Southern California Edison
A.09-09-022 – Alberhill PTC & CPCN

DATA REQUEST SET C P U C - S u p p l e m e n t a l D a t a R e q u e s t - 0 1 1

To: CPUC
Prepared by: Paul McCabe
Job Title: Senior Advisor
Received Date: 6/9/2022

Response Date: 6/23/2022

Question DG-MISC-77:
Resource Areas/ Topic
SCE Subtransmission Planning Criteria and Guidelines (September 24, 2015), sections 2.3.1.2 and 2.2.1.5

Data Gap Question
or reference: SCE Subtransmission Planning Criteria and Guidelines (September 24, 2015), section 2.3.1.2 "Spare Transformers" states: "One three-phase 500/115 kV spare transformer will be provided on site at each 500/115 kV substation. The spare transformer should be so located as to permit practical utilization as a replacement unit within a reasonable period of time." Additionally, SCE Planning Criteria, section 2.2.1.5 states, "Tie lines, at attended or supervisory controlled substations, will be planned so that the entire load of transmission substations with single 220/66 kV, 220/115 kV, or 500/115 kV transformer banks, carrying Major Subtransmission Load, can be transferred to adjoining Subtransmission Systems."

When Edison is planning a new substation similar to the situation involving the proposed SCE Alberhill System Project, does its SCE Subtransmission Planning Criteria and Guidelines permit design of a substation utilizing a single 500/115kV transformer bank? If a 500/115kV substation is designed with a single transformer bank, can it be planned such that a three-phase 500/115kV spare transformer is unnecessary, so long as SCE can transfer the entire load of the substation to adjoining subtransmission system(s)?

Response to Question DG-MISC-77:

For a project that proposes to construct a new transmission substation (e.g., 220/66, 220/115, or 500/115 kV), it is permissible to construct it initially with a single transformer[1] if during peak loading conditions (1-in-5-year heat storm) the following are both true:

- adjacent systems have sufficient capacity to accommodate restoring service to the entire load of the system that lost service for the duration of time necessary to restore it to pre-

[1] In SCE's system, 220/66, 220/115, and 500/115 kV transformers are three-phase transformer units (all three windings contained within a single housing) versus that of a transformer bank composed of three single-phase transformer units (each winding in a separate housing) wired together to form a three-phase bank.

contingency conditions, and

- system tie-lines to adjacent systems are present and have sufficient capacity to allow for the transfer of the entire load of the system that lost service for the duration of time necessary to restore it to pre-contingency conditions

Specially related to new 500/115 kV transmission substations (e.g., like the Alberhill System Project), while it is permissible to consider installing a single load-serving transformer upon initial construction, it would have to satisfy the two requirements above. If Alberhill Substation were constructed with only one transformer, while the Valley South System could restore service to the entire Alberhill System during a transformer contingency (while operating under emergency loading limits[2]), it would not be capable to serve all of the Alberhill System load once the loading limits returned to nameplate values (i.e., after 24 hours). Three-phase 560 MVA 500/115 kV transformers require extremely specialized equipment to mobilize during a contingency event, and if a spare was located off-site and the Alberhill Substation transformer required replacement, it would take significantly longer than 24 hours to replace the failed unit. For this reason, all 500/115 kV substations require an on-site spare transformer regardless of whether all the load could be restored via transfer to adjacent systems.

SCE notes that the Alberhill System Project would provide an adjacent system with tie-lines to assist the Valley South System during contingency events (and which currently does not have any transfer capability to an adjacent system). Limiting the ability of the newly constructed Alberhill System to a single transformer would minimize the effectiveness of the new system to provide relief during typical N-1 contingency events, and significantly impacts its effectiveness during more extreme contingency events.

[2] Short-term emergency loading limit (STELL) has 1-hour duration and long-term emergency loading limit (LTELL) has a 24-hour duration after which loading much be reduced to no more than the nameplate rating. See Section 2.3.1.1.B of SCE's Subtransmission Planning Criteria and Guidelines.

