

# California ISO/MID/RT

Study Area: **SCE Bulk**

Voltage Deviations



ID	Substation	Worst Contingencies	Category	Category Description	Post Cont. Voltage Deviation %										Potential Mitigation Solutions
					2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022SP Heavy Renewables & Min Gas Gen	2022 Summer Off-Peak with Maximum PV Output	N/A	N/A	N/A	

No voltage deviation issues were identified.



ID	Substation	Worst Contingencies	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions
					2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022SP Heavy Renewables & Min Gas Gen	2022 Summer Off-Peak with Maximum PV Output	N/A	N/A	N/A	

No high/low voltage issues identified

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Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022SP Heavy Renewables & Min Gas Gen	2022 Summer Off-Peak with Maximum PV Output	
TS-1	Imperial Valley–N.Gila 500 kV; 3-Phase fault @ Imperial Valley, normal clearing	P1	L-1	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-2	Lugo–Victorville 500 kV; 3-Phase fault @ Lugo, normal clearing	P1	L-1	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-3	Paloverde–Colorado River 500 kV; 3-Phase fault @ Paloverde, normal clearing	P1	L-1	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-4	PDCI Monopole; 3-Phase fault @ Sylmar, normal clearing	P1	L-1	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-5	Serrano–Valley 500 kV; 3-Phase fault @ Valley, normal clearing	P1	L-1	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-6	Palo Verde G-1; 3-Phase fault @ 500 kV, normal clearing	P1	G-1	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-7	Devers-Valley No.1 500 kV & Serrano-Valley 500 kV; 3-Phase fault @ Valley, normal clearing	P6	L-1/L-1	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-8	Lugo–Eldorado & Lugo–Mohave 500 kV; 3-Phase fault @ Lugo, normal clearing	P6	L-1/L-1	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-9	Colorado River–Paloverde & Imperial Valley–N.Gila 500 kV; 3-Phase fault @ Paloverde, normal clearing	P6	L-1/L-1	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-10	Sunrise & SWPL 500 kV; 3-Phase fault @ Suncrest, normal clearing	P6	L-1/L-1	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-11	Midway–Vincent # 1 & Midway - Whirlwind #3 500 kV with RAS; 3-Phase fault @ Midway, normal clearing	P7	L-2	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-12	Midway - Vincent No. 1 & 2 500 kV with RAS; 3-Phase fault @ Midway, normal clearing	P7	L-2	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-13	Vincent–Miraloma & Lugo–Rancho Vista 500 kV; 3-Phase fault @ Mira Loma, normal clearing	P7	L-2	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-14	Colorado River–Red Bluff 500kV #1 & #2; 3-Phase fault @ Red Bluff, normal clearing	P7	L-2	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-15	Devers–Red Bluff 500 kV #1 & #2; 3-Phase fault @ Devers, normal clearing	P7	L-2	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-16	Lugo–Vincent 500 KV #1 & #2; 3-Phase fault @ Vincent, normal clearing	P7	L-2	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-17	Antelope–Vincent #1 & #2 500 kV; 3-Phase fault @ Vincent, normal clearing	P7	L-2	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-18	Loss of PDCI Bipole Converters; 3-Phase fault @ Sylmar, normal clearing	P7	L-2	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-19	Loss of IPPDC Bipole; 3-Phase fault @ Adelanto, normal clearing	P7	L-2	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-20	Lugo–Miraloma & Lugo–Rancho Vista 500 kV; 3-Phase fault @ Lugo, normal clearing	P7	L-2	Stable	Stable	Stable	Stable	Stable	Stable	N/A	
TS-21	Serrano–Mira Loma & Serrano–Rancho Vista 500 kV; 3-Phase fault @ Serrano, normal clearing	P7	L-2	Stable	Stable	Stable	Stable	Stable	Stable	N/A	

Single Contingency Load Drop

ID	Worst Contingencies	Category	Category Description	Amount of Load Drop (MW)										Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022SP Heavy Renewables & Min Gas Gen	2022 Summer Off-Peak with Maximum PV Output	N/A	N/A	N/A	

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
		2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022SP Heavy Renewables & Min Gas Gen	2022 Summer Off-Peak with Maximum PV Output	N/A	N/A	

No single source substation with more than 100 MW Load