Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2024 Summer Peak Heavy Renewable & Minimum Gas Generation	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	
22886 SUNCREST 230 22832 SYCAMORE 230 1 1	OMEC_ALL_Gen OTAYMGT1/GT2/ST1 ID 1 AND TL50001_Line ECO-ML 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	100.1	< 100	Rely on the existing TL50001 Gen Drop RAS or TL23054/ TL23055 RAS, along with the 30-minute short-term emergency ratings of the 230 kV lines (130% higher than their continuous ratings), to allow the market and operators to bring down the overloads that do not exceed 130% for the P6 contingencies within the continuous ratings in 30 minutes as operational mitigation measures. The remaining P6 overloads that exceed 130% can be eliminated by additional system adjustment between the overlapping P1 events. Either the operational mitigations or the system adjustment could involve operational actions, such as reducing generation output in the greater Imperial Valley area, dispatching conventional gas generation, preferred resources, battery energy storage and/or pumped hydro storage in the San Diego area, and adjusting the Imperial Valley phase shifting transformers as needed. The use of energy storage is subject to verification that it has sufficient MWh capability and can be fully charged when needed. For the 2024 Spring-Off Peak Sensitivity Case, charging of the battery energy storage in the San Diego area needs to be curtailed for P6 events.
	PEC_ALL_Gen PEN_CT1/CT2/ST ID 1 AND TL23055_Line SCR-SX 230kV ck 2	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	100.1	
	TL50001_Line ECO-ML 500kV ck 1 AND TL23055_Line SCR-SX 230kV ck 2	P6	N-1-1	150.7	173.1	166.7	133.4	< 100	< 100	151.5	168.3	176.3	
	TL50001+GEN_DROP_RAS_Line ECO-ML 500kV ck 1 + GEN DROP RAS AND TL23055_Line SCR-SX 230kV ck 2	P6	N-1-1	118.7	141.8	134.3	< 100	< 100	< 100	121.1	132.9	145.4	
22886 SUNCREST 230 22832 SYCAMORE 230 2 1	OMEC_ALL_Gen OTAYMGT1/GT2/ST1 ID 1 AND TL50001_Line ECO-ML 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	100.1	< 100	
	PEC_ALL_Gen PEN_CT1/CT2/ST ID 1 AND TL23054_Line SCR-SX 230kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	100.1	
	TL50001_Line ECO-ML 500kV ck 1 AND TL23054_Line SCR-SX 230kV ck 1	P6	N-1-1	150.7	173.1	166.7	133.5	< 100	< 100	151.5	168.3	176.3	
	TL50001+GEN_DROP_RAS_Line ECO-ML 500kV ck 1 + GEN DROP RAS AND TL23054_Line SCR-SX 230kV ck 1	P6	N-1-1	118.7	141.8	134.3	< 100	< 100	< 100	121.1	132.9	145.5	
22886 SUNCREST 230 22888 SNCRSMP1 500 1 1	TL50001_Line ECO-ML 500kV ck 1 AND SCR_BK81_Tran SCR 500/230kV ck 2	P6	N-1-1	113.5	129.8	124.6	100.9	< 100	< 100	115.0	127.7	131.7	Rely on the existing TL50001 Gen Drop RAS, along with the use of the 24-hr emergency ratings of the Suncrest banks (if necessary, the 30-min emergency rating may also be utilized). If this is not enough to mitigate the overloads, congestion management and additional system adjustments can be used after the first contingency for the P6 events. These system adjustments would be similar to the actions described above for the TL23054/23055 (Suncrest - Sycamore Canyon) overload issues.
