

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

**DATA REQUEST SET CPUC - Supplemental Data Request-013**

**To: CPUC**  
**Prepared by: Paul McCabe**  
**Job Title: Senior Advisor**  
**Received Date: 7/12/2022**

**Response Date: 7/26/2022**

---

**Question DG-MISC-82\_FollowUp\_1:**

In reference to Edison's Response to Question DG-MISC-82 which provided the confidential attachment titled "CONFIDENTIAL A.09-09-022 CPUC-Supplemental Data Request-011 Q.DG-MISC-82.xlsx". Revise/update the existing Table provided in DG-MISC-82, to provide the capability of each of SCE's thirteen split systems, in lieu of the comparison to all 42 SCE substations.

**Response to Question DG-MISC-82\_FollowUp\_1:**

CONFIDENTIAL

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

**DATA REQUEST SET CPUC - Supplemental Data Request-013**

**To: CPUC**  
**Prepared by: Paul McCabe**  
**Job Title: Senior Advisor**  
**Received Date: 7/12/2022**

**Response Date: 7/26/2022**

---

**Question DG-MISC-82\_FollowUp\_2:**

In reference to Edison's Response to Question DG-MISC-82 which provided the confidential attachment titled "CONFIDENTIAL A.09-09-022 CPUC-Supplemental Data Request-011 Q.DG-MISC-82.xlsx". Please refer to the information provided below and provide the requested information for each supplemental project alternative, the proposed Alberhill System Project, and the Valley South substation as-is. Add a new worksheet to the table provided in SCE response to DG-MISC-82 to identify the capability of each of SCE's thirteen split systems and the proposed Alberhill System Project and supplemental project alternatives to transfer load to adjacent systems. Provide the following data in the new worksheet:

1. Transfer capability (away)
2. Peakload (mva)
3. % of peak load that can be transferred
4. Remaining load unserved after transfer
5. Installed transformation
6. STELL of remaining transformers
7. Load at risk during transformer N-1 contingency due to transformer STELL
8. LTELL of remaining transformer
9. Load at risk during Transformer N-1 contingency after 1st hour LTELL

**Response to Question DG-MISC-82\_FollowUp\_2:**

After clarifying with the Energy Division, it is SCE's understanding that the requested information would be more responsive if based on the following revision to the question. Deletions are shown in ~~strikeout~~ and additions are shown in underline.

*"In reference to Edison's Response to Question DG-MISC-82 which provided the confidential attachment titled "CONFIDENTIAL A.09-09-022 CPUC-Supplemental Data Request-011 Q.DG-MISC-82.xlsx". Please refer to the information provided below and provide the requested information for each supplemental project alternative, the proposed Alberhill System Project, and the Valley South substation as-is. ~~Add a new worksheet to the~~*

*table provided in SCE response to DG-MISC-82 to identify the capability of each of SCE's thirteen split systems and the proposed Alberhill System Project and supplemental project alternatives to transfer load to adjacent systems. Identify the capability of each of SCE's thirteen split systems and the proposed Alberhill System Project and supplemental project alternatives to transfer load to adjacent systems. Provide the following data in a new spreadsheet for the year 2031, to expand upon the additional analysis requested in CPUC Supplemental Data Request -012, Q.DG-MISC-83. Additional clarifying information (i.e., step-by-step calculations) is acceptable.*

1. Transfer capability (away)
2. Peakload (mva)
3. % of peak load that can be transferred
4. Remaining load unserved after transfer
5. Installed transformation
6. STELL of remaining transformers
7. Load at risk during transformer N-1 contingency due to transformer STELL
8. LTELL of remaining transformer
9. Load at risk during Transformer N-1 contingency after 1st hour LTELL”

The attached table titled “A.09-09-022 CPUC-Supplemental Data Request-013 Q.DG-MISC-82-FollowUp-2.pdf” provides the requested data.