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To: CPUC
Prepared by: Paul McCabe
Job Title: Senior Advisor
Received Date: 6/9/2022

Response Date: 6/23/2022

Question DG-MISC-78:
Resource Areas/ Topic
SCE Subtransmission Planning Criteria and Guidelines (September 24, 2015), section 2.2.1.2

Data Gap Question
For reference: SCE Subtransmission Criteria and Guidelines section 2.2 addresses Load Rolling. Specifically, section 2.2.1.2 "Tie lines, with normally open circuit breakers that can be operated within one hour, will be planned to reduce the transformer load from the short-term Likely Contingency Rating to the long-term Likely Contingency Rating."

SCE Subtransmission Criteria and Guidelines specify that sufficient 500/115kV transformer capacity will be provided OR adequate subtransmission line capacity with circuit breaker switching capability will be planned to limit or reduce transformer loading in the event of a transformer bank outage.

Based on load rolling governed by section 2.2.1.2 – 2.2.1.6, what is the allowable load at risk that can be accumulated assuming that a 1120-MVA transmission substation experiences an N-1 loss of transformer and performs load rolling described by section 2.2.1.2 to an adjacent subtransmission system?

Response to Question DG-MISC-78:

A 500/115 kV system loaded to 1,120 MVA (e.g., Valley South System with two load-serving 560 MVA transformers) which experiences an unplanned N-1 transformer outage would require load-shedding relays in place to automatically shed load in excess of the maximum allowable Short-Term Emergency Loading Limit (STELL) value of 896 MVA. Also required would be sufficient transformer capacity at an adjacent system and sufficient tie-line capacity allowing for restoration of service to the load that was shed within 30 minutes. Additionally, within 1-hour, further load reductions would need to occur to bring the loading of the remaining transformer to within its Long-Term Emergency Loading Limit (LTELL) value of 672 MVA. After 24 hours of the contingency event, the maximum loading of the remaining transformer may not exceed its nameplate rating of 560 MVA.

Based on the loading limits and required actions described above, the maximum allowable load that can be subject to a "brief interruption"[1] during a transformer N-1 contingency event would be 224 MVA (1,120 – 896 = 224 MVA). If an energized on-site spare transformer were available to replace the out-of-service transformer within one hour, then no other action would be required. If an energized on-site spare transformer were not available to replace the out-of-service transformer within one hour, then all load in excess of the LTELL and nameplate rating would be required to be transferred to an adjacent system. In either instance, the maximum allowable load subject to a brief interruption is 224 MVA.

In this example, the load that experiences a "brief interruption" is not considered "Load at Risk" (LAR) as defined in SCE's Planning Study; it is load that would have service restored expeditiously and would not be subject to a prolonged outage. In answer to the question of "what is the allowable load at risk that can be accumulated assuming that a 1120-MVA transmission substation experiences an N-1 loss of transformer and performs load rolling described by section 2.2.1.2 to an adjacent subtransmission system?", the answer is zero. No LAR is to be accumulated during N-0 (normal) system conditions or during N-1 (single contingency) system conditions.

[1] Defined as "A load interruption of duration dictated by the time required for an operator to assess cause and take corrective action to restore service: typical duration measured in minutes." (see section 1.2.3 of SCE's Subtransmission Planning Criteria and Guidelines). Additionally, its application is addressed in Section 2.3.1.2.B "Adequate transformer capacity and load rolling facilities shall be provided to prevent damage to equipment and to limit customer outages to Brief Interruptions as defined in the Reliability Criteria under normal conditions."

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To: CPUC
Prepared by: Paul McCabe
Job Title: Senior Advisor
Received Date: 6/9/2022

Response Date: 6/28/2022

Question DG-MISC-79:
Resource Areas/ Topic
N-1 Loss of Transformer

Data Gap Question
Provide table of credible contingencies (N-1 loss of transformer and N-2) for Valley system listing the description of the triggering event, probability of occurrence, event duration, contingency rating limits. Cite the reference source used as the basis or justification for estimating the probability of occurrence such as SCE historical data, utility industry source (cite to exact source), or application of engineering judgment. When different sources are used for two different events please compare the relative probabilities results for reasonableness. For example, in Exhibit G-2, Table 3-2 excerpted below, compare the last two items listed in Table 3-2 for reasonableness. (see pdf page 228 of 350)

Response to Question DG-MISC-79:

The following table provides the requested data for the Flex-2 metrics which were included in SCE's cost/benefit analysis.