	TL50001+GEN_DROP_RAS_Line ECO-ML 500kV ck 1 + GEN DROP RAS AND SCR_BK81_Tran SCR 500/230kV ck 2	P6	N-1-1	< 100	107.7	101.9	< 100	< 100	< 100	< 100	100.8	110.3	
22886 SUNCREST 230 22889 SNCRSMP2 500 1 1	TL50001_Line ECO-ML 500kV ck 1 AND SCR_BK80_Tran SCR 500/230kV ck 1	P6	N-1-1	113.6	129.9	124.7	100.7	< 100	< 100	115.0	127.5	131.8	
	TL50001+GEN_DROP_RAS_Line ECO-ML 500kV ck 1 + GEN DROP RAS AND SCR_BK80_Tran SCR 500/230kV ck 1	P6	N-1-1	< 100	107.7	102.0	< 100	< 100	< 100	< 100	100.6	110.4	
22464 MIGUEL 230 22468 MIGUEL 500 2 1	OMEC_ALL_Gen OTAYMGT1/GT2/ST1 ID 1 AND ML_BK80_Tran ML 500/230kV ck 1	P3	G-1/N-1	< 100	101.9	< 100	< 100	< 100	< 100	< 100	< 100	103.9	
	TL50003_Line OCO-SCR 500kV ck 1 AND ML_BK80_Tran ML 500/230kV ck 1	P6	N-1-1	121.4	137.9	133.8	104.6	< 100	< 100	124.4	132.2	140.8	
	TL50003+GEN_DROP_RAS_Line OCO-SCR 500kV ck 1 + GEN DROP RAS AND ML_BK80_Tran ML 500/230kV ck 1	P6	N-1-1	< 100	113.6	108.1	< 100	< 100	< 100	< 100	105.0	116.7	Rely on the existing TL50003 Gen Drop RAS and Miguel BK 80/81 RAS, along with the use of the 24-hr emergency ratings of the Miguel banks (if necessary, the 30-min emergency rating may also be utilized). If this is not enough to mitigate the overloads, congestion management and additional system adjustments can be used after the first contingency for the P6 events. These system adjustments would be similar to the actions described above for the TL23054/23055 overload issues.
22464 MIGUEL 230 22472 MIGUELMP 500 1 1	EA_ALL_Gen EAGEN1U6/U7/U8/U9/U10 ID 1 AND ML_BK81_Tran ML 500/230kV ck 2	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	100.7	
	OMEC_ALL_Gen OTAYMGT1/GT2/ST1 ID 1 AND ML_BK81_Tran ML 500/230kV ck 2	P3	G-1/N-1	< 100	103.4	101.1	< 100	< 100	< 100	< 100	< 100	105.5	
	PEC_ALL_Gen PEN_CT1/CT2/ST ID 1 AND ML_BK81_Tran ML 500/230kV ck 2	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	101.4	
	TL50003_Line OCO-SCR 500kV ck 1 AND ML_BK81_Tran ML 500/230kV ck 2	P6	N-1-1	122.6	140.3	136.1	106.7	< 100	< 100	126.1	135.0	143.2	
	TL50003+GEN_DROP_RAS_Line OCO-SCR 500kV ck 1 + GEN DROP RAS AND ML_BK81_Tran ML 500/230kV ck 2	P6	N-1-1	< 100	115.2	109.9	< 100	< 100	< 100	101.1	107.6	118.4	
22430 SILVERGT 230 22596 OLD TOWN 230 1 1	TL23028_Line SG-MS-OT 230kV ck 1 AND TL23071_Line SX-PQ 230kV ck 1	P6	N-1-1	101.2	110.0	120.3	114.1	< 100	< 100	< 100	< 100	109.5	Rely on congestion management to protect against Silvergate 230 kV 2T CB stuck breaker (if necessary, the 2-hr emergency rating may also be utilized). Additional system adjustments can be used after the first contingency for P6 events, such as reducing generation output in Otay Mesa, while dispatching battery energy storage in San Diego area connected north of Old Town substation. The use of energy storage is subject to verification that it has sufficient MWh capability and can be fully charged when needed.
