Electric Sample Form No. 79-1174-03H Sheet 1 (N)
Interconnection Application, Attachment H, Energy Storage Technology (N)

Please Refer to Attached Sample Form

INTERCONNECTION APPLICATION (Form 79-1174-03)
ATTACHMENT H
ENERGY STORAGE TECHNOLOGY

Please complete the following table for the specific generator technology indicated.

Instructions				
Generator Information	Existing Generator type 1	Existing Generator type 2	New Generator type 1	New Generator type 2
Please indicate the number of each "**type" and quantity** of Generator being installed. 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.				
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/Inverter certified? Applicant has verified that all major solar system components are on the verified equipment list maintained by the California Energy Commission and other equipment, as determined by PG&E, has been verified by the customer as having safety certification from a nationally recognized testing laboratory. See PG&E's Rule 21, Section L for additional information regarding Generator certification. For Net Billing Customers all major solar system components shall comply with Electric Rule 21 Section L.2-L.4 and Section L.7	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No

Generator Information	Existing Generator type 1	Existing Generator type 2	New Generator type 1	New Generator type 2
E – Anti-Islanding Detection Method Please select an Anti-Islanding Detection Method				
Group 1 – Frequency Shift with continuous positive frequency feedback	Group 1 ____	Group 1 ____	Group 1 ____	Group 1 ____
Group 2A – Frequency Shift with discontinuous or stepped positive frequency feedback	Group 2A ___	Group 2A ___	Group 2A ___	Group 2A ___
Group 2B – Frequency Shift similar to Group 2A except with a dead zone around 60Hz	Group 2B ___	Group 2B ___	Group 2B ___	Group 2B ___
Group 2C – Frequency shift with unidirectional frequency feedback	Group 2C ___	Group 2C ___	Group 2C ___	Group 2C ___
Group 3 – Monitors change of impedance	Group 3 ____	Group 3 ____	Group 3 ____	Group 3 ____
Group 4 – Monitors shift at a harmonic frequency (multiple of the fundamental)	Group 4 ____	Group 4 ____	Group 4 ____	Group 4 ____
Group 5 – Passive methods like rate of change of frequency, vector shift	Group 5 ___	Group 5 ___	Group 5 ___	Group 5 ___
Group 6 – Produces negative sequence current and monitor voltage	Group 6 ____	Group 6 ____	Group 6 ____	Group 6 ____
F –Volt-Var Smart Inverter Setting *If proposing non-default inverter settings, please provide:*				
Power Factor Value	V1 ________	V2 ________	V3 ________	V4 ________
Inverter Power Factor	Q1 _________	Q2 _________	Q3 _________	Q4 _________
Volt-Var Voltage Values	V1 ________ Q1 _________	V2 ________ Q2 _________	V3 ________ Q3 _________	V4 ________ Q4 _________
Volt-Var Reactive Values	P1 __________	P2 __________	P3 __________	P4 __________
Volt-Watt Real Power Values				

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G - 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.	____ Synch ____ Induct. ____ Inverter	____ Synch ____ Induct. ____ Inverter	____ Synch ____ Induct. ____ Inverter	____ Synch ____ Induct. ____ Inverter
H - 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.				
I - Energy Storage Electrical Source Function (in addition, please complete section: "Additional Information Required for Energy Storage")	Max kWh Capacity: _____ Rated kW Discharge: _____	Max kWh Capacity: _____ Rated kW Discharge: _____	Max kWh Capacity: _____ Rated kW Discharge: _____	Max kWh Capacity: _____ Rated kW Discharge: _____
J - Operating Voltage This value should be the voltage rating designated by the manufacturer and used in this Generating Facility. Please indicate phase-to-phase voltages for 3-phase installations. See PG&E's Rule 21, Section H.2.b. and Table H.1., for additional information.				
K - Power Factor Rating This value should be the nominal power factor rating designated by the manufacturer for the Generator. See PG&E's Rule 21, Section H.2.i. for additional information.				
L - PF Adjustment Range Where the power factor of the Generator is adjustable, please indicate the maximum and minimum operating values. See PG&E's Rule 21, Section H.2.i.				