Description of Triggering Event	**Probability of Occurrence**	**Event Duration**	**Contingency Limits**	**Probability Reference**
Wildfire/Electromagnetic Pulse/Sabotage/Earthquake /Flood	1-in-100 Years (0.01)	Two weeks	0 MVA (complete loss of Valley Substation)	See Appendix I in the following link https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/GMD%20Supplemental%20Filing%20re%20GMD%20White%20Papers.pdf

Valley South System transformer fire or explosion causing collateral damage to adjacent transformer[1]	0.0015	Two weeks	First Day: 896 MVA (for 1st hour) 672 MVA (for hours 2 - 24 hours) 560 MVA (after hour 24)	CIGRE Transformer Reliability Survey, Working Group A2.37, December 2015
Note 1: As described in SCE's Planning Study, three SCE transmission substations (Vincent, Mira Loma, and El Dorado) have experienced similar events in the past 20 years.				

The CIGRE Transformer Reliability Survey provides transformer outage data for major failures, defined as any situation which required the transformer to be removed from service for a period longer than 7 days for investigation, remedial work or replacement. Section 6.8 provides the percentage of total failures that result in fire (7.16%) or explosion/bursts (5.91%). Of the total 964 major failures reported in the survey, this equates to 69 failures resulting in fire and 57 resulting in explosion/burst. The total fire/explosion/burst related failures per transformer-years from the survey is equal to 0.000752 (126 failures divided by 167,459 transformer-years). The Valley South System has two load-serving transformers or a total of two transformer-years per year, so an annual failure rate of 0.0015 was used.

Although not included in the cost/benefit analysis, the following table provides sustained outage data (defined as outages lasting longer than a minute) for transformers in the Western Electricity Coordinating Council from 2016 through 2019 (data was not available for later years). This data was taken from the NERC Transmission Availability Data System (https://www.nerc.com/pa/RAPA/tads/Pages/OutageMetrics.aspx).

Year	**Number of Elements**	**Sustained Outages**	**Sustained Outage Frequency**	**Mean-Time-To-Repair (hours)**
2016	1205	179	0.15	135.37
2017	1291	139	0.11	149.91
2018	1331	113	0.08	40.78
2019	1342	106	0.08	37.23
Total	5171	537	0.1	99.86

The outage frequency for the total four years is equivalent to 0.1, or a 1-in-10-year event per transformer, which in the context of the Valley South System event that SCE is considering would be a 1-in-5-year frequency for loss of one of the two normally load-serving transformers. The mean time to repair for sustained outages is equal to 99.86 hours, or 4.16 days.

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Prepared by: Paul McCabe
Job Title: Senior Advisor
Received Date: 6/9/2022

Response Date: 6/28/2022

Question DG-MISC-80:
Resource Areas/ Topic
N-0 and N-1 Conditions

Data Gap Question
Provide a Table (see Attachment 1 for example) organizing information regarding the SCE Alberhill System Project and the project alternatives under consideration.

a) State the assumptions (evaluation criteria or acceptance criteria) from the SCE Subtransmission Planning Criteria and Guidelines which govern the responses to the basic planning criteria applied in the Table.

b) Provide the accumulation of load at risk for N-0 and N-1 conditions for each project alternative and the SCE Alberhill System Project.

c) Identify which project alternatives satisfy the basic planning criteria.

d) List the certified Final Environmental Impact Report project objectives.

e) Identify Edison's opinion of which project alternatives satisfy the project objectives.

f) In the event a project alternative does not meet the project objectives, explain Edison's opinion why it does not.

