

DOCKETED

| | |
|-------------------------|--|
| Docket Number: | 19-SPPE-04 |
| Project Title: | SJ2 |
| TN #: | 232595 |
| Document Title: | SJC Data Center Response to Data Request Set 3 |
| Description: | N/A |
| Filer: | Jerry Salamy |
| Organization: | Jacobs |
| Submitter Role: | Applicant Consultant |
| Submission Date: | 3/30/2020 2:59:01 PM |
| Docketed Date: | 3/30/2020 |

San José City Data Center (19-SPPE-04)

Data Response Set 3 (Data Request 53 Revised Requests 3, 3b, 4, 5, 6, 8, 8a, 19, 46, 47, and 49 Data Requests 54 through 56)

Submitted to
California Energy Commission

Prepared by
Microsoft Corporation

with technical assistance from

JACOBS[®]

March 2020



Contents

| | |
|--|----------|
| Introduction | 2 |
| Renewed Data Requests | 3 |
| Air Quality & Public Health (54-56) | 7 |

Figures

Figure 2-6R Revised One-Line Drawing

Figure DR-3 Location of the Reconductoring Circuit

Introduction

Attached are Microsoft Corporation (Microsoft or the Applicant) responses to the California Energy Commission (CEC) Data Request, Set 3 regarding the San José City Data Center (SJC02) (19-SPPE-04) Small Power Plant Exemption (SPPE).

The responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as the CEC presented them and are keyed to the Data Request numbers.

New or revised graphics or tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 28 would be numbered Table DR28-1. The first figure used in response to Data Request 28 would be Figure DR28-1, and so on. Figures or tables from the SJC02 SPPE that have been revised have "R1" following the original number, indicating revision 1.

Additional tables, figures, or documents submitted in response to a data request (for example, supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end of each discipline-specific section and are not sequentially page-numbered consistently with the remainder of the document, though they may have their own internal page numbering system.

As identified in the Staff's First Motion for Leave to File Additional Data Requests, docketed February 28, 2020 (TN# 232269) several data responses (3, 3a, 4, 5, 6, 8, 8a, 19, 46, 47, 49) provided in Data Response Set 1 (TN# 231774) and Data Response Set 2 (TN# 232027) require supplemental information. Additional information as requested by Staff has been provided as Data Response #53.

Data Request 53 - Renewed Data Requests

- 3) *Please clarify Figure 2-6 (interconnection to PG&E System and One Line Diagram). The transformer rating shown in the figure for the New Microsoft Data Center Substation is 230/13.8 kV. The IC Substation Adder indicates that the transformer rating is 230/21 kV. Which rating is correct?*

Response: PG&E and the Applicant determined that a revised San José City Data Center site (SJC02) interconnection between the Los Esteros Substation and the onsite substation should be pursued as a result of cost considerations, and therefore desires to modify the project description in the SPPE application accordingly. This revision involves the replacement of the two, 230 kilovolt (kV) feeder lines with two, 115 kilovolt (kV) feeder lines from the Los Esteros 115 kV bus to the onsite substation. The new 115 kV feeder lines will be routed along the eastern boundary of the SJC02 site via approximately 1,100 feet of underground duct bank that is anticipated to be located within the proposed perimeter road along the eastern project site boundary. The duct banks will be approximately 2 feet tall by 3 feet wide, covered by a minimum of 3 feet of engineered fill and asphalt. The conduits within the duct bank will house conductors and communication lines. Revised Figure 2-6R presents the revised one-line design that includes the new interconnection. In addition to these changes, the revised onsite substation design includes three (3) 115/34.5 kV, 60 MVA transformers.

During PG&E engineering review, PG&E determined that interconnecting more than 50 megawatts of load at the Los Esteros Substation would result in a thermal overload on the Newark – North Receiving Station #1 115 kV line. To avoid this result, the approximately 9-mile circuit will need to be reconductored to address the overload. Figure DR-3 presents the location of the reconductoring circuit. The Applicant is working with PG&E in identifying the areas to be impacted from reconductoring and early discussions have indicated that reconductoring in any potentially sensitive habitat areas will be performed by helicopter, which will significantly reduce ground-based environmental impacts. Once the means and methods for reconductoring have been identified by PG&E, the Applicant will submit a supplemental response to Data Request #3 that provides a full discussion of the anticipated environmental impacts (and feasible mitigation measures, if needed) associated with the reconductoring.

