

Study Area: **SCE East of Lugo**



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	N/A	N/A	N/A	
EOL-T-1	19012 MEAD S 230 189040 BOB SS 230 1	Tran ELDORDO 500.00 to ELDORDO2 230.00 Circuit 5ELDOR 5T 13.80_	P1	N-1	<90	<90	<90	<90	<90				T-1 gen tripping as part of Ivanpah RAS
EOL-T-2	24648 IVANPAH 115 24778 MTN PASS 115 1	Line PRIMM 230.0 to ELDORDO2 230.0 Circuit 1_	P1	N-1	58.04	57.36	54.43	100.47	17.05				Congestion management or upgrade if cost effective
EOL-T-3	24086 LUGO 500 26105 VICTORVL 500 1	Line ADELANTO 500.0 to RINALDI2 500.0 Circuit 1_ and Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_	P6	N-1-1	94.77	90.57	<90	101.67	<90				Congestion management or upgrade if cost effective
EOL-T-4	24086 LUGO 500 26105 VICTORVL 500 1	Line ADELANTO 500.0 to TOLUCA 500.0 Circuit 1_ and Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_	P6	N-1-1	97.44	92.42	<90	102.95	<90				Congestion management or upgrade if cost effective
EOL-T-5	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line ADELANTO 500.0 to RINALDI2 500.0 Circuit 1_	P6	N-1-1	94.77	90.57	<90	101.67	<90				Congestion management or upgrade if cost effective
EOL-T-6	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line ADELANTO 500.0 to TOLUCA 500.0 Circuit 1_	P6	N-1-1	97.44	92.41	<90	102.95	<90				Congestion management or upgrade if cost effective
EOL-T-7	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P6	N-1-1	<90	<90	105.38	<90	<90				Congestion management or upgrade if cost effective
EOL-T-8	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P6	N-1-1	113.49	106.74	<90	121.96	<90				Congestion management or upgrade if cost effective
EOL-T-9	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line MOHAVE 500.0 to ELDORDO 500.0 Circuit 1_	P6	N-1-1	<90	<90	106.55	<90	<90				Congestion management or upgrade if cost effective
EOL-T-10	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line MOHAVE 500.0 to ELDORDO 500.0 Circuit 1_	P6	N-1-1	113.86	107.67	<90	122.21	<90				Congestion management or upgrade if cost effective
EOL-T-11	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line PALOVRDE 500.0 to COLRIVER 500.0 Circuit 1_	P6	N-1-1	110.28	<90	<90	116.42	<90				Congestion management or upgrade if cost effective
EOL-T-12	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line VICTORVL 500.0 to RINALDI 500.0 Circuit 1_	P6	N-1-1	93.97	<90	<90	100.83	<90				Congestion management or upgrade if cost effective

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	N/A	N/A	N/A	
EOL-T-13	24647 IVANPAH 230 24648 IVANPAH 115 1	Line BAKER 115.0 to DUNNSIDE 115.0 Circuit 1_ and Tran IVANPAH 230.00 to IVANPAH 115.00 Circuit 2 0.00_	P6	N-1-1	<90	<90	<90	119.57	<90				Congestion management
EOL-T-14	24647 IVANPAH 230 24648 IVANPAH 115 1	Line BAKER 115.0 to MTN PASS 115.0 Circuit 1_ and Tran IVANPAH 230.00 to IVANPAH 115.00 Circuit 2 0.00_	P6	N-1-1	<90	<90	<90	120.04	<90				Congestion management
EOL-T-15	24647 IVANPAH 230 24648 IVANPAH 115 1	Line COLWATER 115.0 to DUNNSIDE 115.0 Circuit 1_ and Tran IVANPAH 230.00 to IVANPAH 115.00 Circuit 2 0.00_	P6	N-1-1	<90	<90	<90	119.51	<90				Congestion management
EOL-T-16	24647 IVANPAH 230 24648 IVANPAH 115 1	Line IVANPAH 115.0 to MTN PASS 115.0 Circuit 1_ and Tran IVANPAH 230.00 to IVANPAH 115.00 Circuit 2 0.00_	P6	N-1-1	<90	<90	<90	122.25	<90				Congestion management
EOL-T-17	24648 IVANPAH 115 24778 MTN PASS 115 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line LUGO 500.0 to VICTORVL 500.0 Circuit 1_	P6	N-1-1	<90	<90	<90	110.57	<90				Congestion management

