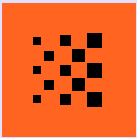
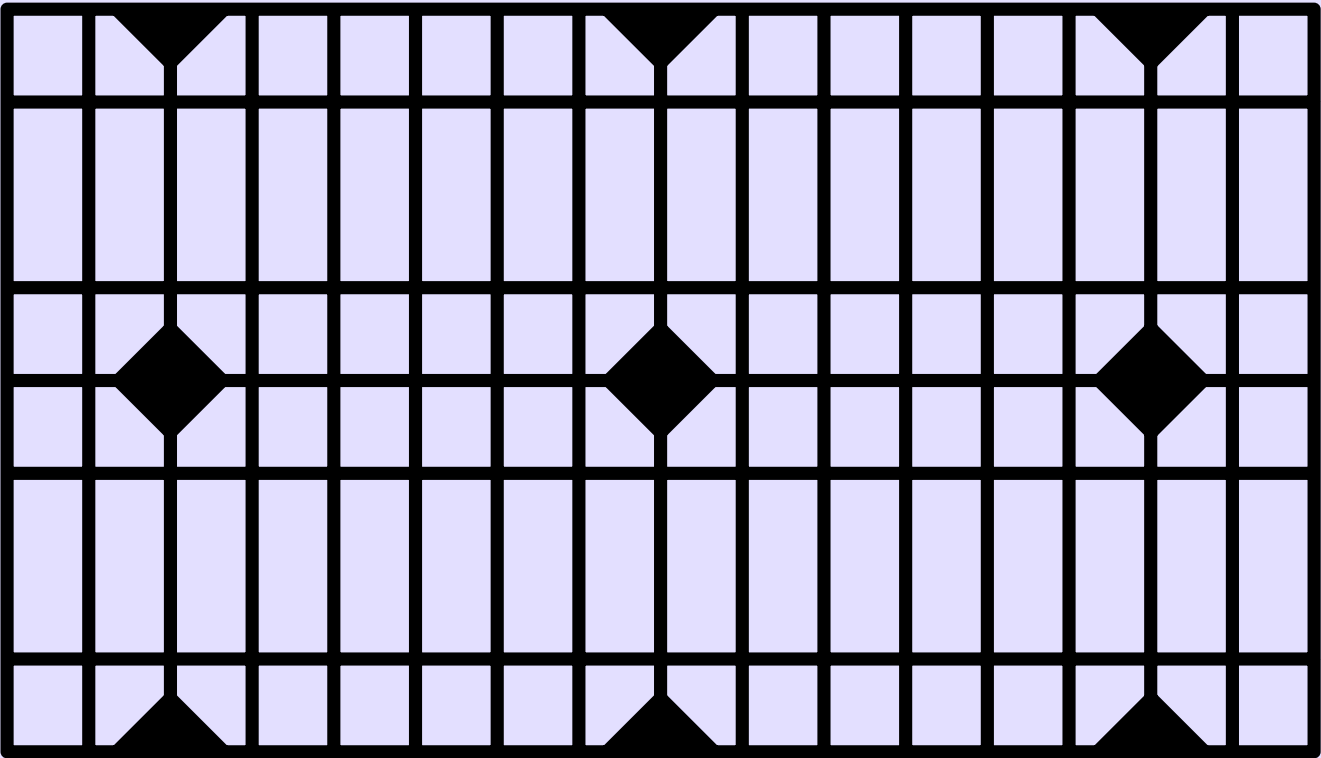


Capacity Report

CAISO - CROSRDJT

ERIS Discharging Summer Peak - Substation

Prepared May 23, 2025



PVCASE
PROSPECT

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1.0 Executive Summary

1.1 Summary of POI Details

Substation: Cross Road Junction, Bus Number: 33522, 115 KV



Satellite imagery courtesy of Google

Substation Model Identifier	CROSRDJT
Substation Name	Cross Road Junction
Latitude/Longitude	37.79785502, -121.274217
Nominal Voltage (KV)	115
Scenario	ERIS Discharging Summer Peak - Substation

1.2 Summary of Pre-Existing Issues

Pre-Existing Issues	7
Total Cost of Pre-Existing Issues \$MM	22.140166299
Number of Transformers	0
Total Transmission Line Mileage	51.250384954000005

