



Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)					Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2020 Summer Peak	2023 Summer Peak	2028 Summer Peak	2020 Spring Off-Peak	2023 Spring Peak	2023 SP High CEC Forecast	2023 SpOP Hi Renew & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen	
Line 24804 DEVERS 230 kV to 24944 Vista2LR 230 kV	Line DEVERS 500.0 to VALLEYSC 500.0 Circuit 1 AND Line DEVERS 500.0 to VALLEYSC 500.0 Circuit 2	P7	L-2	144.15	<100	<100	<100	<100	<100	<100	142.49	Existing West of Devers SPS, Congestion Management and Curtailment
Line 24944 Vista2LR 230 kV to 24901 VSTA 230 kV	Line DEVERS 500.0 to VALLEYSC 500.0 Circuit 1 AND Line DEVERS 500.0 to VALLEYSC 500.0 Circuit 2	P7	L-2	144.15	<100	<100	<100	<100	<100	<100	142.49	Existing West of Devers SPS, Congestion Management and Curtailment
Line 24804 DEVERS 230 kV to 24941 EICascoLR 230 kV	Line DEVERS 500.0 to VALLEYSC 500.0 Circuit 1 AND Line DEVERS 500.0 to VALLEYSC 500.0 Circuit 2	P7	L-2	131.21	<100	<100	<100	<100	<100	<100	138.33	Existing West of Devers SPS, Congestion Management and Curtailment
Line 24941 EICascoLR 230 kV to 25666 EL CASCO 230 kV	Line DEVERS 500.0 to VALLEYSC 500.0 Circuit 1 AND Line DEVERS 500.0 to VALLEYSC 500.0 Circuit 2	P7	L-2	131.21	<100	<100	<100	<100	<100	<100	138.33	Existing West of Devers SPS, Congestion Management and Curtailment
Line 24804 DEVERS 230 kV to 24943 Vista1LR 230 kV	Line DEVERS 500.0 to VALLEYSC 500.0 Circuit 1 AND Line DEVERS 500.0 to VALLEYSC 500.0 Circuit 2	P7	L-2	123.12	<100	<100	<100	<100	<100	<100	121.71	Existing West of Devers SPS, Congestion Management and Curtailment
Line 24943 Vista1LR 230 kV to 24901 VSTA 230 kV	Line DEVERS 500.0 to VALLEYSC 500.0 Circuit 1 AND Line DEVERS 500.0 to VALLEYSC 500.0 Circuit 2	P7	L-2	123.12	<100	<100	<100	<100	<100	<100	121.71	Existing West of Devers SPS, Congestion Management and Curtailment

Study Area: SCE Eastern area

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2020 Summer Peak	2023 Summer Peak	2028 Summer Peak	2020 Spring Off-Peak	2023 Spring Off-Peak	2023 SP High CEC Forecast	2023 SpOP Hi Renew & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen	
None	None											

Study Area: SCE Eastern area

Voltage Deviation



Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2020 Summer Peak	2023 Summer Peak	2028 Summer Peak	2020 Spring Off-Peak	2023 Spring Off-Peak	2023 SP High CEC Forecast	2023 SpOP Hi Renew & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen	
None	None											

