
Generator Interconnection Procedures Wholesale Distribution Tariff

Supplemental Review

Sunniva Systems LLC

Petaluma Solar East
5853 Bodega Avenue
Petaluma, CA 94952

1000 kW PV Generator

Queue# 1399-WD



Pacific Gas and Electric Company

04 January 2017

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1. Executive Summary

1.1 Generation Interconnection Request

Sunniva Systems LLC, an Interconnection Customer (IC), has requested a Generating Facility (GF) interconnection for Petaluma Solar East (Project) to the Pacific Gas and Electric Company (PG&E)'s distribution system for a 1000 kW PV generating facility to be located at 5853 Bodega Avenue, Petaluma, CA 94952. The Generating Facility will be connected to PG&E's Petaluma C 1108 distribution circuit. Interconnection will be in accordance with FERC's Generator Interconnection Procedures. The requested operating date for the Project is 5 December 2017. This Project has been assigned the reference number of 1399-WD.

In accordance with the FERC Small Generator Interconnection Procedures, the Initial Review did not pass all necessary screens. Supplemental Review is required. The Supplemental Review will determine if IC can continue to qualify for interconnection pursuant to the Fast Track Process.

1.2 Initial Review Summary

The GIP Initial Review Process has determined that the generating facility has failed at least one screen on Initial Review. Pursuant to Section 2.2.1 of the Generator Interconnection Procedure, PG&E cannot determine the interconnection requirements for this project without further study. Here is a summary of the failed screen and the issues related to the screen:

Screen 2 – 15% Line Section Peak Load Issues

Screen 4 – Project contributes more than 10% fault current at POI

Screen 5 – Short Circuit Interrupting Capability Issues

Screen 9 – Known Transmission Stability Limitations

Screen 10 – Distribution Provider Construction Issues

1.3 Supplemental Review Results

The non-binding estimated construction schedule to engineer and construct the facilities is approximately **months** from the signing of the Generator Interconnection Agreement (GIA).

The project estimated cost is **\$** not including Cost of Ownership (COO) and ITCC.

1.4 Next Step

The next step of the Interconnection Process is the Interconnection Agreement. Once you have reviewed the results of this Supplemental Review, please contact your EGI Interconnection Manager to discuss arranging a results meeting and next steps meeting.

2.5 Maps and Diagrams

2.5.1 Project Vicinity Sketch



3.2 Power Quality and Voltage Tests

3.2.1 Steady State Voltage

Petaluma C 1108 has no line voltage regulating devices between the substation and the proposed generation site. Bank 3 at Petaluma C Substation has a Station Load Tap Changer (LTC) that regulates the feeder voltages. The addition of the Project will offset some load measured by the Bank 3 Regulator, possibly causing output voltage to be lower than necessary.

Analysis was performed to determine if the Project causes any steady state voltage problems where the primary voltage is out of tolerance from Rule 2 Standards. Steady state voltage was examined with the generator off-line and on-line for the different system operating conditions.

Table 3.C.1. - Steady State Voltage

Voltage on 120V Base	Case 1			Case 2		
	MAX	MIN	PCC	MAX	MIN	PCC
Project Off-Line						
CB 1108	125.6	121.5	125.6	125.3	122.8	125.3
Project On-Line						
CB 1108	128.9	121.3	128.9	130.3	121.7	130.3

Table 3.D.2. - Steady State Voltage (After re-conductor and inverter at 95% leading PF)

Voltage on 120V Base	Case 1			Case 2		
	MAX	MIN	PCC	MAX	MIN	PCC
Project Off-Line						
CB 1108	125.6	121.5	125.6	125.3	122.8	125.3
Project On-Line						
CB 1108	125.7	121.1	125.7	127.0	121.6	127.0

Analysis of this section has determined that there will be significant impacts to the system when the project goes online. The steady state voltage will be outside Rule 2 thresholds when the project goes online.

Mitigations

- Re-conductor ~4000ft of #6CU to #4/0 AAC
- Set the inverter to 95% leading power factor (absorbing VARs)

10. Requirements Prior to Pre-parallel Inspection and Operation

10.1 PG&E System Work

The following is the required work on the PG&E System prior to the pre-parallel inspection:

1. Re-conductor ~ 4000ft of #6CU to 4/0 AAC

10.2 Interconnection Facility Work

The following is the required work for the interconnection facilities prior to the pre-parallel inspection:

1. Primary Service must be established. Primary service requirements can be found in the PG&E Green Book or provided by the PG&E Service Planning Department
2. Applicant is to provide an approved PG&E switch that is accessible, lockable, and gang-operated at the PCC beyond the meter.
3. PG&E to install Primary Revenue Metering
4. PG&E to install SCADA Recloser at POI
5. Customer to install a ground fault detection transformer and associated relays

10.3 Required Documentation

The following is the required work prior to the pre-parallel inspection:

1. Applicant to provide a complete set of layout drawings and elevations of the switchgear including dimensioned drawings of the PG&E revenue metering section showing the current transformer and potential transformer mountings
2. Applicant to provide manufacturers' specification sheets for the breaker, primary disconnect switch, batteries and charger, generator step-up transformer, current transformers and potential transformers
3. Applicant to provide relay settings for primary switchgear
4. Applicant to provide updated Single and 3-line wiring diagrams
5. Applicant to provide AC/DC schematic diagram
6. Applicant to provide a copy of Form G5-1 relay settings and the bench test report of the relays before PG&E will schedule a pre-parallel inspection of the generating facility (Primary Service requirement)
7. Applicant to provide battery sizing calculations and type as described in Transmission Interconnection Handbook

10.4 Parallel Operation Requirements

In order to release this project for parallel operation with the PG&E distribution system, the following tasks are required:

1. Approval of the customer's 3-line wiring diagrams, control and relay diagrams
2. Approval of relay settings
3. Approval of operation and control sequence descriptions (function description)
4. Approval of customer's required relay test reports and Form G5-1
5. Pre-parallel inspection
6. Execution of the operating agreement
7. All the required upgrades are completed

10.5 Operating Requirements

Sunniva Systems LLC ability to operate the generating facilities at the 5853 Bodega Avenue, Petaluma, CA 94952 is guaranteed only when the PG&E system is in the normal operating configuration and all required protection and regulation equipment is operational. PG&E reserves the right to require the Petaluma Solar East generators to separate from the PG&E system if required for safety or system stability during an abnormal condition. In particular, the Petaluma Solar East generator will not be

allowed to operate in parallel with PG&E if the PG&E circuit source feeding the plant is switched to a source configuration different from what was studied in this report.