2.0 Pre-Existing Issues

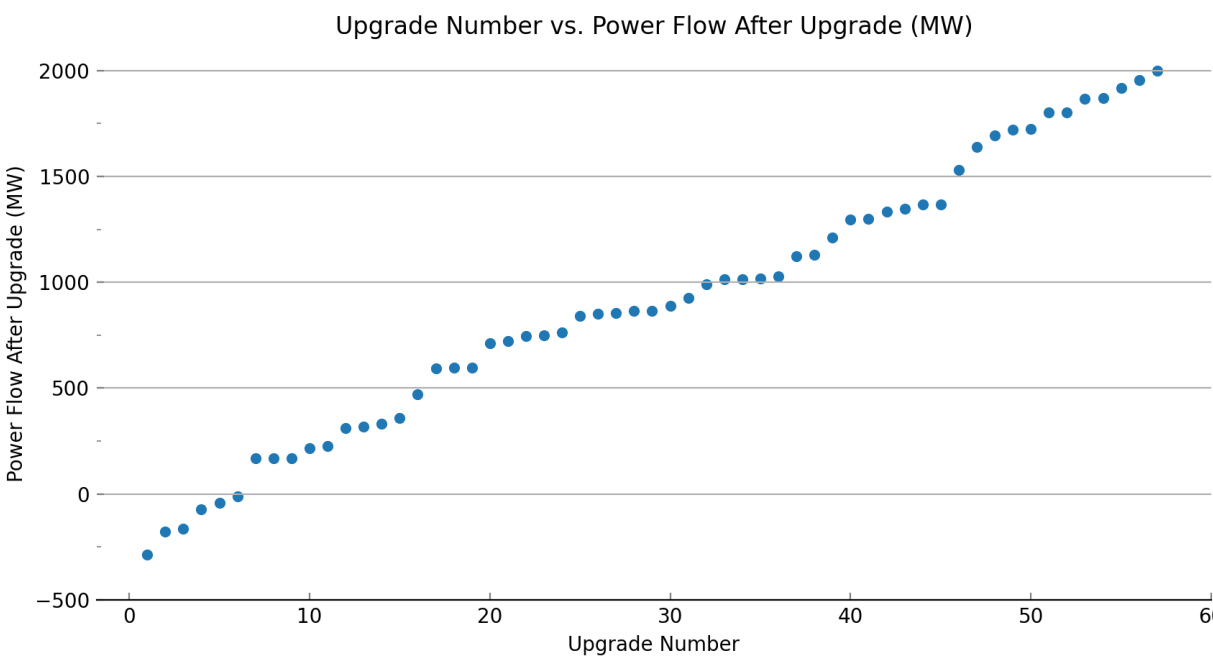
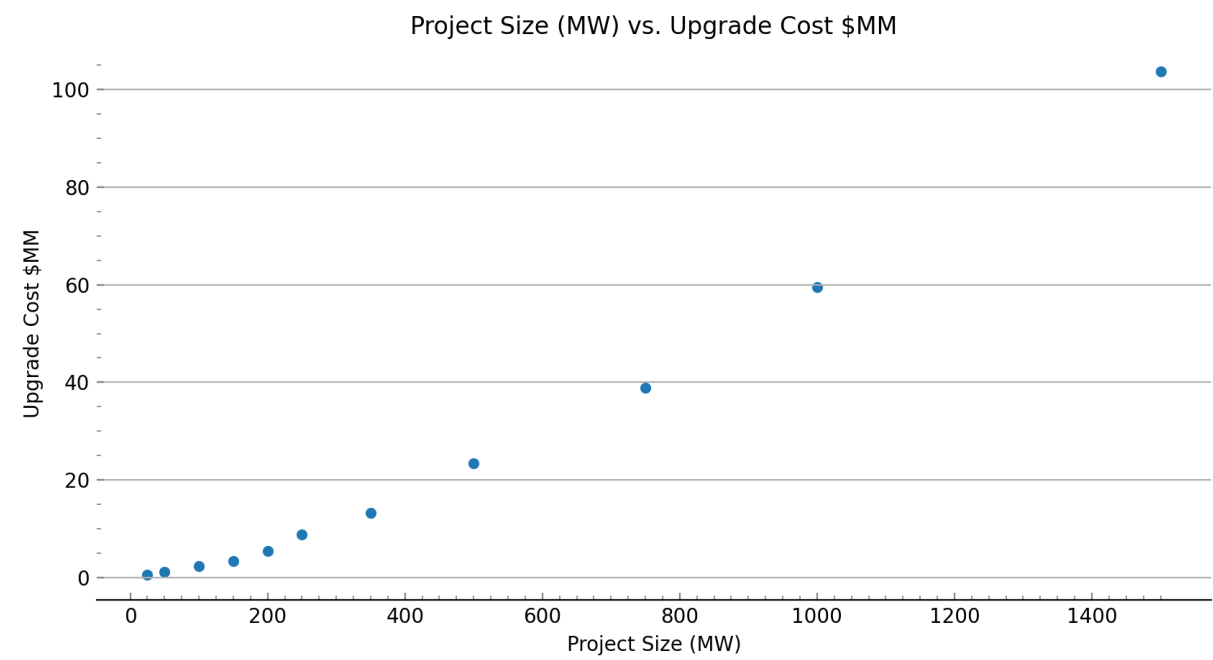
Existing constraints on the system before injection at POI