Study Area: SCE Eastern area

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance (Number of voltage and frequency violations)								Potential Mitigation Solutions
			2020 Summer Peak	2023 Summer Peak	2028 Summer Peak	2020 Spring Off-Peak	2023 Spring Off-Peak	2023 SP High CEC Forecast	2023 SpOP Hi Renew & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen	
3-Phase fault at EagleMTN 161 kV Bus, tripping EagleMTN 230/161 kV Transformer #5	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at EagleMTN 161 kV Bus, tripping BlytheSCE-EagleMTN 161 kV	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at EagleMTN 161 kV Bus, tripping BlytheSCE-EagleMTN 161 kV & Blythe 1CT trip (RAS)	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at EagleMTN 230 kV Bus, tripping EagleMTN-IronMTN 230 kV	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at Julian Hinds 230 kV Bus, tripping Julian Hinds-EagleMTN 230 kV	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at Julian Hinds 230 kV Bus, tripping Julian Hinds-EagleMTN 230 kV & Blythe 1CT trip	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at Julian Hinds 230 kV Bus, tripping Julian Hinds-Mirage 230 kV	P1	Normal Clearing	Stable	Stable	Stable	Stable	Unstable	Stable	Unstable	Stable	Existing Blythe SPS to trip generation, Stable when Blythe 1CT is tripped
3-Phase fault at Julian Hinds 230 kV Bus, tripping Julian Hinds-Mirage 230 kV & Blythe 1CT trip	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at Palo Verde 500 kV Bus, tripping Colorado River-Palo Verde 500 kV	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at Julian Hinds 230 kV Bus, loss CB513, loss J.Hinds	P2.4	Breaker Fault	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at Devers 500 kV, tripping Devers - Red Bluff 500 kV #1 with stuck breaker follow by Devers-Valley 500 kV #1	P4.2	Delayed Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at Devers 500 kV, tripping Devers - Red Bluff 500 kV #2 with stuck breaker follow by Devers 1AA bank	P4.2	Delayed Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at Valley 500 kV, tripping Valley-Serrano 500 kV with stuck breaker follow by Valley 4AA Bank	P4.2	Delayed Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	

Study Area: SCE Eastern area

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance (Number of voltage and frequency violations)								Potential Mitigation Solutions
			2020 Summer Peak	2023 Summer Peak	2028 Summer Peak	2020 Spring Off-Peak	2023 Spring Off-Peak	2023 SP High CEC Forecast	2023 SpOP Hi Renew & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen	
SLG fault at Mirage 230 kV, tripping Devers-Mirage 230 kV with stuck breaker follow by Coachell Valley-Mirage 230 kV	P4.2	Delayed Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at Devers 230 kV, tripping Devers - Vista 230 kV # 1 with stuck breaker follow by Devers 3A bank	P4.2	Delayed Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at Devers 230 kV, tripping Devers - Vista 230 kV # 1 with stuck breaker follow by Devers-San Bernardino 230 kV	P4.2	Delayed Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at El Casco 230 kV, tripping Devers - El Casco 230 kV with stuck breaker follow by El Casco 2A bank	P4.2	Delayed Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at Mirage 230 kV, tripping Mirage-J.Hinids 230 kV with stuck breaker follow by Mirage-Ramon 230 kV	P4.2	Delayed Clearing	Stable	Stable	Stable	Stable	Unstable	Stable	Unstable	Stable	Existing Blythe SPS to trip generation, Stable when Blythe 1CT is tripped
SLG fault at Mirage 230 kV, tripping Mirage-J.Hinids 230 kV with stuck breaker follow by Mirage-Ramon 230 kV, Blythe 1CT trip (RAS)	P4.2	Delayed Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at Blythe 161 kV, tripping BlytheSCE-EagleMTN 161 kV, CB 872 stuck at Blythe	P4.2	Breaker Failure	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at Blythe 161 kV, tripping BlytheSCE-EagleMTN 161 kV, CB 872 stuck at Blythe & Blythe 1CT trip (RAS)	P4.2	Breaker Failure	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at EagleMTN 161 kV , tripping BlytheSCE-EagleMTN 161 kV, CB 70 stuck at EagleMTN	P4.2	Breaker Failure	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at EagleMTN 161 kV , tripping BlytheSCE-EagleMTN 161 kV, CB 70 stuck at EagleMTN	P4.2	Breaker Failure	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at EagleMTN 230 kV Bus, tripping EagleMTN-IronMTN 230 kV, CB 407 stuck at EagleMTN	P4.2	Breaker Failure	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	