- b. *Are adding a third transformer an option to prevent the use of back-up diesel generators to supply the full data center loads in the event of regular maintenance or outages?*

Response: As shown in revised Figure 2-6R, the onsite substation includes 3 transformers that will allow for the maintenance of the transformers without interrupting the supply of utility-provided electricity. The Applicant does not anticipate a maintenance event that would require the operation of the emergency standby generators (other than routine maintenance and testing of the standby generators).

- 4) *Please provide an updated Figure 2-6 for the proposed onsite data center substation with correct transformer sizes, breaker ratings, protection equipment information and the distribution feeders' interconnection with the load centers. Please identify each data center block, load information and how it would be interconnected with the proposed emergency diesel generators.*

Response: See the response to Data Request #3.

- 5) *Please update Figure 2-6 to show all changes and upgrades in the Los Esteros Substation, which are required to interconnect the project. Show the equipment ratings and bay arrangements.*

IC Substation Adder

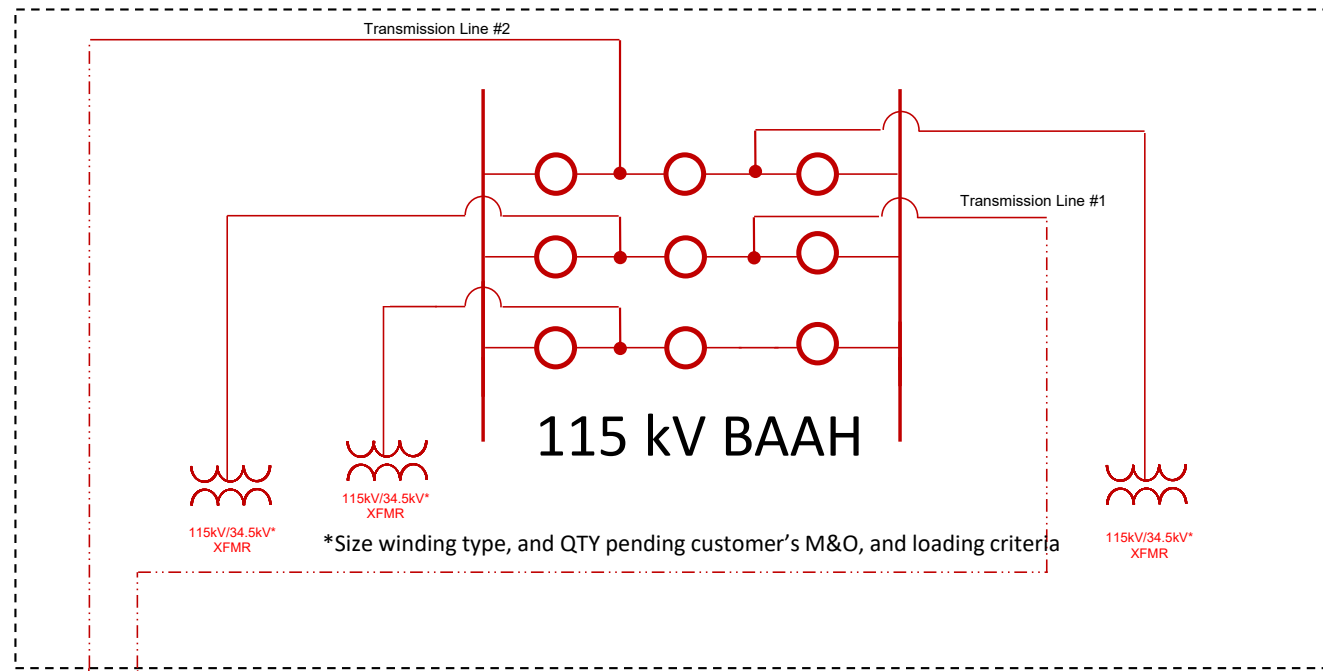
TRANSMISSION SCOPE:
New 3-Bay, 9 CB 115kV BAAH substation with terminals for (2) 115kV lines and (3) 115/34.5kV 60MVA XFMR's