Upgrade Order	Interconnection Power Flow Before Upgrade MW	Interconnection Power Flow After Upgrade MW	Distribution Factor %	Contingency Criteria	Limiting Element Identifier	Limiting Element Type	Limiting Element Length mi	Limiting Element Total Upgrade Cost \$MM
1	-521.5	-286.2	6.37	N-1	33514 MANTECA 115 33509 AVENATP1 115 1	Transmission Line	8.33	3.6
2	-286.2	-175.8	6.37	N-1	33509 AVENATP1 115 33500 MELNS JA 115 1	Transmission Line	18.88	8.16
3	-175.8	-165.4	19.38	N-1	33518 VIERRA 115 33514 MANTECA 115 1	Transmission Line	0.89	0.38
4	-165.4	-72	8.59	N-1	33500 MELNS JA 115 33932 MELONES 115 1	Transmission Line	7.83	3.38
5	-72	-42.1	12.33	N-1	33526 KSSN-JC1 115 33513 LID JCT 115 1	Transmission Line	3.07	1.33
6	-42.1	-10	12.33	N-1	33513 LID JCT 115 33514 MANTECA 115 1	Transmission Line	4.41	1.91
7	-10	168.6	7.38	N-1	33936 MELNS JB 115 33932 MELONES 115 1	Transmission Line	7.84	3.39