Response to Question DG-MISC-80:
a) The accumulation of load for N-0 and N-1 conditions are based on meeting SCE's Subtransmission Planning Criteria and Guidelines. The following sections/statements apply to meeting N-0 and N-1 conditions:

Section	Criteria	Description
1.3	Criteria: At a minimum, SCE's Subtransmission System shall be so designed that: Likely Contingency Prohibited Performance - Interruption of load except a) when served by a single Subtransmission System Component or b) in the case of an overlapping outage of two subtransmission lines serving less than Major Subtransmission Load	During likely contingency conditions (N-1), load is prohibited to be lost except when the load is served by a single subtransmission system component or in the case of overlapping outages of two subtransmission lines serving Major Subtransmission Load (firm load aggregating 140 MW or more of demand on the 115 kV System)
2.2.1	Load Rolling: Transmission Bank Loading Sufficient 220/66 kV, 220/115 kV, or 500/115 kV transformer capacity will be provided, or adequate subtransmission tie line capacity with circuit breaker switching capability will be planned to limit or reduce the transformer loading in the event of a transformer bank outage.	Adequate transformer capacity or system tie-line capacity is required to limit or reduce transformer loading during an N-1 transformer bank outage.
2.3.2.1	A-A-Bank Transformers - Guidelines a) All Facilities in Service – Adequate transformer capacity shall be provided to serve the maximum coincident customer loads (including one-in-five year heat storm conditions) after adjusting for dependable local generation and loss of the largest local bypass generator). b) Contingency Outages – Adequate transformer capacity and load rolling facilities shall be provided to prevent damage to equipment and to limit customers' outages to Brief Interruptions as defined in the Reliability Criteria under normal conditions.	For A-Bank (and 500/115 kV) transformers, adequate transformer capacity shall be provided to serve N-0 conditions based on the maximum coincident customer loads (for 1-in-5 heat storm conditions), and only brief interruptions are acceptable during contingency conditions.

b) Please see the attachment titled "A.09-09-022 CPUC-Supplemental Data Request-011 Q.DG-MISC-80.xlsx". Columns D, E, G, H, I and J provide the requested N-0 and N-1 load at risk values.

c) Please see the attachment titled "A.09-09-022 CPUC-Supplemental Data Request-011 Q.DG-

MISC-80.xlsx". Columns F and K indicate whether each alternative meets N-0 and N-1 planning criteria.

d) The certified Final Environmental Impact Report project objectives for the Alberhill System Project are provided below:

1. Relieve projected electrical demand that may exceed the operating limit of the two load-serving Valley South 115 kV System 500/115-kV transformers.
2. Construct a new 500/115-kV substation within the Electrical Needs Area that provides safe and reliable electrical service pursuant to NERC and WECC standards.
3. Maintain system ties between a new 115-kV System and the Valley South 115-kV System that enable either of these systems to provide electricity in place of the other during maintenance, during emergency events, or to relieve other operational issues on one of the systems.

e) Please see the attachment titled "A.09-09-022 CPUC-Supplemental Data Request-011 Q.DG-MISC-80.xlsx". Column N indicates whether each alternative meet the certified FEIR Project Objectives.

f) The attachment titled "A.09-09-022 CPUC-Supplemental Data Request-011 Q.DG-MISC-80.xlsx" provides load at risk results for N-0 and N-1 conditions, which correspond to Project Objectives #1 and #3, respectively. In other words, if an alternative has load at risk (LAR) for N-0 conditions, Project Objective #1 is not met, and if an alternative has LAR for N-1 conditions, Project Objective #3 is not met. Project Objective #2 is not met for any alternative that does not include the construction of a 500/115 kV substation. Note, however, the certified FEIR Project Objective #2 to construct a new 500/115 kV substation (developed by the CPUC[1]) is aligned with SCE's goal to diversify the source of power delivery to the region which is currently provided through a single point of service at Valley Substation. Geographically diversifying the delivery locations of power from the CAISO-controlled Bulk Electric System directly improves the resilience of the region served by the Valley South System as it, among other things, removes the vulnerability of a single point of failure. SCE's project objectives from its Proponent's Environmental Assessment also identify "creating system ties", "transferring load" and locating a project at "a suitable location" as needed for source power locational diversity in order to improve resilience.[2]

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[1] While Project Objective #2 of the FEIR states specifically a new "500/115 kV substation" be constructed, SCE has demonstrated through its analysis of various other substation-based alternatives, which included 220/115 kV substations (Mira Loma, SCE Orange County, and SDGE), that the benefits associated with this project objective are rooted in having a diversely located new substation, rather than one with a prescribed voltage level.