A previous DR (A.09-09-022-CPUC Supplement Data Request-011 Question DG-MISC-82) provided a tabulation of Load at Risk (and supporting data) for loss of Valley Substation resilience scenarios in comparison to other SCE split subtransmission systems as well as other alternatives considered in the SCE Planning Study. Data Request A.09-09-022-CPUC Supplement Data Request-013 Question DG-MISC-82\_FollowUp\_2 requests similar data for a much more common reliability scenario in which an outage occurs to a single Valley South System transformer (N-1). Column P in the attached document provides the peak load at risk if the spare transformer is available to replace the transformer that experienced the outage. Additionally, SCE has provided (in Column N) the maximum load at risk if the spare transformer was not available (N-1-1 resilience event).

Note that the results provided demonstrate that, even with increased battery sizing for the alternative with BESS, the Alberhill System Project is the only alternative that does not accrue any LAR in the identified scenario. This is because Alberhill System Project alternative has the largest initial load transfer away from the Valley South System and substantial tie-line transfer capability, which in concert provide the capacity margin and operational flexibility needed to best address the Valley South System capacity, reliability, and resilience needs.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
	Substation	Load-serving xfmr Inventory	Installed xfmr Capacity	Peak Load w/losses Before Project	Initial Peak Load Transfer of Alternative if applicable	Peak Load w/losses After Initial Load Transfer	BESS Size if applicable	Peak Load w/losses After Initial Load Transfer and BESS	Transfer Capability (Away) During xfmr N-1	% of Peak Load that can be transferred away	Peak Load w/losses After Initial Load Transfer, After BESS, and After Transfer Capability (Away)	STELL of remaining xfmr	Peak Load at risk during xfmr N-1 during 1st Hour STELL	LTELL of remaining xfmr	Peak Load at risk during xfmr N-1 for hours 2-24 LTELL if the Valley Sub on-site spare xfmr is not available for either VS or VN	LTELL Capacity of VS or VN during xfmr N-1 for hours 2-24 with Valley on-site spare available to address this xfmr outage	Peak Load at risk during Valley Sub xfmr N-1 for hours 2-24 with LTELL rating w/Valley on-site spare available to address this xfmr outage in either VS or VN
						Col. D + Col. E		Col. F - Col. G			Col. H - Col. I	=160% X remaining xfmr capacity	If Col. J < Col. K then 0, otherwise Col. J - Col. K	=120% X remaining xfmr capacity	If Col. J < Col. M then 0, otherwise Col. J - Col. M	=2 X 560 X 120%	If Col. J < Col. O then 0, otherwise Col. J - Col. O
1	Valley South (as is)	2@560	1120	1264	0	1264	0	1264	0	0%	1264	896	368	672	592	1344	0
2	Alberhill Alternative																
3	Alberhill	2@560	1120	0	422	422	N/A	422	369	87%	53	896	0	672	0	N/A	N/A
4	Valley South	2@560	1120	1264	-422	842	N/A	842	205	24%	637	896	0	672	0	1344	0
5	CBESS in VS Alternative																
6	Valley South	2@560	1120	1264	0	1264	368	896	0	0%	896	896	0	672	224	1344	0
7	Menifee Alternative																
8	Menifee	2@280	560	0	210	210	N/A	210	210	100%	0	448	0	336	0	N/A	N/A
9	Valley South	2@560	1120	1264	-210	1054	N/A	1054	0	0%	1054	896	158	672	382	1344	0
10	Mira Loma Alternative																
11	Mira Loma	2@280	560	0	91	91	N/A	91	91	100%	0	448	0	336	0	N/A	N/A
12	Valley South	2@560	1120	1264	-91	1173	N/A	1173	181	15%	992	896	96	672	320	1344	0
13	Mira Loma+CBESS in VS Alternative																
14	Mira Loma	2@280	560	0	91	91	N/A	91	91	100%	0	448	0	336	0	N/A	N/A
15	Valley South	2@560	1120	1264	-91	1173	96	1077	181	17%	896	896	0	672	224	1344	0
16	SCE Orange County Alternative																
17	SCE Orange County	2@280	560	0	191	191	N/A	191	191	100%	0	448	0	336	0	N/A	N/A
18	Valley South	2@560	1120	1264	-191	1073	N/A	1073	232	22%	841	896	0	672	169	1344	0
19	SDGE Alternative																
20	SDGE	2@280	560	0	168	168	N/A	168	168	100%	0	448	0	336	0	N/A	N/A
21	Valley South	2@560	1120	1264	-168	1096	N/A	1096	71	6%	1025	896	129	672	353	1344	0
22	SDGE+CBESS in VS Alternative																
23	SDGE	2@280	560	0	168	168	N/A	168	168	100%	0	448	0	336	0	N/A	N/A
24	Valley South	2@560	1120	1264	-168	1096	129	967	71	7%	896	896	0	672	224	1344	0
25	VS-VN Alternative																
26	Valley North	2@560	1120	907	210	1117	N/A	1117	356	32%	761	896	0	672	89	1344	0
27	Valley South	2@560	1120	1264	-210	1054	N/A	1054	0	0%	1054	896	158	672	382	1344	0
28	VS-VN+CBESS in VS Alternative (12A)																
29	Valley North	2@560	1120	907	210	1117	N/A	1117	356	32%	761	896	0	672	89	1344	0
30	Valley South	2@560	1120	1264	-210	1054	158	896	0	0%	896	896	0	672	224	1344	0
31	VS-VN+CBESS in VS Alternative (12B)																
32	Valley North	2@560	1120	907	0	907	N/A	907	146	16%	761	896	0	672	89	1344	0
33	Valley South	2@560	1120	1264	0	1264	158	1106	210	19%	896	896	0	672	224	1344	0
34	VS-VN+CBESS in VS and CBESS in VN Alternative																
35	Valley North	2@560	1120	907	210	1117	0	1117	356	32%	761	896	0	672	89	1344	0
36	Valley South	2@560	1120	1264	-210	1054	158	896	0	0%	896	896	0	672	224	1344	0
37	VS-VN-Vista+CBESS in VS Alternative																
38	Valley North	2@560	1120	907	210	1117	N/A	1117	356	32%	761	896	0	672	89	1344	0
39	Valley South	2@560	1120	1264	-210	1054	158	896	0	0%	896	896	0	672	224	1344	0
40	VS-VN-Vista Alternative																
41	Valley North	2@560	1120	907	210	1117	N/A	1117	356	32%	761	896	0	672	89	1344	0
42	Valley South	2@560	1120	1264	-210	1054	N/A	1054	0	0%	1054	896	158	672	382	1344	0

