

Part 1 - Introduction and Overview

- A. Applicability:** This Generating Facility Interconnection Application (Application) shall be used to request the interconnection of a Generating Facility to Sacramento Municipal Utility District's (SMUD) Distribution System. Refer to SMUD's Rates Policy and Procedure 11-01 to determine the specific requirements for interconnecting a Generating Facility. Capitalized terms used in this Application, and not otherwise defined herein, shall have the same meanings as defined in SMUD's Rates Policy and Procedure 11-01.

Except as noted in the next paragraph, this Application may be used for any Generating Facility to be operated by or for a Customer and/or Producer to supplement or serve the Customer's electric service requirements that would otherwise be served by SMUD, including "distributed" generation, "cogeneration," emergency, backup, and standby generation, and Net Energy Metered Generating Facilities. A simpler, shorter form is also available from SMUD for most Net Energy Metered Generating Facilities. While Customers or Producers operating isolated Generating Facilities are not obligated to enter into an Interconnection Agreement with SMUD, some parts of this Application will need to be completed even for Generating Facilities that will always be isolated from the SMUD's Distribution System. Completing this application will satisfy SMUD's notice requirements for operating an isolated Generating Facility.

This Application may not be used to apply for interconnecting Generating Facilities used to participate in transactions where all or a portion of the electrical output of the Generating Facility is scheduled with the SMUD's Energy Trading & Contracts. Interconnection of Generating Facilities of this type are coordinated by SMUD's Energy Supply business unit and require a different application available from SMUD.

- B. Guidelines and Steps for Interconnection:** This Application must be completed and sent to SMUD along with the additional information indicated below to initiate SMUD's review and authorization to interconnect the proposed Generating Facility. An application fee of \$800 (payable by check or money order to SMUD) must accompany most Applications. Exceptions to this fee requirement include Applications used for isolated Generating Facilities, Solar Generating Facilities that do not export power, and most Net Energy Metered Generating Facilities. Additional fees and charges may also apply for large and/or more complex Generating Facility Interconnections; see SMUD Rates Policy & Procedure 11-01.

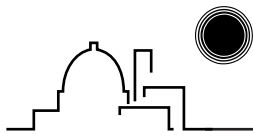
This document is only an application. Upon acceptance, SMUD will prepare an Interconnection Agreement for execution by SMUD and the "Producer," the party that will be responsible for the Generating Facility. SMUD may also require an inspection and testing of the Generating Facility and any related Interconnection Facilities prior to giving the Producer written authorization to Interconnect. **Unauthorized interconnections may be dangerous and may result in injury to persons and/or may cause damage to equipment and/or property for which a Producer may be liable!**

Please note, other approvals may need to be acquired and/or other agreements may need to be formed with SMUD or regulatory agencies, such as the Air Quality Management Districts and local governmental building and planning commissions prior to operating a Generating Facility. SMUD's authorization to interconnect does not satisfy the need for an Applicant to acquire such other approvals.

- C. Required Documents:** Four copies of this Application and each of the following documents are required to be submitted. Drawings must conform to accepted engineering standards and must be legible. 11"x17" drawings are preferred.
1. A **Single-line drawing** showing the electrical relationship and descriptions of the significant electrical components such as the primary switchgear, secondary switchboard, protective relays, transformers, generators, circuit breakers, with operating voltages, capacities, and protective functions of the Generating Facility, the Customer's loads, and the interconnection with SMUD's Distribution System.
 2. **Site plans and diagrams** showing the physical relationship of the significant electrical components of the Generating Facility such as generators, transformers, primary switchgear/secondary switchboard, and control panels, the Customer's loads and the interconnection with SMUD's Distribution System.
 3. If **transformers** are used to interconnect the Generating Facility with SMUD Distribution System, please provide transformer nameplate information (voltages, capacity, winding arrangements, connections, impedance, et cetera).
 4. If a **transfer switch** or scheme is used to interconnect the Generating Facility with SMUD's Distribution System, please provide component descriptions, capacity ratings, and a technical description of how the transfer scheme is intended to operate.
 5. If **protective relays** are used to control the interconnection, please provide protection diagrams or elementary drawings showing relay wiring and connections, proposed relay settings, and a description of how the protection scheme is intended to function.
- D. Mailing Instructions, Assistance:** When this application has been completed it may be printed and mailed, along with the required attachments to:

Sacramento Municipal Utility District
Attention: Distributed Generation Administrator
Distribution System Engineering, MS D104
6201 Street
P.O. Box 15830
Sacramento, CA, 95852-1830

If you have questions or need assistance in completing this application please call (916)732-6424.