[2] *See generally* SCE's comments on Alberhill Draft Environmental Impact Report at: https://ia.cpuc.ca.gov/Environment/info/ene/alberhill/Docs/Appendix%20M6%20-%20Project%20Proponent.pdf

A.09-09-022 CPUC-Supplemental Data Request-011 Q.DG-MISC-80

		Capacity N-0 (2031)		Meets N-0 Planning Criteria?	Reliability N-1 subtransmission lines (2031)		N-1 Transformer Outage (separated from Flex 2-2) (2031)		Meets N-1 Planning Criteria*	Resilience (Flex-2-1) (2031)		Meets all FEIR Project Objectives (2031)	Which FEIR Project Objectives are met?	Resilience Attributes	
Item No.	Project Alternative	LAR	EENS	Yes/No	LAR	EENS	Period of Flexibility Deficit (# of hours above 896 MVA)	LAR	Yes/No	LAR	EENS	Yes/No	List each (1, 2, 3)	Provides improvement to Resilience (tied to FEIR Project Objective #2)	Period of Flexibility Deficit (# of hours between 672 and 896 MVA (after first hour and after spare transformer switched in))
1	SCE Alberhill System Project	0	0	Yes	0	0	0	0	Yes	45,959	18	Yes	1,2,3	Yes	0
2	SDG&E	0	0	Yes	0	0	0	0	Yes	514,701	197	Yes	1,2,3	Yes	243
3	SCE Orange County	0	0	Yes	23	0.0013	0	0	Yes	483,013	185	Yes	1,2,3	Yes	224
4	Menifee	0	0	Yes	0	0	38	2,137	No	813,139	312	No	1,2	Yes**	268
5	Mira Loma	13.1	13.1	No	2	0.0003	4	58	No	2,368,206	908	Yes	1,2,3	Yes	283
6	VS-VN	0	0	Yes	0	0	38	2,137	No	3,577,448	1,372	No	1	No	268
7	VS-VN-Vista	0	0	Yes	0	0	38	2,137	No	3,577,448	1,372	No	1	No	268
8	CBESS in VS	0	0	Yes	0	0	94	8,757	No	3,577,448	1,372	No	1	No	321
9	VS-VN+DBESS in VS	0	0	Yes	0	0	38	2,137	No	3,577,448	1,372	No	1	No	268
10	SDG&E+CBESS in VS	0	0	Yes	0	0	0	0	Yes	514,701	197	Yes	1,2,3	Yes	243
11	Mira Loma+CBESS In VS	0	0	Yes	0	0	0	0	Yes	2,368,206	908	Yes	1,2,3	Yes	244
12	VS-VN+CBESS in VS & VN (original)	0	0	Yes	0	0	38	2,137	No	3,577,448	1,372	No	1	No	268
13	VS-VN-Vista+CBESS in VS	0	0	Yes	0	0	38	2,137	No	3,577,448	1,372	No	1	No	268
CPUC Energy Division versions of Alternative 12 with CBESS sized to meet appropriate operating threshold per SCE Planning Criteria*															
12a	VS-VN+CBESS in VS (with load transfer and right-sized)	0	0	Yes	0	0	0	0	Yes	TBD	TBD	No	1	No	TBD
12b	VS-VN+CBESS in VS (without load transfer and right-sized)	0	0	Yes	0	0	0	0	Yes	TBD	TBD	No	1,3	No	TBD

* With effective tie-lines, the system is planned for the 1,120 MVA limit under N-0 transformer conditions and 896 MVA limit under a transformer N-1 contingency. Without effective tie-lines, the system is planned to 896 MVA for both N-0 and N-1 conditions.

**While the Menifee alternative receives a "Yes" in this column, SCE notes it would be located essentially adjacent to Valley Substation (only 400 yards west) and only represents a marginal improvement to reslience.