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Generator Information	Existing Generator type 1	Existing Generator type 2	New Generator type 1	New Generator type 2
M - Wiring Configuration Please indicate whether the Generator is a single-phase or three-phase device. See PG&E's Rule 21, Section H.3.				
N - (MP) 3-Phase Winding Configuration (Choose One) For three-phase generating units, please indicate the configuration of the Generator's windings or inverter systems.	__3 Wire Delta __3 Wire Wye __4 Wire Wye	__3 Wire Delta __3 Wire Wye __4 Wire Wye	__3 Wire Delta __3 Wire Wye __4 Wire Wye	__3 Wire Delta __3 Wire Wye __4 Wire Wye
O - (MP) Neutral Grounding System Used (Choose One) 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.	__ Ungrounded __ Solidly Grounded __ Ground Resistor __ Ohms	__ Ungrounded __ Solidly Grounded __ Ground Resistor __ Ohms	__ Ungrounded __ Solidly Grounded __ Ground Resistor __ Ohms	__ Ungrounded __ Solidly Grounded __ Ground Resistor __ Ohms
P - Short Circuit Current Produced by Generator:	_____ (Amps)	_____ (Amps)	_____ (Amps)	_____ (Amps)
Q – Prime Mover Type Please indicate the type and fuel used as the prime mover or source of energy for the Generator. 1 = Natural Gas 2 = Diesel Fueled 3 = Other Fuel	1 2 3	1 2 3	1 2 3	1 2 3

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R - AC Disconnect For systems requiring an AC Disconnect only, please include the requested information about the AC Disconnect. See PG&E's Rule 21, Section H.1.d Located within 10 feet of the PG&E meter?	_____ Manufacturer _____ Model # _____ Rating (amps) ____ Yes ____ No	_____ Manufacturer _____ Model # _____ Rating (amps) ____ Yes ____ No	_____ Manufacturer _____ Model # _____ Rating (amps) ____ Yes ____ No	_____ Manufacturer _____ Model # _____ Rating (amps) ____ Yes ____ No
S - Energy Storage (ES) System (For important sizing information related to DC-Couple configurations, see sizing note below).	_____ Manufacturer _____ Model # _____ Quantity of Units	_____ Manufacturer _____ Model # _____ Quantity of Units	_____ Manufacturer _____ Model # _____ Quantity of Units	_____ Manufacturer _____ Model # _____ Quantity of Units
T - Lineside Tap Where is the point of interconnection in relation to the main breaker? PG&E has special requirements for a lineside tap. Contact PG&E at: Rule21Gen@PGE.com for more information.	____ Customer side ____ PG&E side	____ Customer side ____ PG&E side	____ Customer side ____ PG&E side	____ Customer side ____ PG&E side
U – Warranty or Service Agreement Applicant has verified that (i) a warranty of at least 10 years has been provided on all equipment and on its installation, or (ii) have a 10-year service warranty or executed "agreement" ensuring proper maintenance and continued system performance.	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No
V - Distribution Interconnect Handbook (DIH) and Greenbook Requirements Does this interconnection meet the DIH and Greenbook Requirements	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No
W - Gas Clearance Requirements Certify that this interconnection meets Greenbook Gas Clearance Requirements?	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No

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X - Basic Single Line Diagram (SLD) If the interconnection is eligible to use a Basic SLD, please include the requested information.	_____ Panel Voltage (Volts) _____ Main Breaker (Amps) _____ Storage Breaker Size (Amps)	_____ Panel Voltage (Volts) _____ Main Breaker (Amps) _____ Storage Breaker Size (Amps)	_____ Panel Voltage (Volts) _____ Main Breaker (Amps) _____ Storage Breaker Size (Amps)	_____ Panel Voltage (Volts) _____ Main Breaker (Amps) _____ Storage Breaker Size (Amps)
Can this system be used as a back-up generator?	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No
If so, please include the requested information for the back-up controller or other device.	_____ Manufacturer _____ Make _____ Model No.	_____ Manufacturer _____ Make _____ Model No.	_____ Manufacturer _____ Make _____ Model No.	_____ Manufacturer _____ Make _____ Model No.
Y - Back-up Generator Operation Will the generator be operated as a back-up?	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No
If yes, please indicate control device.	☐ Automatic Transfer Switch ☐ Contactor ☐ Breaker	☐ Automatic Transfer Switch ☐ Contactor ☐ Breaker	☐ Automatic Transfer Switch ☐ Contactor ☐ Breaker	☐ Automatic Transfer Switch ☐ Contactor ☐ Breaker
Z - Limited Export Will the generator export be limited?	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No
If yes, please indicate how export will be limited.	☐ Power Control System (PCS – Option 9) ☐ Relay ☐ Derated Inverter	☐ Power Control System (PCS – Option 9) ☐ Relay ☐ Derated Inverter	☐ Power Control System (PCS – Option 9) ☐ Relay ☐ Derated Inverter	☐ Power Control System (PCS – Option 9) ☐ Relay ☐ Derated Inverter