SMUD

SACRAMENTO MUNICIPAL UTILITY DISTRICT
6201 S Street, P.O. Box 15830, Sacramento, CA 95852-1830
The Power To Do More.SM

**SMUD GENERATING FACILITY
INTERCONNECTION APPLICATION**

Project name:

Date received:

Generating facility ID:

For SMUD Use Only

Part 2 - Identifying the Generating Facility's Location and Responsible Parties

A. Host Customer Facility Information - Where will the Generating Facility be installed?

Name shown on SMUD service account

Electric Account number

Meter Number

Street Address

City

State CA

Zip

Note: If available, please also submit a copy of the host Customer facility's utility bill

B. Contact Information - Who should be contacted for additional information, if necessary?

Contact Person

Company Name

Phone

Fax

Email

Mailing Address

City

State CA

Zip

Backup Contact Person (optional)

Company Name

Phone

Fax

Email

Mailing Address

City

State CA

Zip

C. Operating Date - What date is this Generating Facility expected to begin operation?

SMUD GENERATING FACILITY INTERCONNECTION APPLICATION

Part 3 - Describing the Generating Facility and Host Customer's Electrical Facilities

A. Indicate how this Generating Facility will interface with SMUD's Distribution System. (Choose one)

1. **Parallel Operation:** The Generating Facility will interconnect and operate "in parallel" with SMUD's Distribution System for more than one (1) second.
2. **Momentary Parallel Operation:** The Generating Facility will interconnect and operate on a "momentary parallel" basis with SMUD's Distributions System for a duration of one (1) second or less through switches or circuit breakers specifically designed and engineered for such operation.
3. **Isolated operation:** The Generating Facility will be "isolated" and prevented from becoming interconnected with SMUD's Distribution System through a transfer switch or operating scheme specifically designed and engineered for such operation.

Instructions and Notes

If the answer is option 1, "parallel operation," please supply all of the information requested for the Generating Facility. Be sure to supply adequate information including diagrams and written descriptions regarding the protective relays that will be used to detect faults or abnormal operating conditions on SMUD's Distribution System.

If the answer is option 2, "momentary parallel operation," only questions A and E of this Part 3 and questions A, B, E, F, I, L, M, N, and S of Part 4 need be answered. Be sure, however, to supply adequate information including diagrams and written descriptions regarding the switching device or scheme that will be used to limit the parallel operation period to one second or less. Please also describe the back up or protective device and controls that will trip the Generating Facility should the transfer switch or scheme not complete the transfer in one second or less.

If the answer is option 3, "Isolated Operation," only questions A and E of this Part 3 and questions A, B, F, and S of Part 4 need be answered. Be sure, however, to supply adequate information including diagrams and written descriptions regarding the isolating switching device or scheme that will be used to prevent the Generating Facility from operating in parallel with SMUD's Distribution System.

B. If the Answer to Question A was option 1, please indicate the type of agreement that is being requested with this Application. If options 2 or 3 were selected, please skip to questions E. (Choose one)

1. **A Generating Facility Interconnection Agreement** that provides for parallel or momentary parallel operation of the Generating Facility, but does not provide for exporting power to SMUD's Distribution System.
2. **A Generating Facility Interconnection Agreement** that provides for parallel operation of the Generating Facility, and the occasional, inadvertent, non-compensated, export of power to SMUD's Distribution System. (This type of Agreement has not yet been developed by SMUD or approved by its Board. Check with SMUD for availability.)
3. **A "Qualifying Facility" Power Purchase Agreement** that provides for parallel operation of the Generating Facility, and exporting power to SMUD's Distribution System for sale to SMUD. This option is available only to "Qualifying Facilities" with a total Nameplate Capacity of 100 kW or less. See Question F for the definition of a Qualifying Facility. (This type of Agreement has not yet been developed by SMUD or approved by its Board. Check with SMUD for availability.)
4. **A Net Energy Metering Agreement** that provides for parallel operation of the Generating Facility, and exporting power to SMUD's Distribution System for credit under the terms of SMUD's Net Energy Metering Tariff. This option is available only to solar and wind powered Generating Facilities per the terms of Section 2827 of the California Public Utilities Code.