Note 1: VS=Valley South, VN=Valley North, CBESS= Centralized BESS, DBESS=Distributed BESS

Note 2:

The FEIR includes the following Project Objectives:

1. Relieve projected electrical demand that would exceed the operating limit of the two load-serving Valley South 115-kV System 500/115-kV transformers
2. Construct a new 500/115-kV substation within the ENA that provides safe and reliable electrical service pursuant to North American Electric Reliability Corporation and Western Electricity Coordinating Council standards
3. Maintain system ties between a new 115-kV System and the Valley South 115-kV System that enable either of these systems to provide electricity in place of the other during maintenance, during emergency events, or to relieve other operational issues on one of the systems

Note 3: All periods of flexibility deficit reflect the impact of load transfers during contingency events

Southern California Edison
A.09-09-022 – Alberhill PTC & CPCN

DATA REQUEST SET C P U C - S u p p l e m e n t a l D a t a R e q u e s t - 0 1 1

To: CPUC
Prepared by: Paul McCabe
Job Title: Senior Advisor
Received Date: 6/9/2022

Response Date: 7/15/2022

Question DG-MISC-80-First Supplemental:
Provide a Table (see Attachment 1 for example) organizing information regarding the SCE Alberhill System Project and the project alternatives under consideration.

a) State the assumptions (evaluation criteria or acceptance criteria) from the SCE Subtransmission Planning Criteria and Guidelines which govern the responses to the basic planning criteria applied in the Table.

b) Provide the accumulation of load at risk for N-0 and N-1 conditions for each project alternative and the SCE Alberhill System Project.

c) Identify which project alternatives satisfy the basic planning criteria.

d) List the certified Final Environmental Impact Report project objectives.

e) Identify Edison's opinion of which project alternatives satisfy the project objectives.

f) In the event a project alternative does not meet the project objectives, explain Edison's opinion why it does not.

Response to Question DG-MISC-80-First Supplemental:

The attached table revises SCE's prior response to CPUC-Supplemental Data Request-011 DG-MISC-80. This revision reflects a correction in the attachment titled "A.09-09-022 CPUC-Supplemental Data Request-011 Q.DG-MISC-80-First Supplemental" to Item No. 5 "Mira Loma" Project Alternative. Specifically, the update is to values in columns N and O of the spreadsheet. Column N is updated from "Yes" to "No" and column O is updated from "1,2,3" to "2,3".

A.09-09-022 CPUC-Supplemental Data Request-011 Q.DG-MISC-80-First Supplemental

		Capacity N-0 (2031)		Meets N-0 Planning Criteria?	Reliability N-1 subtransmission lines (2031)		N-1 Transformer Outage (separated from Flex 2-2) (2031)		Meets N-1 Planning Criteria*	Resilience (Flex-2-1) (2031)		Meets all FEIR Project Objectives (2031)	Which FEIR Project Objectives are met?	Resilience Attributes	
Item No.	Project Alternative	LAR	EENS	Yes/No	LAR	EENS	Period of Flexibility Deficit (# of hours above 896 MVA)	LAR	Yes/No	LAR	EENS	Yes/No	List each (1, 2, 3)	Provides improvement to Resilience (tied to FEIR Project Objective #2)	Period of Flexibility Deficit (# of hours between 672 and 896 MVA (after first hour and after spare transformer switched in))
1	SCE Alberhill System Project	0	0	Yes	0	0	0	0	Yes	45,959	18	Yes	1,2,3	Yes	0
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12	VS-VN+CBESS in VS & VN (original)	0	0	Yes	0	0	38	2,137	No	3,577,448	1,372	No	1	No	268
13	VS-VN-Vista+CBESS in VS	0	0	Yes	0	0	38	2,137	No	3,577,448	1,372	No	1	No	268
CPUC Energy Division versions of Alternative 12 with CBESS sized to meet appropriate operating threshold per SCE Planning Criteria*															
12a	VS-VN+CBESS in VS (with load transfer and right-sized)	0	0	Yes	0	0	0	0	Yes	TBD	TBD	No	1	No	TBD
12b	VS-VN+CBESS in VS (without load transfer and right-sized)	0	0	Yes	0	0	0	0	Yes	TBD	TBD	No	1,3	No	TBD

* With effective tie-lines, the system is planned for the 1,120 MVA limit under N-0 transformer conditions and 896 MVA limit under a transformer N-1 contingency. Without effective tie-lines, the system is planned to 896 MVA for both N-0 and N-1 conditions.