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Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	N/A	N/A	N/A	
EOL-VD-1	LAUGHLIN1 500 kV	Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P1	N-1	-5.836	-6.33	-6.549	-5.46	-5.978				Dynamic VAR support or exception
EOL-VD-2	LAUGHLIN2 500 kV	Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P1	N-1	-5.836	-6.33	-6.549	-5.46	-5.978				Dynamic VAR support or exception
EOL-VD-3	MOHAVE 500 kV	Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P1	N-1	-5.835	-6.33	-6.548	-5.46	-5.978				Dynamic VAR support or exception
EOL-VD-4	PRIMM 230 kV	Line BAKER 115.0 to DUNNSIDE 115.0 Circuit 1_ and Line PRIMM 230.0 to ELDORDO2 230.0 Circuit 1_	P6	N-1-1	<10	<10	<10	11.879	<10				Dynamic VAR support or excpetion
EOL-VD-5	TC08SC68 230 kV	Line BAKER 115.0 to DUNNSIDE 115.0 Circuit 1_ and Line PRIMM 230.0 to ELDORDO2 230.0 Circuit 1_	P6	N-1-1	<10	<10	<10	11.998	<10				Dynamic VAR support or exception

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High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	N/A	N/A	N/A	
EOL-V-1	CIMA 230 kV	Base Case	P0	N-0	1.0255	< 1.05	1.0313	1.0139	1.0502				Adjust voltage schedules, taps and reactive devices.
EOL-V-2	CIMAT1 230 kV	Base Case	P0	N-0	1.0255	< 1.05	1.0313	1.0139	1.0502				Adjust voltage schedules, taps and reactive devices.
EOL-V-3	CIMAT2 230 kV	Base Case	P0	N-0	1.0419	< 1.05	1.045	1.0323	1.053				Adjust voltage schedules, taps and reactive devices.
EOL-V-4	DSRTSTLN 230 kV	Base Case	P0	N-0	1.0263	< 1.05	1.0224	0.9869	1.0675				Not under ISO control. Adjust voltage schedules, taps and reactive devices.
EOL-V-5	ELDORDO2 230 kV	Base Case	P0	N-0	1.0185	< 1.05	1.02	0.9844	1.0623				Adjust voltage schedules, taps and reactive devices.
EOL-V-6	IVANPAH 230 kV	Base Case	P0	N-0	1.0264	< 1.05	1.0232	0.9871	1.0673				Adjust voltage schedules, taps and reactive devices.
EOL-V-7	JASPER 230 kV	Base Case	P0	N-0		< 1.05	1.0175		1.0527				Adjust voltage schedules, taps and reactive devices.
EOL-V-8	PISGAH 230 kV	Base Case	P0	N-0	1.0157	< 1.05	1.0242	0.9985	1.0561				Adjust voltage schedules, taps and reactive devices.
EOL-V-9	PRIMM 230 kV	Base Case	P0	N-0	1.0245	< 1.05	1.0226	0.9815	1.0666				Adjust voltage schedules, taps and reactive devices.
EOL-V-10	LAUGHLIN1 500 kV	Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P1	N-1	1.1244	1.1353	1.1466	1.1132	1.1438				Adjust voltage schedules, taps and reactive devices.
EOL-V-11	LAUGHLIN2 500 kV	Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P1	N-1	1.1244	1.1353	1.1466	1.1132	1.1438				Adjust voltage schedules, taps and reactive devices.
EOL-V-12	MOHAVE 500 kV	Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P1	N-1	1.1244	1.1353	1.1467	1.1132	1.1438				Adjust voltage schedules, taps and reactive devices.
EOL-V-13	IVANPAH 230 kV	Line PRIMM 230.0 to ELDORDO2 230.0 Circuit 1_ and Line IVANPAH 115.0 to MTN PASS 115.0 Circuit 1_	P6	N-1-1	> 0.9	> 0.9	> 0.9	0.8569	> 0.9				Adjust scheduled voltages, taps and reactive devices

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Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance								Potential Mitigation Solutions
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	N/A	N/A	N/A	
X-TS-1												

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Single Contingency Load Drop

ID	Worst Contingency	Category	Category Description	Amount of Load Drop (MW)								Potential Mitigation Solutions
				Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	
X-SLD-1												

No single contingency resulted in total load drop of more than 250 MW.

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Single Source Substation with more than 100 MW Load

ID	Substation	Load Served (MW)								Potential Mitigation Solutions
		Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	
X-SS-1										

No single source substation with more than 100 MW Load