DISTRIBUTION SCOPE:
(3) 115/34.5kV 60MVA XFMR's,
(3) 34.5kV XFRM bays and
(6) 34.5kV Feeders (2 per XFMR)

T-Line: 1100' per (2) Underground 115kV Transmission Lines

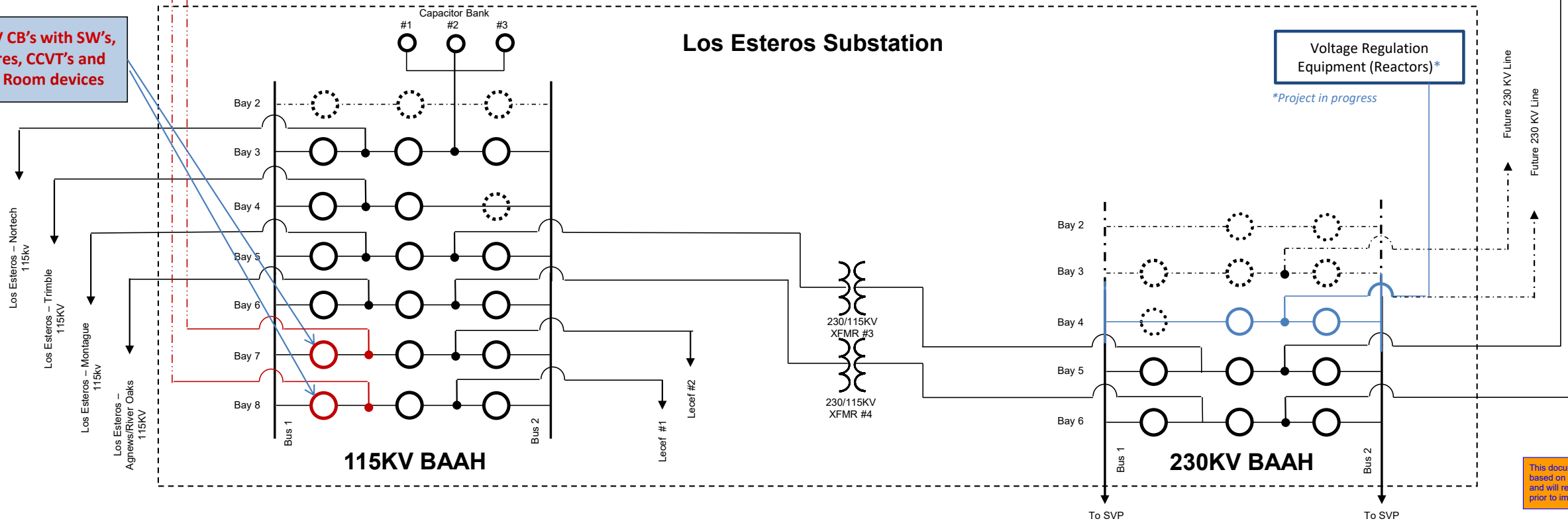
(2) 115KV CB's with SW's, Structures, CCVT's and Control Room devices

New Microsoft Data Center



(2) Permanent 115KV Interconnections (Underground T-Line)

Los Esteros Substation



This document has been modified based on client indicated changes and will require approval from PG&E prior to implementation.

Figure 2-6R
Interconnection to PG&E System and One Line Diagram
San José Data Center (SJC02)
San José, California