**While the Menifee alternative receives a "Yes" in this column, SCE notes it would be located essentially adjacent to Valley Substation (only 400 yards west) and only represents a marginal improvement to reslience.

Note 1: VS=Valley South, VN=Valley North, CBESS= Centralized BESS, DBESS=Distributed BESS

Note 2:

The FEIR includes the following Project Objectives:

1. Relieve projected electrical demand that would exceed the operating limit of the two load-serving Valley South 115-kV System 500/115-kV transformers
2. Construct a new 500/115-kV substation within the ENA that provides safe and reliable electrical service pursuant to North American Electric Reliability Corporation and Western Electricity Coordinating Council standards
3. Maintain system ties between a new 115-kV System and the Valley South 115-kV System that enable either of these systems to provide electricity in place of the other during maintenance, during emergency events, or to relieve other operational issues on one of the systems

Note 3: All periods of flexibility deficit reflect the impact of load transfers during contingency events

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A.09-09-022 – Alberhill PTC & CPCN

DATA REQUEST SET C P U C - S u p p l e m e n t a l D a t a R e q u e s t - 0 1 1

To: CPUC
Prepared by: Paul McCabe
Job Title: Senior Advisor
Received Date: 6/9/2022

Response Date: 6/23/2022

Question DG-MISC-81:
Resource Areas/ Topic
Flex 2-2 MWh Discrepancy between A0909022-SCE ASP Amended Motion to Supplement - Exhibit C-2 Table 6-2 and A0909022-SCE ASP Amended Motion to Supplement - Exhibit G-2 Table 5-36 (And those related)

Data Gap Question
Reference: For the VS-VN Alternative, A0909022-SCE ASP Amended Motion to Supplement - Exhibit C-2 Table 6-2 reports a Flex 2-2 MWh value of 61,787 along with a Flex-1 MWh value of 163,090. In the companion comparison, A0909022-SCE ASP Amended Motion to Supplement - Exhibit G-2 Table 5-36, the Flex 2-1 MWh of 163,090 matches, however, the Flex 2-2 MWh lists a value of 2,384.

Question: What is the source of this discrepancy?

Response to Question DG-MISC-81:

The values provided in Exhibit C-2 Table 6-2 for Flex-2-2 represent the total Load at Risk (LAR) for the year 2048. The values provided in Exhibit G-2, Table 5-36 represent the average LAR for a two-week outage for the year 2048. The conversion of the total LAR for the year 2048 and the average LAR for a two-week outage for that same year is provided below:

61,787 MWh / 8,760 hours * 14 days * 24 hours = 2,384 MWh

Although the question only refers to the VS-VN alternative, this presentation of total annual LAR in Exhibit C-2 and average two-week LAR in Exhibit G-2 is consistent for all alternatives.

Southern California Edison
A.09-09-022 – Alberhill PTC & CPCN

DATA REQUEST SET C P U C - S u p p l e m e n t a l D a t a R e q u e s t - 0 1 1

To: CPUC
Prepared by: Paul McCabe
Job Title: Senior Advisor
Received Date: 6/9/2022

Response Date: 7/1/2022

Question DG-MISC-82:
Resource Areas/ Topic
Load at Risk

Data Gap Question
Page A-38 of the appendix to SCE Written Comments dated 01/27/2022 include the following statement: "Common industry practices utilize a meshed configuration with a minimum of two or more parallel supply sources (serving as a backbone) feeding the sub-transmission network. Alternatively, tie-lines are leveraged to transfer loads under emergency or maintenance conditions. Valley South substation is unique in this context as it is one of the few radial loadserving systems without any system ties. Due to these topological limitations, larger magnitudes of customer load are at risk compared to other SCE and industry systems."

Justify the claim that "larger magnitudes of customer load are at risk compared to other industry systems". Provide comparison of the magnitude of customer load at risk in SCE Valley System as compared to other industry systems.

Response to Question DG-MISC-82:

CONFIDENTIAL