



COVER SHEET

Energy Distribution Standard

S-0053: Facility Interconnection Requirements

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Facility Interconnection Requirements

Energy Distribution Standard		S-0053
Reviewed By: Billy Quach Sr. Electric Utility Engineer	Date Signed: 1/3/2018	Version 3.0
Approved By: Kevin Keating Electric Division Manager	Effective Date: 1/3/2018	Page 1 of 10

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1 Purpose

The purpose of this document is to provide technical interconnection requirements for third parties and/or customers (Applicant) requesting interconnection to Silicon Valley Power (SVP) facilities at voltages greater than 12kV (“SVP Facilities”). The requirements in this document supplement requirements established by the City of Santa Clara City Code and Silicon Valley Power, City of Santa Clara, Rules and Regulations.

This document also establishes compliance with the requirements of the North American Electric Reliability Corporation (NERC) Reliability Standard FAC-001-2 “Facility Interconnection Requirements”, FAC-002-2 “Facility Interconnection Studies”, and applicable California Independent System Operator (CAISO) (Balancing Authority and adjacent interconnected Transmission Operator), Pacific Gas & Electric Company (PG&E) (adjacent interconnected Transmission Owner) requirements for reliable operation of interconnected transmission systems.

The requirements and studies identified in this document are intended to be the minimum requirements to be used by SVP in evaluating interconnection requests and the reliability impact of the new facilities or materially modified existing facilities and their connection on the interconnected transmission system. Additional requirements, depending upon the location, type and characteristics of the proposed interconnection facility may be necessary and will be determined on a case-by-case basis.

This document addresses the technical aspects of interconnection of facilities to SVP’s Facilities. It does not address any commercial requirements for interconnection or receiving service, or any tariff/rate requirements. Any interconnection will require and be governed by terms and conditions outlined in a specific contract between the Applicant and the City of Santa Clara.

2 Definitions

Applicant – A third party transmission owner, end-use customer or generation owner requesting approval to interconnect to SVP’s facilities.

BES – Bulk Electric System, Primarily all of SVP’s 115kV and above facilities.

CAISO – California Independent System Operator, the Planning Coordinator and Balancing Authority for SVP’s area.

PG&E – Pacific Gas and Electric Company, the transmission owner for the adjacent transmission system interconnected to the SVP system.

PEAK RC - The Reliability Coordinator for the area in which SVP operates.

SVP – Silicon Valley Power, the Transmission Owner, Operator and Planner (TO, TOP and TP) for SVP BES Facilities.

SVP Facilities – Portions of SVP’s system operating at voltages greater than 12kV.

3 Applicability

This Standard covers the technical interconnection requirements for Applicants requesting interconnection to SVP Facilities.

SVP, pursuant to the Silicon Valley Power, City of Santa Clara, Rules and Regulations, cannot allow interconnection of Applicant facilities to its 230kV or 115kV transmission facilities.

Applicant request for generator interconnection to SVP system shall be made in accordance with SVP’s Generating Facility Interconnection Application and meet the requirements contained in SVP Design Standard SD 1630 “Initial Review Process for Applications to Interconnect Generating Facilities” and SVP Design Standard SD 1631 “Engineering & Operating Requirements for the Interconnection of Generating Facilities.” In addition, Applicant requests for generator interconnection will also be expected to meet the requirements contained in this standard for providing technical information and for best utility industry practices to ensure the reliability of the SVP system, interconnected transmission systems and the Bulk Electric System.

4 General Requirements

Applicant must submit in writing an interconnection request to SVP describing the scope of the project and desired time schedule for interconnection as explained below.

Applicant is responsible to pay to SVP the cost to perform any detailed reviews and conduct any necessary interconnection studies, as determined by SVP, including any studies required/necessary by adjacent transmission owners/operators, the CAISO, or other applicable regulatory authority.

The responsibility to provide or pay the cost to provide all engineering designs, construction services, maintenance, operations, permits, licenses, environmental reviews, rights-of-way, equipment/material purchases, metering, control facilities, telecommunications, or other specific services will be set forth in written contracts between the Applicant and the City of Santa Clara. In general, the Applicant will be responsible for the cost associated with the identified items. SVP reserves the right to participate in any proposed facility expansion plans.

A direct interconnection with SVP Facilities does not guarantee capacity on or through the SVP system. Upgrades to the SVP system will be determined as part of the system impact studies associated with the Applicant’s interconnection request.