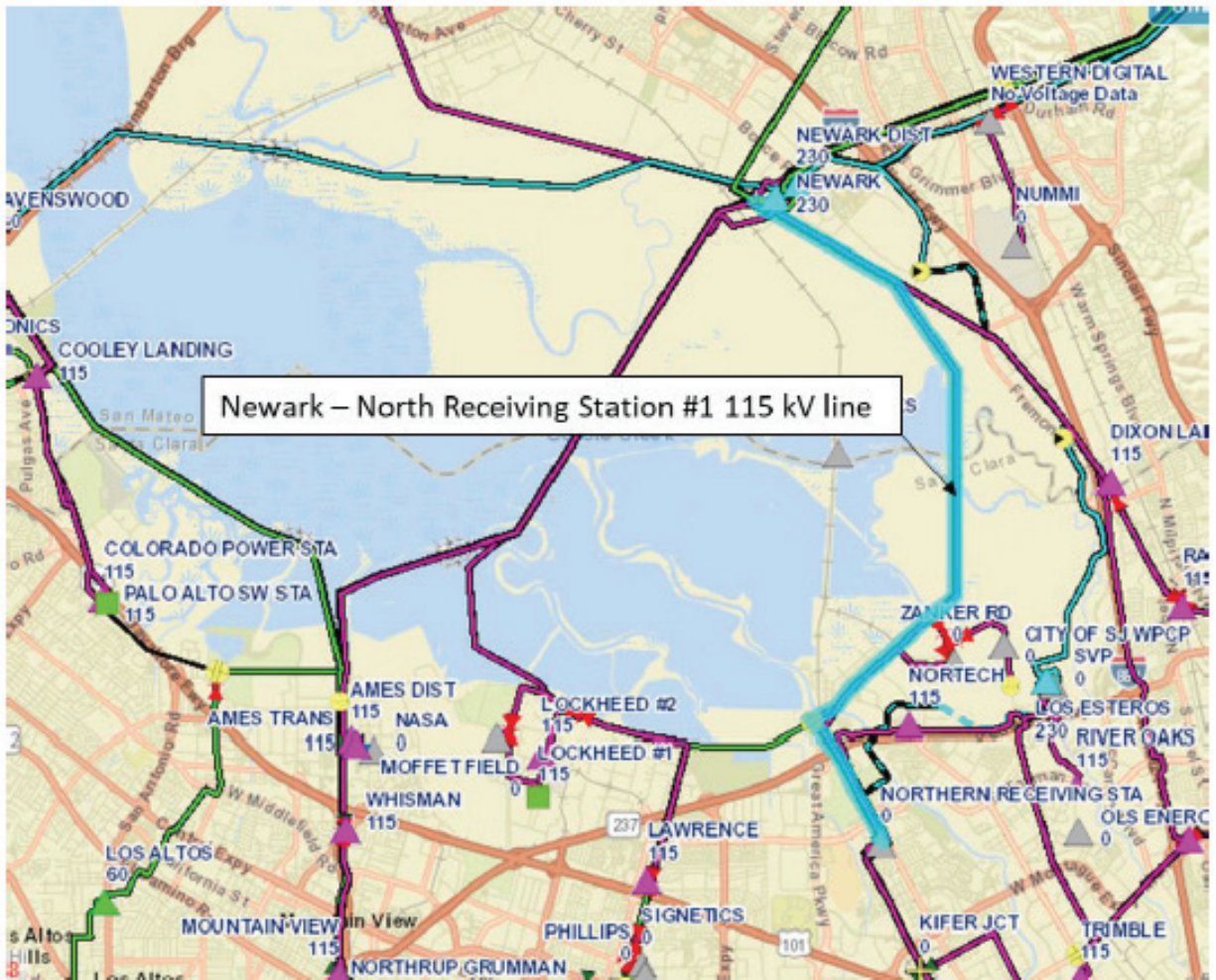


Figure DR-3
 Location of the Reconducting Circuit
 San José Data Center (19-SPPE-04)
 San José, California

Response: The available information provided by PG&E is shown on revised Figure 2-6R. At this stage in the design, PG&E is unable to provide any additional detail in this regard.

- 6) *Please provide the pole configurations that would be used to support the transmission lines from the Los Esteros Substation to the proposed data center substation. Show proposed pole structure configuration and measurement.*

Response: The revised interconnection lines from the Los Esteros Substation to the onsite substation would now be located underground, within the boundary of the project site.

- 8) *Section 2.2 states "the receiving station step voltage down to 60 kV for distribution along the Northwest Loop, which can then provide electricity to facilities interconnected to the loop from either end, making electrical service reliable." How does the 60 kV loop fit into the 230 kV interconnection to the Los Esteros substation?*

Response: References to the 60 kV Northwest loop were typographical errors that are not relevant to the SJC02 project and should be disregarded.

- a. *If the Northwest Loop is relevant to the project, please provide detailed descriptions and one-line diagrams showing detailed interconnection information of the Northwest Loop transmission segment with the project.*

Response: See the response to Data Request #8 above.

- 19) *Please provide a schedule for completing the archaeological survey of the linears.*

Response: As noted in Staff's Issues Identification Report and Proposed Schedule (TN# 232375), Staff has withdrawn Data Request #19.