If options 2, 3, or 4 to this question B are chosen, please provide an estimate of the monthly kWh the Generating Facility is expected to deliver to SMUD's Distribution System. If SMUD determines that the amount of power to be exported is significant in relation to the capacity available on its Distribution System, it may request additional information, including time of delivery or seasonal kWh estimates.

Amps

SMUD GENERATING FACILITY INTERCONNECTION APPLICATION

- C. If the answer to question B was option 1, please indicate the option that will be used to prevent energy from being exported to SMUD's Distribution System. *(Choose one)*
1. A reverse-power protection device will be installed at the Point of Common Coupling (PCC) to measure any outflow of power and trip the Generating Facility or open an intertie breaker to isolate the Generating Facility if limits are exceeded.
 2. An under-power protection device will be installed at the PCC to measure the inflow of power and trip or reduce the output of the Generating Facility if limits are not maintained.
 3. The Generating Facility's interface equipment has been certified as Non-Islanding and the incidental export of power will be limited by the design of the interconnection. If this option is to be used, the continuous ampere rating of the service entrance equipment (Main Panel size) that is used by the host Customer facility must be stated in the space provided below.
 4. The nameplate rating of the Generating Facility will not exceed 50% of the host Customer facility's minimum electrical load. If this option is to be used, the minimum load of the host Customer facility must be stated in the space provided below. Refer to SMUD's Rates Policy and Procedure 11-01 for additional information as to how to answer this question. If the Generating Facility will never export power to SMUD's Distribution System, a simpler, lower cost, protection scheme may be used to control the interface between the Generating Facility and SMUD's Distribution System.

If option 3 to this question C is selected, please provide the continuous current rating of the host Customer facility's service entrance equipment (service panel size):

Amps

If option 4 to this question C is selected, please provide the minimum load of the host Customer facility:

KW

D. What is the maximum 3-phase fault current that will be contributed by the Generating Facility to a 3-phase fault at the Point of Common Coupling (PCC)? (If the Generating Facility is single phase in design, please provide the contribution for a line-to-line fault.)

Amps

Please indicate the short circuit interrupting rating of the host Customer facility's service entrance ("main") panel:

Amps

Instructions and Notes

Refer to SMUD's Rates Policy and Procedure 11-01 for significance and additional information. To determine this value, any transformers and/or significant lengths of interconnecting conductor used between the each of the Generators (if there are more than one) that make up the Generating Facility and the PCC must be taken into account. The details, impedance, and arrangement of such transformers and cable runs should be shown on the single-line diagram that is provided. Consult an electrical engineer or the equipment supplier if assistance is needed in answering this question.

It is expected that most Applicants will want to reserve the flexibility to operate any or all of their Generators in parallel. However, if the design of the proposed installation will limit the amount of generation that may be interconnected at any time to SMUD's Distribution System, please describe the assumptions used in calculating the maximum fault current contribution value.

Note: With the approval of SMUD, a Producer that wishes to retain the option to export power from a Generating Facility to SMUD's Distribution System may use a different protection scheme that provides for the detection of faults and other abnormal operating conditions.

SMUD GENERATING FACILITY INTERCONNECTION APPLICATION

E. Please indicate how this Generating Facility will be operated. *(Please choose all options that may apply)*

- 1. **Combined Heat and Power or Cogeneration** – Where the operation of the Generating Facility will produce thermal energy for a process other than generating electricity.
- 2. **Peak Shaving/Demand Management** – Where the Generating Facility will be operated primarily to reduce electrical demands of the host Customer facility during SMUD's "peak pricing periods."
- 3. **Primary Power Source** – Where the Generating Facility will be used as the primary source of electric power and that supplied by SMUD to the host Customer's loads will be required for supplemental, standby or backup power purposes only.
- 4. **Standby / Emergency / Backup** – Where the Generating Facility will normally be operated only when SMUD's electric service is not available.
- 5. **Net Energy Metering** – Where the Generating Facility qualifies and receives service under SMUD's Net Energy Metering tariff.