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Generator Information	Existing Generator type 1	Existing Generator type 2	New Generator type 1	New Generator type 2
AA - Telemetry Will the Generating Facility Gross Nameplate Rating exceed 1 MW?	____ Yes ____ No			
If yes, please select a Telemetry Option.	_____ Customer-owned Telemetry - Gateway _____ Customer-owned Telemetry - Aggregator _____ Mini RTU			
If one of the Customer-owned Telemetry options is selected, please identify the preferred Site Metering Arrangement.	_____Customer-side net load metering _____Replace PG&E meter with a Mark V meter and terminal block _____Add terminal block to existing PG&E Mark V meter _____Replace meter socket with dual-socket meter cabinet for installation of customer-owned meter _____Install customer-owned meter in existing dual socket meter cabinet.			
AB - Vehicle to Grid Will the inverter be located in the Electric Vehicle Supply Equipment (EVSE) or in the Electric Vehicle (EV) itself?	_____ EVSE _____ EV	_____ EVSE _____ EV	_____ EVSE _____ EV	_____ EVSE _____ EV
If for the V2G AC Pilot, the EV includes the inverter, please provide EV details.	_____ EV Make _____ EV Model _____ EV Year	_____ EV Make _____ EV Model _____ EV Year	_____ EV Make _____ EV Model _____ EV Year	_____ EV Make _____ EV Model _____ EV Year
If inverter is in the EVSE, please provide EVSE model manufacture year.	_____ EVSE Model Year	_____ EVSE Model Year	_____ EVSE Model Year	_____ EVSE Model Year
If inverter is in the EVSE, is the EVSE newly installed?	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No
If inverter is in the EVSE, will the Generator participate in the Emergency Load Reduction Program (ELRP)?	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No
If yes, please provide ELRP Application Number.	_____ Application #	_____ Application #	_____ Application #	_____ Application #

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Energy Storage Charging Function:

Rated Charge Demand (Load): _____ kW

Estimated annual Net Energy Usage* of the energy storage device(s): ____ ____ kWh

*Net Energy usage = (kWh input, including charging, storage device auxiliary loads and losses) – (kWh output including discharging)

Will the Distribution Grid be used to charge the storage device: ☐ Yes ☐ No

If no: Provide technical description of control systems including (e.g. Nationally-certified piece of equipment, Relays/metering):

Source of energy for Charging: _____

Mechanism to prevent charging from the Distribution System: _____

If Yes: Will charging the storage device(s) increase the host facility's existing peak load demand:

☐ Yes ☐ No

If Yes: Provide the following loading information:

Amount of added peak demand: _____ kW

If no: Provide technical description of controls systems including:

Charging periods: _____

Mechanism to prevent charging from the Distribution System during host facility peak:

_____

Expedited Interconnection Process Selection for Non-Export Energy Storage:

☐ This project meets the requirements identified in Rule 21 Section N and this process is being selected for expedited interconnection.

Note on Sizing (DC-Coupled Configurations)

The size of the storage system in DC-coupled NEM/NEM2/NBT-eligible generator plus storage systems is the lesser of the shared inverter's (or inverters') nameplate capacity (capacities summed) and the storage device's (devices') maximum continuous discharge capacity (capacities summed) listed on the device's (devices') technical specifications sheets. A storage device's maximum continuous discharge capacity may be listed on technical specification sheets using different terminology. Note: PG&E will use common sense to determine whether a device's technical specification sheet includes the appropriate metric for purposes of determining system size, regardless of the terminology used. If that metric is not included, PG&E may rely on the inverter's nameplate rating.

For example:

- What is the maximum continuous discharge capability for each storage unit?
  _____ +_____ +_____ +_____ + _____ =. total_____
- What is each inverter's nameplate rating?
  _____ +_____ +_____ +_____ + _____ =. total_____