Study Area: SCE Eastern area

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance (Number of voltage and frequency violations)								Potential Mitigation Solutions
			2020 Summer Peak	2023 Summer Peak	2028 Summer Peak	2020 Spring Off-Peak	2023 Spring Off-Peak	2023 SP High CEC Forecast	2023 SpOP Hi Renew & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen	
SLG fault at EagleMTN 230 kV Bus, tripping EagleMTN-IronMTN 230 kV, CB 407 stuck at EagleMTN & Blythe 1CT trip	P4.2	Breaker Failure	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at IronMTN 230 kV Bus, tripping EagleMTN-IronMTN 230 kV, CB 307 stuck (close to Iron)	P4.2	Breaker Failure	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at EagleMTN 230 kV Bus, tripping Julian Hinds-EagleMTN 230 kV, CB 405 stuck at EagleMTN	P4.2	Breaker Failure	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at EagleMTN 230 kV Bus, tripping Julian Hinds-EagleMTN 230 kV, CB 405 stuck at EagleMTN & Blythe 1CT trip	P4.2	Breaker Failure	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at Julian Hinds 230 kV Bus, tripping Julian Hinds-Mirage 230 kV, Stuck CB at J.Hinds	P4.2	Breaker Failure	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at EagleMTN 230 kV Bus, tripping EagleMTN 230/161 kV Transformer #5	P4.3	Breaker Failure	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at 20% from BlytheSCE 161 Bus, tripping BlytheSCE-EagleMTN 161 kV, non-redundant pilot relay fail	P5.2	pilot relay fail	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at 20% from EagleMTN 161 kV Bus, tripping BlytheSCE-EagleMTN 161 kV, non-redundant pilot relay fail	P5.2	pilot relay fail	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at 20% from EagleMTN 230 kV Bus, tripping EagleMTN-IronMTN 230 kV, pilot relay fail	P5.2	pilot relay fail	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at 20% from IronMTN 230 kV Bus, tripping EagleMTN-IronMTN 230 kV, pilot relay fail	P5.2	pilot relay fail	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at EagleMTN 230 kV Bus, tripping EagleMTN Bus, non-redundant relayfail	P5.5	Bus relay Failure	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at EagleMTN 230 kV Bus, tripping EagleMTN Bus & Blythe 1CT trip, non-redundant relay fail	P5.5	Bus relay Failure	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	

Study Area: SCE Eastern area

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance (Number of voltage and frequency violations)								Potential Mitigation Solutions
			2020 Summer Peak	2023 Summer Peak	2028 Summer Peak	2020 Spring Off-Peak	2023 Spring Off-Peak	2023 SP High CEC Forecast	2023 SpOP Hi Renew & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen	
SLG fault at 20% from EagleMTN 230 kV Bus, tripping Julian Hinds-EagleMTN 230 kV, pilot relay fail	P5.2	pilot relay fail	Stable	Stable	Stable	Stable	Unstable	Stable	Unstable	Stable	Existing Blythe SPS to trip generation, Stable when Blythe 1CT is tripped
SLG fault at 20% from EagleMTN 230 kV Bus, tripping Julian Hinds-EagleMTN 230 kV & Blythe 1CT trip, pilot relay fail	P5.2	pilot relay fail	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at 20% from Julian Hinds 230 kV Bus, tripping Julian Hinds-EagleMTN 230 kV, pilot relay fail	P5.2	pilot relay fail	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at 20% from Julian Hinds 230 kV Bus, tripping Julian Hinds-EagleMTN 230 kV & Blythe 1CT trip, pilot relay fail	P5.2	pilot relay fail	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at 20% from Julian Hinds 230 kV Bus, tripping Julian Hinds-Mirage 230 kV, pilot relay fail	P5.2	pilot relay fail	Stable	Stable	Stable	Stable	Unstable	Stable	Unstable	Stable	Existing Blythe SPS to trip generation, Stable when Blythe 1CT is tripped
SLG fault at 20% from Julian Hinds 230 kV Bus, tripping Julian Hinds-Mirage 230 kV & Blythe 1CT trip, pilot relay fail	P5.2	pilot relay fail	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
SLG fault at 20% from Mirage 230 kV Bus, tripping Julian Hinds-Mirage 230 kV, pilot relay fail	P5.2	pilot relay fail	Stable	Stable	Stable	Stable	Unstable	Unstable	Unstable	Stable	Existing Blythe SPS to trip generation, Stable when Blythe 1CT is tripped or Eagle Mountain cap bank is on
SLG fault at 20% from Mirage 230 kV Bus, tripping Julian Hinds-Mirage 230 kV & Blythe 1CT trip, pilot relay fail	P5.2	pilot relay fail	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at Julian Hinds 230 kV Bus, tripping Julian Hinds-Mirage & EagleMTN-IronMTN 230 kV	P6.1	Normal Clearing	Unstable	Unstable	Unstable	Stable	Unstable	Unstable	Unstable	Unstable	Existing Blythe SPS to trip generation, Stable when Blythe 1CT is tripped; Otherwise, Operation Procedure GCC128 to open Eagle Mountain-Blythe 161 kV
3-Phase fault at Julian Hinds 230 kV Bus, tripping Julian Hinds-Mirage & EagleMTN-IronMTN 230 kV & Blythe 1CT trip	P6.1	Normal Clearing	Stable	Unstable	Stable	Stable	Unstable	Unstable	Unstable	Unstable	Existing Blythe SPS to trip generation, Stable when Blythe 1CT is tripped; Otherwise, Operation Procedure GCC128 to open Eagle Mountain-Blythe 161 kV
3-Phase fault at Julian Hinds 230 kV Bus, tripping Julian Hinds-Mirage & EagleMTN-IronMTN 230 kV & Blythe 2CTs trip (RAS)	P6.1	Normal Clearing	Stable	Unstable	Stable	Stable	Stable	Unstable	Stable	Unstable	Existing Operation Procedure GCC128 to open Eagle Mountain-Blythe 161 kV