SMUD GENERATING FACILITY INTERCONNECTION APPLICATION

Part 4 - Describe each of the Generators (See Instructions.)

Please indicate the number of each "type" of Generator being installed

A. Generator/Inverter Manufacturer (Name)

B. Generator/Inverter Model (Name/Number)

C. Generator/Inverter Software Version (Number)

D. Is the Generator Certified by a Nationally Recognized Testing Laboratory (NRTL) according to Rates Policy and Procedure 11-01? Yes No

E. Generator Design Synchronous Induction Inverter

F. Gross Nameplate Rating kVa

G. Gross Nameplate Rating kW

H. Net Nameplate Rating kW

I. Operating Voltage Volts/kV

J. Power Factor Rating %

K. PF Adjustment Range Min % Max %

L. Wiring Configuration Single-Phase Three-Phase

M. 3-Phase Winding Configuration 3 Wire Delta 3 Wire Wye 4 Wire Wye

N. Neutral Grounding System Used UnGrounded Solidly Grounded Ground Resistor
Ohms

O. For Synchronous Generators Only: Synchronous Reactance Transient Reactance Subtransient Reactance
Xd% X'd% X''d%

P. For Induction Generators Only: Locked Rotor Current
Amps

or
 Stator Resistance: Stator Leakage Reactance Rotor Resistance Rotor Leakage Reactance
% % % %

Q. Short Circuit Current Produced by Generator Amps

SMUD GENERATING FACILITY INTERCONNECTION APPLICATION

Part 4 Cont. - Describe each of the Generators (See Instructions.)

R. For Generators that are Started as
a "Motor" Only

1. In-Rush Current
Amps

2. Host Customer's Service Entrance Panel (Main Panel)
Continuous Current Rating
Amps

S. Prime Mover Type

- Internal Combustion Engine - Natural Gas/Propane Fueled
- Internal Combustion Engine - Diesel Fueled
- Internal Combustion Engine - Other Fuel
- Microturbine (< 250 kW) - Natural Gas/Propane Fueled
- Microturbine - Other Fuel
- Combustion Turbine (> 250 kW) - Natural Gas/Propane Fueled
- Combustion Turbine - Other Fuel
- Steam Turbine
- Photovoltaic Panels
- Solar-thermal engine
- Fuel Cell- Natural Gas/Propane Fueled
- Fuel Cell- Other Fuel
- Hydroelectric Turbine
- Wind Turbine
- Other (please describe)

Other

SMUD GENERATING FACILITY INTERCONNECTION APPLICATION

Instructions for Part 4 - Describing the Generators

#	Please indicate the number of each "type" of Generator being installed:	Please provide the following information for each Generator "type". Be sure all Generators classified as one "type" are identical in all respects. If only one type of Generator is to be used, only one column needs to be completed. Please be sure the information in the "Totals" column is correct and reflects the total number of Generator units to be installed.
A	Generator/Inverter Manufacturer	Enter the brand name of the Generator.
B	Generator/Inverter Model	Enter the model name or number assigned by the manufacturer of the Generator.
C	Generator/Inverter Software Version	If this Generator's control and or protective functions are dependent on a "software" program supplied by the manufacturer of the equipment, please provide the version or release number for the software that will be used.
D	Is the Generator Certified by a Nationally Recognized Testing Laboratory (NRTL) according to Rates Policy and Procedure 11-01?	Answer "Yes" only if the Generator manufacturer can or has provided certification data. See SMUD's Rates Policy and Procedure 11-01 for additional information regarding Generator certification.
E	Generator Design	Please indicate the design of each Generator. Designate "Inverter" anytime an inverter is used as the interface between the Generator and the electric system regardless of the primary power production/storage device used.
F	Gross Nameplate Rating (kVA)	This is the capacity value normally supplied by the manufacturer and stamped on the Generator's "nameplate". This value is not required where the manufacturer provides only a "kW" rating. However, where both kVA and kW values are available, please indicate both.
G	Gross Nameplate Rating (kW)	This is the capacity value normally supplied by the manufacturer and stamped on the Generator's "nameplate". This value is not required where the manufacturer provides only a "kVA" rating. However, where both kVA and kW values are available, please indicate both.
H	Net Nameplate Rating (kW)	This capacity value is determined by subtracting the "Auxiliary" or "Station Service" loads used to operate the Generator or Generating Facility. Applicants are not required to supply this value but, if it is not supplied, applicable Standby Charges may be based on the higher "gross" values.
I	Operating Voltage	This value should be the voltage rating designated by the manufacturer and used in this installation. Please indicate phase-to-phase voltages for 3-phase installations. See SMUD's Rates Policy and Procedure 11-01 for additional information.
J	Power Factor Rating	This value should be the nominal power factor rating designated by the manufacturer for the Generator. See SMUD's Rates Policy and Procedure 11-01 for additional information.

