ( $I_{mpp}$ ): \_\_\_\_\_ Amps

Voltage at maximum power point ( $V_{mpp}$ ): \_\_\_\_\_ Volts

Short-circuit current in standard test conditions ( $I_{sc}$ ): \_\_\_\_\_ Amps

Open-circuit voltage in standard test conditions ( $V_{oc}$ ): \_\_\_\_\_ Volts

Short-circuit current temperature coefficient ( $\alpha_{sc}$ ): \_\_\_\_\_ %/°C

Open-circuit voltage temperature coefficient ( $\beta_{oc}$ ): \_\_\_\_\_ %/°C

Normal operating cell temperature (NOCT): \_\_\_\_\_ °C

Reference ambient temperature ( $T_a$  ref): \_\_\_\_\_ °C

Standard test condition temperature ( $T_{stc}$ ): \_\_\_\_\_ °C

Standard test condition irradiance ( $G_{stc}$ ): \_\_\_\_\_ W/m<sup>2</sup>

##### Total Photovoltaic Array

☐ Fixed Tilt Array    ☐ Single Axis Tracking Array    ☐ Double Axis Tracking Array

Number of photovoltaic panels in series ( $N_s$ ): \_\_\_\_\_

Number of photo voltaic panels in parallel ( $N_p$ ): \_\_\_\_\_

DC voltage of array: \_\_\_\_\_ Volts-DC

Rated power of array: \_\_\_\_\_ kW-DC

### Inverter Information

Quantity	Manufacturer	Model	Standard
<hr/>			
<input type="checkbox"/> Single-phase <input type="checkbox"/> Three-phase			
<input type="checkbox"/> Line-commutated <input type="checkbox"/> Self-commutated			
Efficiency: _____ %			
Internal losses: _____ W			
AC side inverter rating: _____ kVA			
AC side active power rating: _____ kW			
AC side reactive power rating: _____ kVAR			
AC side minimum power factor rating: +/- _____ %			
Short-circuit fault contribution: _____ A			
Harmonic content: _____			
DC side rated voltage (Vdc): _____ Volts			
DC side capacitor (Cdc): <input type="checkbox"/> No <input type="checkbox"/> Yes _____ $\mu$ F			
Internal Coupling Element: <input type="checkbox"/> No <input type="checkbox"/> Yes			
Internal coupling resistance (R): _____ $\Omega$			
Internal coupling inductance (L): _____ H			

### **VI. Inverter-Based Battery Energy Storage Characteristics (if applicable)**

#### Battery Module and Battery Management System

Rated Storage Energy: \_\_\_\_\_ kWh

Maximum Charging Power: \_\_\_\_\_ kW

Maximum Discharging Power: \_\_\_\_\_ kW

Charge Efficiency (DC Side): \_\_\_\_\_ %

Discharge Efficiency (DC Side): \_\_\_\_\_ %

Idling Active Losses: \_\_\_\_\_ W

Idling Active Losses: \_\_\_\_\_ var

Energy Storage Controls:

<input type="checkbox"/> No Monitoring	<input type="checkbox"/> Volt-Var	<input type="checkbox"/> Max Generation Level
<input type="checkbox"/> Power Monitoring	<input type="checkbox"/> Volt-Watt	<input type="checkbox"/> Max Charging Level
<input type="checkbox"/> DER Monitoring	<input type="checkbox"/> Watt-Power Factor	<input type="checkbox"/> Adjust Power Factor

Summary of control mode and properties on how the battery will be charged and discharged:

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Inverter Information

Quantity	Manufacturer	Model	Standard
<hr/>			
<input type="checkbox"/> Single-phase <input type="checkbox"/> Three-phase			
<input type="checkbox"/> Line-commutated <input type="checkbox"/> Self-commutated			
Efficiency: _____%			
Internal losses: _____W			
AC side inverter rating: _____ kVA			
AC side active power rating: _____ kW			
AC side reactive power rating: _____ kVAR			
AC side minimum power factor rating: +/- _____ %			
Short-circuit fault contribution: _____A			
Harmonic content: _____			
DC side rated voltage (Vdc): _____ Volts			
DC side capacitor (Cdc): <input type="checkbox"/> No <input type="checkbox"/> Yes _____ $\mu$ F			
Internal Coupling Element: <input type="checkbox"/> No <input type="checkbox"/> Yes			
Internal coupling resistance (R): _____ $\Omega$			
Internal coupling inductance (L): _____ H			

**VII. Rotating Machine Facility Characteristics** (*if applicable*)

Synchronous Machines

Equivalent MVA base: \_\_\_\_\_MVA

Field voltage: \_\_\_\_\_ Volts

Field amperage: \_\_\_\_\_Amps

Direct axis synchronous reactance,  $X_d$ : \_\_\_\_\_p.u.