The Applicant must provide information and meet applicable requirements associated with SVP Standards, the SVP/PG&E Interconnection Agreement, the SVP/CAISO Metered Subsystem Agreement and must also comply with applicable Federal Energy Regulatory Commission–approved interconnection procedures for the CAISO Balancing Authority Area or any other applicable regulatory requirements or laws.

5 Procedures for Coordinated Joint Studies

Applicants seeking to integrate new facilities shall be expected to coordinate and cooperate on any and all required assessments and studies, including those assessments / studies by SVP, PG&E and the CAISO.

Written Request:

Applicant must submit a written request for interconnection to SVP's Facilities. The written request is to be addressed to:

Director of the Electric Utility
Silicon Valley Power/City of Santa Clara
Electric Department
1500 Warburton Ave.
Santa Clara, CA 95050-3796

The written request shall contain the following information

- A description of the proposed facility;
- Milestone schedule for key actions/decisions;
- Requested point of interconnection/service;
- Specifications of the Applicant's proposed facility including type, voltage level, capacity (MW), size, rating, and any other applicable specification listed below in the "Information and Data Requirements" section; and
- Single Line diagrams and area geographic maps showing project location and transmission line routes (as applicable);
- A description of proposed operation which shall include how the Applicant's project will comply with applicable NERC Reliability Standards and meet WECC and CAISO planning and operational criteria for system performance

5(a) Preliminary Feasibility Review

Once SVP receives the Written Request, SVP will perform a Preliminary Feasibility Review. This preliminary review will assess the Applicant's proposed facility for technical completeness of information, potential impacts to SVP's system and adjacent transmission systems and the likelihood of SVP to permit the requested interconnection. This review will take up to three months to perform and will involve joint discussion with

the Applicant and other entities as necessary (e.g. PG&E, CAISO). Upon conclusion of the Preliminary Feasibility Review, SVP will provide the Applicant with the results of the Preliminary Feasibility Review, a cost estimate to perform an Initial Feasibility Study and an approximate timeline for completion of an Initial Feasibility Study.

5(b) Initial Feasibility Study

If, upon receipt of the Preliminary Feasibility Review, the Applicant wishes to proceed, the Applicant will be required to pay to SVP the estimated cost, non-refundable, of the Initial Feasibility Study. During the Initial Feasibility Study, SVP will review the project in more detail, including performing initial system studies to determine the feasibility for the project to proceed. This may include having other entities perform preliminary studies on the impact of the Applicant's project on their system. SVP will work with the Applicant throughout the study process to determine any missing information and identify any additional obstacles or operational issues affecting the reliability of the transmission system. The Initial Feasibility Study will take approximately four to six months to complete, and will provide the Applicant with a better understanding of the engineering, design, operational and construction challenges in completing the interconnection of the Applicant's proposed facility. At that time, SVP will also provide the Applicant with a cost estimate to proceed with the System Impact Study associated with the Applicant's proposed facility.

5(c) System Impact Study

If, upon receipt of the Initial Feasibility Study, the Applicant wishes to proceed, the Applicant will be required to pay to SVP the estimated cost, non-refundable, of the System Impact Study. The Applicant may also be required to pay the cost for studies by other entities (PG&E and/or the CAISO). SVP will perform the System Impact Study which will identify specific system improvements / enhancements to SVP's system and/or adjacent transmission systems necessary in order to interconnect the Applicant's proposed facility. This stage of the process requires coordination and joint studies between the Applicant, SVP and other entities (PG&E and/or the CAISO,) and may take from ten or more months to complete.

5(d) Detailed Facility Study

If, upon receipt of the System Impact Study, the Applicant wishes to proceed, the Applicant will be required to pay to SVP the estimated cost, non-refundable, of the Detailed Facility Study. The Applicant (if an End-use Customer) will also be required to demonstrate, in a manner acceptable to SVP, the need for the requested service interconnection facilities, execute all required contracts / agreements with the City of Santa Clara, and complete required City Planning Department reviews/Permit Applications. SVP will provide the results of the study that will identify the detailed requirements and construction costs associated with interconnecting the Applicant's proposed facility to SVP's system. The timeframe to conduct the Detailed Facility Study will typically take from twelve to eighteen months and will depend upon the size of the Applicant's proposed facility and the complexity of the proposed interconnection.

Studies evaluating the reliability impacts of the Applicant's proposed facilities (Generation, Transmission, or Transmission End-use) on the interconnected transmission systems shall be conducted using analytical tools and databases acceptable to SVP, which may include any analytical tools or databases utilized by the CAISO or considered acceptable by the CAISO.