SMUD GENERATING FACILITY INTERCONNECTION APPLICATION

Instructions for Part 4 - Describing the Generators-Continued

K	Power Factor Adjustment Range	Where the power factor of the Generator is adjustable, please indicate the maximum and minimum operating values. See SMUD's Rates Policy and Procedure 11-01 for additional information.
L	Wiring Configuration	Please indicate whether the Generator is a single-phase or three-phase device. See SMUD's Rates Policy for additional information.
M	3-Phase Winding Configuration	For three-phase generating units, please indicate the configuration of the Generator's windings or inverter systems.
N	Neutral Grounding	Wye connected generating units are often grounded – either through a resistor or directly, depending upon the nature of the electrical system to which the Generator is connected. If the grounding method used at this facility is not listed, please attach additional descriptive information.
O	<i>For Synchronous Generators Only:</i>	If the Generator is of a "synchronous" design, please provide the synchronous reactance, transient reactance, and subtransient reactance values supplied by the manufacturer. This information is necessary to determine the short circuit contribution of the Generator and as data to be input in load flow and short circuit computer models of SMUD's Distribution System. If the Generator's Gross Nameplate Capacity is 10 MW or greater, SMUD may request additional data to better model the nature and behavior of the Generator with relation to its Distribution System.
P	<i>For Induction Generators Only:</i>	If the Generator is of an "induction" design, please provide the "locked rotor current" value supplied by the manufacturer. If this value is not available, the stator resistance, stator leakage reactance, rotor resistance, rotor leakage reactance values supplied by the manufacturer may be used to determine the locked rotor current. If the Generator's Gross Nameplate Capacity is 10 MW or greater, SMUD may request additional data to better model the nature and behavior of the Generator with relation to its Distribution System.
Q	Short Circuit Current Produced by Generator	Please indicate the current each Generator can supply to a three-phase fault across its output terminals. For single phase Generators, please supply the phase-to-phase fault current.
R	<p><i>For Generators that are Started as a "Motor" Only:</i></p> <p>1. In-Rush Current</p> <p>2. Host Customer's Service Entrance Panel (Main Panel) Continuous Current Rating</p>	<p>This information is needed only for Generators that are started by "motoring" the generator.</p> <p>Refer to SMUD's Rates Policy and Procedure 11-01 for significance and additional information.</p> <p>If this question was answered in Part 3, question C of this Application, it need not be answered here.</p>

SMUD GENERATING FACILITY INTERCONNECTION APPLICATION

Instructions for Part 4 - Describing the Generators-Continued

S Prime Mover Type	Please indicate the type and fuel used as the “prime mover” or source of energy for the Generator. 1 = Internal Combustion Engine – Natural Gas/Propane Fueled 2 = Internal Combustion Engine – Diesel Fueled 3 = Internal Combustion Engine - Other Fuel 4 = Microturbine (< 250 kW) – Natural Gas/Propane Fueled 5 = Microturbine – Other Fuel 6 = Combustion Turbine (> 250 kW) Natural Gas/Propane Fueled 7 = Combustion Turbine - Other Fuel 8 = Steam Turbine 9 = Photovoltaic Panels 10 = Solar-thermal engine 11 = Fuel Cell– Natural Gas/Propane Fueled 12 = Fuel Cell– Other Fuel 13 = Hydroelectric Turbine 14 = Wind Turbine
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