**Notes:**

- All values are in MVA. For BESS sizes MW=MVA and are approximate.
- Study was performed to demonstrate peak load at risk (MVA) during highest loading hour in year 2031 during 1-in-5year heat storm conditions.
- Study was performed to determine for awareness the general magnitude of load at risk of being unserved during an N-1 transformer outage in a radially-served system (i.e., Valley South, Valley North, or the other system alternatives).
- Loss of a single transformer shall not result in load unserved is a requirement of basic planning criteria (i.e., N-1 requires all load be served under these conditions by ensuring that sufficient transformer capacity is installed or that adequate transformer capacity at adjacent systems with adequate system tie-line capacity be provided to allow for load to be transferred to avoid exceeding maximum equipment ratings.
- Transfer capability to adjacent systems studied via PSLF power flows and determined by transformer capacity and tie-line conductor thermal and voltage ratings.
- Load transfer capabilities do not include an evaluation of protection settings (which could impact transfer values).
- In the SCE Planning Study and associated Benefit-Cost Analysis (BCA), BESS sizing for alternatives that included BESS was based on meeting only N-0 capacity requirements. Accordingly, Load at Risk (LAR) was accrued for N-1 scenarios implicit in the Flex-2-2 metric because it was assumed that sizing batteries to meet the N-1 transformer contingency consistent with SCE Planning Criteria would be cost prohibitive. In recent Data Requests related to the Valley South to Valley North plus Centralized BESS alternative, SCE has been directed by the Energy Division to size batteries to no longer accrue LAR under the N-1 contingency. In this Data Request response, SCE has adopted this same practice in sizing batteries for all alternatives that include BESS, that is peak power (MW) delivery capability is sufficient to ensure there is no LAR under the 896 MVA STELL 1-hour rating. Thus, the BESS sizes presented in this Table differ from this presented in the SCE Planning Study and BCA.