The scope of studies (normal and emergency) conducted, as determined by SVP, shall include, but not be limited to, steady state power flow analysis, post-transient analysis, dynamic stability analysis, and short-circuit analysis, as acceptable to SVP, to ensure compliance with all applicable NERC, WECC, sub-regional, Power Pool, CAISO Balancing Authority area, SVP/PG&E Interconnection Agreement, SVP and City of Santa Clara standards and requirements.

Results of the interconnection studies shall be documented along with any assumptions, system performance, alternatives considered, conclusions and jointly coordinated recommendations. Such documentation shall be retained by SVP for three (3) years and shall be made available if requested by NERC, WECC, or any other entity responsible for the reliability of the interconnected transmission system within 30 calendar days.

6 Notification of New or Modified Facilities

SVP will notify other affected entities, including but not limited to the CAISO, PG&E, and other City of Santa Clara Departments as may be required and necessary to complete the studies requested by the Applicant. Such notification will be in accordance with established procedures and contractual agreements and will occur as soon as feasible.

Notification of actual new or modified facilities, as required, shall be made by SVP, or its designee, to the CAISO and PG&E. The Applicant is required to make their own notifications/registration, if applicable, to the WECC and NERC for its own facilities.

7 Information and Data Requirements

The Applicant will be responsible for providing all information and data associated with their proposed facilities necessary for SVP, and others, to perform the required assessments and studies. Such information includes:

1. Written request as described above, including a description of the Applicant's proposed facility.
2. Complete all required forms and data sheets as may be required by SVP.
3. Projected loads and resource (generation) projections for a ten (10) year period.
4. Facility single line diagram for the proposed facility, detailing proposed facility connection points, voltage levels, equipment data, breaker/switch configurations, and protective relay schemes.
5. Voltage level and MW and MVAR capacity or demand at the point of connection.
6. Breaker duty and surge protection.

7. System protection and coordination.
8. Metering and telecommunications.
9. Grounding and safety issues.
10. Insulation and insulation coordination.
11. Voltage, Reactive Power, and power factor control.
12. Power quality impacts.
13. Equipment Ratings.
 - Transformer impedance data, winding configurations, voltage levels, thermal ratings and available tap settings.
 - Generator data – see requirements in SVP System Design Standards as listed below in Reference Documents
 - Transmission conductor size, line configuration, impedance and thermal ratings (both normal and emergency).
14. Synchronizing of facilities.
15. Maintenance coordination.
16. Operational issues (abnormal frequency and voltages).
17. Inspection requirements for existing or new facilities.
18. Communications and procedures during normal and emergency operating conditions.

All requirements associated with the Applicant's proposed facility will adhere to good industry practices and as appropriate will be contained in a contractual agreement (Agreement) between the Applicant and the City of Santa Clara. Such Agreement shall be fully executed prior to SVP performing any Detailed Facilities Studies or physical construction work.

8 Maintenance and Updating of SVP's Facility Connection Requirements

SVP shall maintain and update these Facility Connection Requirements as necessary to maintain compliance with any and all NERC, WECC, CAISO, PG&E, SVP or other governmental, legal or regulatory body requirements. SVP shall make these Facility Connection Requirements available to the users of SVP's system, WECC, and NERC on request (within five business days).

9 Reference Documents

- *NERC Standard FAC-001-2 “Facility Interconnection Requirements”*
- *NERC Standard FAC-002-2 “Facility Interconnection Studies”*
- *SVP, City of Santa Clara, Rules and Regulations*
- *SVP System Design Standard SD 1630 “Initial Review Process for Applications to Interconnect Generating Facilities”*
- *SVP System Design Standard SD 1631 “Engineering & Operating Requirements for the Interconnection of Generating Facilities”*
- *SVP Generating Facility Interconnection Application*

Reviewed: <i>/s/ Billy Quach</i>	Approved: <i>/s/ Kevin Keating</i>	Date: 01/03/18
Billy Quach Sr. Electric Utility Engineer	Kevin Keating Electric Division Manager	

Attachment A: Distribution List

Internal Distribution Groups		External Distribution Groups	
“X”	Mark those that Apply	“X”	Mark those that Apply
	All SVP Employees		CAISO
	SVP Emergency Management Organization		PG&E
X	Customer Service Group		PEAK RC
X	Engineering		WECC
	Generation		
	Operations/ECC/BECC		
	Scheduling Desk		
	Substations		
	Transmission & Distribution		
	SVP Systems Support		
Customized List of Individual Internal Recipients		Customized List of Individual External Recipients	