3.0 Interconnection Upgrades

3.1 Upgrade Charts



3.2 Constraints Table

Additional Power Flow Constraints

Substation: Cross Road Junction, Bus Number: 33522, 115 KV

Upgrade Order	Interconnection Power Flow Before Upgrade MW	Interconnection Power Flow After Upgrade MW	Distribution Factor %	Contingency Criteria	Limiting Element Identifier	Limiting Element Type	Limiting Element Length mi	Limiting Element Total Upgrade Cost \$MM	Limiting Element MW Allocated Cost \$MM								Cumulative MW Allocated Cost \$MM							
									25	50	100	150	200	250	350	500	25	50	100	150	200	250	350	500
8	168.6	168.6	5.58	N-1	33503 FRGTNTP2 115 33936 MELNS JB 115 1	Transmission Line	5.11	2.21	0	0	0	0	0.38	0.48	0.67	0.95	0	0	0	0	4.93	6.16	8.62	12.31
9	168.6	168.6	5.58	N-1	33506 STANISLS 115 33504 CATARACT 115 1	Transmission Line	2.16	0.93	0	0	0	0	0.16	0.2	0.28	0.4	0	0	0	0	5.09	6.36	8.9	12.72
10	168.6	217.8	5.58	N-1	33504 CATARACT 115 33503 FRGTNTP2 115 1	Transmission Line	5.08	2.19	0	0	0	0	0.38	0.47	0.66	0.94	0	0	0	0	5.46	6.83	9.56	13.66
11	217.8	225.7	70.94	N-1	33522 CROSRDJT 115 33530 KSSN-JC2 115 1	Transmission Line	2.74	1.18	0	0	0	0	0	0.94	1.18	1.18	0	0	0	0	0	7.77	10.74	14.84
12	225.7	311	100	N-1	33522 CROSRDJT 115 33518 VIERRA 115 1	Transmission Line	2.33	1.01	0	0	0	0	0	1.01	1.01	1.01	0	0	0	0	0	8.77	11.75	15.85
13	311	318.1	28.05	N-1	33530 KSSN-JC2 115 33550 HJ HEINZ 115 1	Transmission Line	3.58	1.55	0	0	0	0	0	0	1.27	1.55	0	0	0	0	0	0	13.02	17.4
14	318.1	330.7	28.05	N-1	33550 HJ HEINZ 115 33548 TRACY 115 1	Transmission Line	0.25	0.11	0	0	0	0	0	0	0.09	0.11	0	0	0	0	0	0	13.11	17.5
15	330.7	358.5	29.77	N-1	33528 KASSON 115 33526 KSSN-JC1 115 1	Transmission Line	0.45	0.19	0	0	0	0	0	0	0.12	0.17	0	0	0	0	0	0	13.23	17.67
16	358.5	469.4	71.95	N-1	33530 KSSN-JC2 115 33528 KASSON 115 1	Transmission Line	0.78	0.34	0	0	0	0	0	0	0	0.34	0	0	0	0	0	0	0	18.01
17	469.4	591.8	41.32	N-1	33570 RIPONCOGENJT 115 33568 TH.E.DV. 115 1	Transmission Line	12.55	5.42	0	0	0	0	0	0	0	5.42	0	0	0	0	0	0	0	23.43
18	591.8	597.5	24.9	N-1	33574 LLNL TAP 115 37649 LLNLAB 115 1	Transmission Line	1.1	0.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	597.5	597.6	29.53	N-1	33541 AEC_TPI 115 33540 TESLA 115 1	Transmission Line	3.45	1.49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Upgrade Order	Interconnection Power Flow Before Upgrade MW	Interconnection Power Flow After Upgrade MW	Distribution Factor %	Contingency Criteria	Limiting Element Identifier	Limiting Element Type	Limiting Element Length mi	Limiting Element Total Upgrade Cost \$MM	Limiting Element MW Allocated Cost \$MM								Cumulative MW Allocated Cost \$MM							
									25	50	100	150	200	250	350	500	25	50	100	150	200	250	350	500
20	597.6	710.9	29.45	N-1	33543 AEC_TP2 115 33540 TESLA 115 1	Transmission Line	3.45	1.49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	710.9	722.8	41.32	N-1	33568 TH.E.DV. 115 33540 TESLA 115 1	Transmission Line	2.83	1.22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	722.8	747.2	9.33	N-1	33934 TULLOCH 115 33950 RVRBK TP 115 1	Transmission Line	1.4	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	747.2	749.5	9.34	N-1	33932 MELONES 115 33934 TULLOCH 115 1	Transmission Line	7.68	3.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	749.5	762.8	29.53	N-1	33549 SCHULTE 115 33537 SFWY_TP1 115 1	Transmission Line	2.73	1.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	762.8	841.6	29.53	N-1	33537 SFWY_TP1 115 33541 AEC_TP1 115 1	Transmission Line	4.2	1.81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	841.6	851.3	31.75	N-1	33514 MANTECA 115 33513 LID JCT 115 1	Transmission Line	4.41	1.91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	851.3	853.2	41.37	N-1	33595 VIERATP2 115 33570 RIPONCOGENJT 115 1	Transmission Line	4.47	1.93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	853.2	863.7	31.75	N-1	33513 LID JCT 115 33526 KSSN-JC1 115 1	Transmission Line	3.07	1.33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	863.7	863.7	29.45	N-1	33535 SFWY_TP2 115 33543 AEC_TP2 115 1	Transmission Line	5.16	2.23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	863.7	889.8	29.45	N-1	33549 SCHULTE 115 33535 SFWY_TP2 115 2	Transmission Line	3.48	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	889.8	927.2	24.9	N-1	33540 TESLA 115 33574 LLNL TAP 115 1	Transmission Line	7.9	3.41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	927.2	991.8	20.08	N-1	33526 KSSN-JC1 115 33528 KASSON 115 1	Transmission Line	0.45	0.19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	991.8	1013.1	28.05	N-1	33548 TRACY 115 33542 LEPRINO 115 1	Transmission Line	0.61	0.26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	1013.1	1013.1	62.75	N-1	33540 TESLA 115 30625 TESLA D 230 1	Transformer	0	7.