Study Area: SCE Eastern area

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance (Number of voltage and frequency violations)								Potential Mitigation Solutions
			2020 Summer Peak	2023 Summer Peak	2028 Summer Peak	2020 Spring Off-Peak	2023 Spring Off-Peak	2023 SP High CEC Forecast	2023 SpOP Hi Renew & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen	
3-Phase fault at Rud Bed Bulff 500 kV, tripping Colorado River - Red Bluff 500 kV #1 & #2	P6.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at Devers 500 kV, tripping Devers - Red Bluff 500 kV #1 & #2	P6.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at Valley 500 kV, tripping Devers Valley 500 kV #1 & #2	P6.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at El Casco 230 kV, tripping Etiwanda-San Bernardino & Devers-El Casco 230 kV	P6.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at San Bernardino 230 kV, tripping Etiwanda-San Bernardino & El Casco-San Bernardino 230 kV	P6.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at El Casco 230 kV, tripping San Bernardino-Vista & Devers-El Casco 230 kV	P6.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at San Bernardino 230 kV, tripping San Bernardino-Vista & Devers-San Bernardino 230 kV	P6.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at San Bernardino 230 kV, tripping Etiwanda-San Bernardino & San Bernardino-Vista 230 kV	P7.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at Devers 230 kV, tripping Devers-El Casco & Devers-San Bernardino #2 230 kV	P7.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at Vista 230 kV, tripping Devers-Vista 230 kV # 1 & #2	P7.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at San Bernardino 230 kV, tripping Etiwanda-San Bernardino & Devers-San Bernardino #2 230 kV	P7.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at San Bernardino 230 kV, tripping El Casco-San Bernardino & San Bernardino-Vista 230 kV	P7.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at Mirage 230 kV, tripping CVSUB230-Mirage & Ramon-Mirage 230 kV	P7.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	
3-Phase fault at Devers 230 kV, tripping Devers - Mirage #1 & #2 230 kV	P7.1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	

Study Area: SCE Eastern area



Single Contingency Load Drop

Worst Contingency	Category	Category Description	Amount of Load Drop (MW)								Potential Mitigation Solutions
			Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	

Study Area: SCE Eastern area



Single Source Substation with more than 100 MW Load

Substation	Load Served (MW)								Potential Mitigation Solutions
	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	