- 46) *Please provide information that reviews the frequency and durations of historic outages of the 230 kV facilities that would be likely to trigger a total loss of service to the proposed onsite substation and lead to emergency operations of the diesel-powered generators. This response should identify the reliability of service historically provided by PG&E to other similar data centers in its service territory.*

Response: Tables DR46-1 and DR46-2 (provided in Data Response Set 2) presents the outage historic, frequency, and duration for the Los Estero-Metcalf and Los Esteros-Newark 230 kilovolt (kV) transmission lines supplying the 230-kV bus at the Los Esteros Substation. The Applicant provided the available data regarding the frequency and duration of historic outages of the 230 kV facilities that could trigger the loss of services at the Los Esteros Substation. Furthermore, the Applicant requested PG&E provide information regarding the reliability of service historically to other similar data centers in its service territory. A subsequent request was made to PG&E in this regard and to date, no additional information has been provided. The Applicant commits to docket the requested information once received.

- 47) *Please provide information on the historic outages of the 230-kV portion of the Los Esteros Substation.*

Response: See the response to Data Request #46.

- 49) *Please describe whether the existing Newark-Los Esteros or Metcalf-Los Esteros 230 kV circuits could be looped into the data center's onsite substation and if feasible, whether doing so would increase or decrease electric service reliability to the data center.*

Response: The Applicant has twice requested the owner of these transmission circuits, PG&E, to consider if looping in the existing Newark-Los Esteros or Metcalf-Los Esteros 230 kV circuits into the SJC02 substation is feasible. To date, no response from PG&E in this regard has been provided. The Applicant will docket PG&E's response once received.

Air Quality & Public Health (54-56)

Background: Maintenance Activities for Onsite Substation

The applicant's response to Data Request question 34 (Set 2) shows that air permits would include enforceable limitations on maintenance and testing of each engine. These limitations would specify that only one engine at a time operate for maintenance purposes and that each engine would operate for maintenance no more than 42 hours per engine per 12 month period. Staff recognizes that use of the engines would not be subject to these aforementioned limitations if there is an "emergency" interruption of the electricity supply.

For staff's analysis, "emergency use" is defined in the Airborne Toxic Control Measure (ATCM) for Emergency Standby Diesel-Fueled Engines [17 CCR § 93115.4(a)(30)]. Staff expects normal electrical power service to be continually available during all types of routine and scheduled maintenance of the proposed onsite substation. Maintenance of the substation should be foreseeable and would not qualify as an "emergency."

Information in the application and responses to data requests do not describe whether routine maintenance of the proposed onsite substation including the two proposed 45 megavolt ampere (MVA) transformers could result in total or partial loss of PG&E's electricity service to the data center.

Data Requests

54) *Please describe the frequency and nature of maintenance activities that would be needed for upkeep of the proposed onsite substation, and include the plan for maintenance or servicing the transformers.*

Response: The Applicant does not expect to operate the emergency standby generators during any maintenance activities not associated with the standby generators themselves. As noted in the response to Data Request #3, the onsite substation design shows the necessary redundancy to allow for the maintenance of substation equipment.

Background: Non-Emergency Use of Generators Due to Maintenance

The response to Data Request question 3a (Set 1) indicates that both of the 45 MVA transformers at the new onsite substation would be required to serve the data center electric loads. It is our understanding that both transformers would be needed at all times; however, transformers like these could require maintenance, like cooling oil change, as often as one day per-year.

55) *Please describe whether the data center would be able to continue to operate using power from PG&E during regularly scheduled maintenance of the onsite substation, and if not, what strategy would be used to avoid non-emergency use of the diesel-powered generators?*

Response: The onsite substation design was originally based on a preliminary design by PG&E and did not include redundancy or safety margins incorporated into the Applicant's designs. As shown in the revised Figure 2-6R, the two, 45 MVA transformers have been replaced by three, 60 MVA transformers that eliminate the concern about needing to maintain these transformers.

56) *Please describe under what conditions maintenance of the proposed onsite substation could contribute to a total or partial loss of PG&E's electricity service to the data center and lead to operation of the diesel-powered generators?*

Response: The Applicant does not foresee any maintenance activity at the onsite substation that would require the operation of the standby generator.