Direct axis transient reactance,  $X'_d$ : \_\_\_\_\_p.u.

Direct axis subtransient reactance,  $X''_d$ : \_\_\_\_\_p.u.

Negative sequence reactance,  $X_2$ : \_\_\_\_\_p.u.

Zero sequence reactance,  $X_0$ : \_\_\_\_\_p.u.

### Induction Machines

Motoring power: \_\_\_\_\_ kW  
Equivalent MVA base: \_\_\_\_\_ MVA  
 $I^2t$  or K (Heating time constant): \_\_\_\_\_  
Rotor resistance,  $R_r$ : \_\_\_\_\_ p.u.  
Stator resistance,  $R_s$ : \_\_\_\_\_ p.u.  
Rotor reactance,  $X_r$ : \_\_\_\_\_ p.u.  
Stator reactance,  $X_s$ : \_\_\_\_\_ p.u.  
Magnetizing reactance,  $X_m$ : \_\_\_\_\_ p.u.  
Short current reactance,  $X_d$ : \_\_\_\_\_ p.u.  
Exciting current: \_\_\_\_\_ Amps  
Required reactive power (No load): \_\_\_\_\_ kVAR  
Required reactive power (Full Load): \_\_\_\_\_ kVAR  
Total rotating inertia, H: \_\_\_\_\_ p.u.

### **VIII. Interconnection Facilities Information** *(if applicable)*

Will more than one transformer be used between the DER and the point of common coupling?

☐ Yes ☐ No

*(If yes, provide the below information for each transformer. The number of transformers must match the one-line diagram and transformer specification sheets.)*

Will the transformer be provided by the Interconnection Customer? ☐ Yes ☐ No

#### Transformer Data (if supplied and Owned by Interconnection Customer)

☐ Single-Phase ☐ Three-Phase

Size: \_\_\_\_\_ kVA

Impedance: \_\_\_\_\_ %

For three-phase transformers:

Primary Winding Voltage: \_\_\_\_\_ Volts

☐ Delta ☐ Wye, grounded neutral (City Standard) ☐ Wye, floating neutral

Secondary Winding Voltage: \_\_\_\_\_ Volts

☐ Delta ☐ Wye, grounded neutral (City Standard) ☐ Wye, floating neutral

Tertiary Delta Winding? ☐ Yes ☐ No

Transformer fuse data *(if applicable)*

Manufacturer: \_\_\_\_\_ Type: \_\_\_\_\_ Size: \_\_\_\_\_ Speed: \_\_\_\_\_

## IX. Additional Information

### One-Line Diagram

Enclose site electrical one-line diagram showing the configuration of all DER Facility equipment, current and potential circuits, and protection and control schemes.

- Include the project owner's name, project name, project address, model numbers and nameplate sizes of equipment, including number and nameplate electrical size information for solar panels, inverters, wind turbines, disconnect switches, latitude and longitude of the project location, and tilt angle and orientation of the photovoltaic array for solar projects.
- Depict the metering arrangement required whether installed on the customer side of an existing meter or directly connected to the grid through a new or separate delivery point requiring a separate meter.
- List of adjustable set points for the protective equipment or software should be included on the electrical one-line diagram.
- Signed and sealed by a licensed Professional Engineer if the DER Facility is greater than 150 kW.

Is one-line diagram enclosed? ☐ Yes ☐ No

### Site Plan

Enclose site plan showing the physical location of the proposed DER and point of interconnection with the utility.

- Indicate the latitude and longitude coordinates.
- Overlay on an aerial map.
- Included the proposed location of protective interface equipment on property.

Is a site plan enclosed? ☐ Yes ☐ No

### Equipment Specifications

Include equipment specification information (product literature) for the solar panels and inverter(s) that provides technical information and certification information for the equipment to be installed with the application.

Are equipment specifications enclosed? ☐ Yes ☐ No

### Protection and Control Schemes

- Enclose copy of any site documentation that describes and details the operation of the protection and control scheme.
- Enclose copies of schematic drawings for all protection and control circuits, relay current circuits, relay potential circuits, and alarm/monitoring circuits (*if applicable*)

Are protection and control documents and schematics enclosed? ☐ Yes ☐ No



**X. Applicants Signature**

All DER Interconnections must comply with the City's DER Interconnection Technical Standards.

I hereby certify that, to the best of my knowledge, all the information provided in this DER Interconnection Application Form is true and correct. I also certify that I have received a copy of the City's DER Interconnection Technical Standards.

Interconnection Customer

Signature: \_\_\_\_\_  
(Authorized Agent of the Legal Entity)

Date: \_\_\_\_\_

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