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Upgrade Order	Interconnection Power Flow Before Upgrade MW	Interconnection Power Flow After Upgrade MW	Distribution Factor %	Contingency Criteria	Limiting Element Identifier	Limiting Element Type	Limiting Element Length mi	Limiting Element Total Upgrade Cost \$MM	Limiting Element MW Allocated Cost \$MM								Cumulative MW Allocated Cost \$MM							
									25	50	100	150	200	250	350	500	25	50	100	150	200	250	350	500
35	1013.1	1017.2	62.75	N-1	33540 TESLA 115 30625 TESLA D 230 3	Transformer	0	7.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	1017.2	1027.1	28.05	N-1	33542 LEPRINO 115 33546 TRACY JC 115 1	Transmission Line	2.84	1.23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	1027.1	1124.5	28.05	N-1	33544 ELLS GTY 115 33540 TESLA 115 1	Transmission Line	1.03	0.44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	1124.5	1129.2	28.05	N-1	33546 TRACY JC 115 33544 ELLS GTY 115 1	Transmission Line	7.29	3.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	1129.2	1212.5	24.9	N-1	37649 LLNLAB 115 37560 LLNL 230 1	Transformer	0	7.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	1212.5	1296.1	41.37	N-1	33518 VIERRA 115 33595 VIERATP2 115 1	Transmission Line	1.02	0.44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	1296.1	1299.2	8.89	N-1	33950 RVRBK TP 115 33562 BELLOTA 115 1	Transmission Line	5.38	2.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	1299.2	1333.4	24.39	N-1	33528 KASSON 115 33531 OWENSTP1 115 1	Transmission Line	3.6	1.55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	1333.4	1345.5	7.68	N-1	33950 RVRBK TP 115 33944 RVRBANK 115 1	Transmission Line	4.89	2.11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	1345.5	1368.3	24.39	N-1	33531 OWENSTP1 115 33529 LAMMERS 115 1	Transmission Line	0.67	0.29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	1368.3	1368.4	23.0	N-1	33526 KSSN-JC1 115 33533 OWENSTP2 115 1	Transmission Line	19.73	8.52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	1368.4	1530.9	23.0	N-1	33533 OWENSTP2 115 33549 SCHULTE 115 2	Transmission Line	0.99	0.43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	1530.9	1639.5	12.39	N-1	33514 MANTECA 115 33970 INGRM C. 115 1	Transmission Line	20.61	8.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	1639.5	1692	7.68	N-1	33944 RVRBANK 115 33946 RVRBK J1 115 1	Transmission Line	4.57	1.97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Upgrade Order	Interconnection Power Flow Before Upgrade MW	Interconnection Power Flow After Upgrade MW	Distribution Factor %	Contingency Criteria	Limiting Element Identifier	Limiting Element Type	Limiting Element Length mi	Limiting Element Total Upgrade Cost \$MM	Limiting Element MW Allocated Cost \$MM								Cumulative MW Allocated Cost \$MM							
									25	50	100	150	200	250	350	500	25	50	100	150	200	250	350	500
49	1692	1721.5	11.34	N-1	33528 KASSON 115 33530 KSSN-JC2 115 1	Transmission Line	0.78	0.34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	1721.5	1723.7	8.61	N-1	33562 BELLOTA 115 999595 21D21EETL0_2 115 1	Transmission Line	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	1723.7	1801.6	8.6	N-1	33562 BELLOTA 115 30500 BELLOTA 230 2	Transformer	0	7.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	1801.6	1801.6	8.39	N-1	33970 INGRM C. 115 33959 TCHRT_T2 115 1	Transmission Line	6.25	2.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	1801.6	1866.1	8.39	N-1	33959 TCHRT_T2 115 33540 TESLA 115 1	Transmission Line	8.06	3.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	1866.1	1871.5	5.16	N-1	33970 INGRM C. 115 33965 SALADO J 115 1	Transmission Line	8.58	3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	1871.5	1917.2	27.62	N-1	33529 LAMMERS 115 33549 SCHULTE 115 1	Transmission Line	2.63	1.14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	1917.2	1955.3	24.9	N-1	37560 LLNL 230 37585 TRCY PMP 230 1	Transmission Line	13.11	8.49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	1955.3	2000	5.16	N-1	33965 SALADO J 115 33964 SALADO 115 1	Transmission Line	2.0	0.86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendices

Appendix A: POI Details

Substation Name	Cross Road Junction
Nominal Voltage (KV)	115
Substation Bus Number	33522
Substation Model Identifier	CROSRDJT
Substation Area	PG AND E
Latitude/Longitude	37.79785502, -121.274217
County	San Joaquin
State	CA
FIPS Code	6077
ISO	caiso
Scenario	ERIS Discharging Summer Peak - Substation
# Pre-existing Issues Summer Peak ERIS Substation Discharging	7
Headroom Capacity (MW) Summer Peak ERIS Substation Discharging	168.6
3 Phase Short Circuit (MVA)	3220.04
3 Phase Short Circuit Current(AMPS)	16166.0

Appendix B: Interconnection Queue Summary

Summary of interconnection queue for modelled scenario with > 0 MW

Showing queue information for:

ISO CAISO

County San Joaquin

State CA

Model Simulation ERI5 Discharging Summer Peak

Point of Interconnection	Maximum MW	Type of Generating Facility	Projected In-Service Date
Weber Substation 60kV	20	Storage	2018-05-31
Belotta Substation 115 kV	105.6	Storage	2021-01-06
Weber Substation	16	Storage	2022-01-12
Ripon Substation 115kV	79.2	Storage	2022-12-16
Vierra Substation 115kV	80.96	Storage	2023-06-15
Bellota -Tesla 230kV	300	Storage	2023-12-01
Schulte Sw St 115 kV	70	Storage	2024-01-06
Schulte Substation 115 kV	157.5	Storage	2024-01-11
Lammers Substation 115 kV	52.5	Storage	2024-10-31
Tesla Substation 500 kV	320	Wind	2024-12-15
Bellota Substation 115 kV	37.5	Solar	2024-12-31
Bellota Substation 115 kV	15	Storage	2024-12-31
Tesla Substation 500 kV	75	Storage	2025-01-06
Rancho Seco-Bellota #1 230 kV	122.5	Storage	2025-01-06

Point of Interconnection	Maximum MW	Type of Generating Facility	Projected In-Service Date
Ripon Substation 115 kV	225	Storage	2025-06-01
Weber Substation 60 kV	91	Storage	2025-10-30
Bellota Substation 115 kV	105	Storage	2025-11-30
Bellota 115kV	198	Storage	2026-03-31
Lammers 115kV	300	Storage	2026-10-01
French Camp line 60kV	60	Storage	2026-12-01
Lockeford 115kV	100	Storage	2026-12-01
Tesla 500kV	500	Storage	2027-06-01
Bellota - Weber 230kV	170.41	Solar	2027-06-01
Weber 230 kV	200	Solar	2027-10-01
Banta 115kV	50	Solar	2027-10-01
Bellota -Brighton 230kV Substation	300	Solar	2027-12-01
Tesla Substation 230kV	400	Storage	2027-12-01
Bellota Sub 230 kV	100	Solar	2028-04-01
Weber 230 kV	300	Storage	2028-06-01
Banta 115kV	300	Storage	2028-06-01
Bellota Sub 230 Kv	200	Solar	2028-06-30
Bellota 115kV	300	Storage	2028-12-01
Bellota -Tracy 230kV	400	Storage	2028-12-31
Tesla - Bellota 230kV	500	Storage	2028-12-31
Kasson Substation 115kV	250	Storage	2029-09-14

Appendix C: Study Assumptions and Methodology

To learn more about the assumptions and methodology for this power flow model, please visit:
<https://storymaps.arcgis.com/stories/ff558c23727d43b49c7c3d978af5d4bd>

To learn more about the field descriptions, please visit:
<https://storymaps.arcgis.com/stories/63989c39559c492c814af6db497d08e2>