22430 SILVERGT 230 22597 OLDTWNTP 230 1 1	SG-2T_SILVERGATE 230 kV 2T CB	P4	Fault + Stuck Breaker	< 100	< 100	100.9	< 100	< 100	< 100	< 100	< 100	< 100	
	TL23029_Line SG-OT 230kV ck 1 AND TL23071_Line SX-PQ 230kV ck 1	P6	N-1-1	< 100	108.6	118.5	113.3	< 100	< 100	< 100	< 100	108.0	
	TL23029_Line SG-OT 230kV ck 1 AND TL50003_Line OCO-SCR 500kV ck 1	P6	N-1-1	< 100	109.1	117.6	111.7	< 100	< 100	< 100	< 100	108.1	
	EA_ALL_Gen EAGEN1U6/U7/U8/U9/U10 ID 1 AND TL23071_Line SX-PQ 230kV ck 1	P3	G-1/N-1	< 100	< 100	103.8	< 100	< 100	< 100	< 100	< 100	< 100	
	EA_ALL_Gen EAGEN1U6/U7/U8/U9/U10 ID 1 AND TL50003_Line OCO-SCR 500kV ck 1	P3	G-1/N-1	< 100	< 100	103.3	< 100	< 100	< 100	< 100	101.0	< 100	

Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2024 Summer Peak Heavy Renewable & Minimum Gas Generation	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	
22430 SILVERGT 230 22771 BAY BLVD 230 1 1	EA_ALL_Gen EAGEN1U6/U7/U8/U9/U10 ID 1 AND TL50003+IV_N-1_RAS_Line OCO-SCR 500kV ck 1 + IV N-1 RAS	P3	G-1/N-1	< 100	< 100	100.5	< 100	< 100	< 100	< 100	< 100	< 100	Rely on congestion management to protect against CB Mission 230KV 5T stuck breaker and P7 contingency of TL23022 and TL23023 (if necessary, the 2-hr emergency rating may also be utilized). Summer Peak overloads can be eliminated by system adjustments after the first contingency for P3 and P6 events, such as reducing generation output in Otay Mesa, while dispatching battery energy storage in San Diego area connected north of Bay Boulevard substation. The use of energy storage is subject to verification that it has sufficient MWh capability and can be fully charged when needed. 2024 Spring Off-Peak sensitivity case overloads can be eliminated by system adjustments after the first contingency for P3 and P6 events, such as curtailing the charging of battery energy storage in San Diego area.
	EA_ALL_Gen EAGEN1U6/U7/U8/U9/U10 ID 1 AND TL50005_Line IV-OCO 500kV ck 1	P3	G-1/N-1	< 100	< 100	101.7	< 100	< 100	< 100	< 100	< 100	< 100	
	PEC_ALL_Gen PEN_CT1/CT2/ST ID 1 AND TL23071_Line SX-PQ 230kV ck 1	P3	G-1/N-1	< 100	< 100	100.4	< 100	< 100	< 100	< 100	< 100	< 100	
	PEC_ALL_Gen PEN_CT1/CT2/ST ID 1 AND TL50003_Line OCO-SCR 500kV ck 1	P3	G-1/N-1	< 100	< 100	102.8	< 100	< 100	< 100	< 100	< 100	< 100	
	PEC_ALL_Gen PEN_CT1/CT2/ST ID 1 AND TL50005_Line IV-OCO 500kV ck 1	P3	G-1/N-1	< 100	< 100	101.0	< 100	< 100	< 100	< 100	< 100	< 100	
	MS-230-5T_CB MISSION 230KV 5T	P4	Fault + Stuck Breaker	< 100	< 100	107.9	< 100	< 100	< 100	< 100	101.1	< 100	
	TL23041_Line SX-OM-ML 230kV ck 1 AND TL50003_Line OCO-SCR 500kV ck 1	P6	N-1-1	< 100	101.8	110.7	< 100	< 100	< 100	< 100	107.9	102.2	
	TL23023_Line ML-MS 230kV ck 2 AND TL50003_Line OCO-SCR 500kV ck 1	P6	N-1-1	< 100	102.0	111.0	< 100	< 100	< 100	< 100	107.1	102.6	
	TL23023_Line ML-MS 230kV ck 2 AND TL23071_Line SX-PQ 230kV ck 1	P6	N-1-1	< 100	101.9	111.9	< 100	< 100	< 100	< 100	104.0	102.9	
	TL23022+23023_Lines ML-MS 230kV ck 1 + ML-MS 230kV ck 2	P7	DCTL	< 100	< 100	107.9	< 100	< 100	< 100	< 100	101.1	< 100	
22464 MIGUEL 230 22466 MLMS3TAP 230 1 1	TL23041_Line SX-OM-ML 230kV ck 1 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	< 100	< 100	107.3	< 100	< 100	< 100	< 100	< 100	< 100	Rely on existing TL23041/TL23042 RAS (if necessary, the 30-min emergency rating may also be utilized). If this is not enough to mitigate the overloads, congestion management and additional system adjustments can be used after the first contingency for P3 and P6 events, such as reducing remaining generation output in Otay Mesa.
22464 MIGUEL 230 22467 MLSXTAP 230 1 1	TL23042_Line BB-OM-ML 230kV ck 1 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	104.6	105.1	132.5	106.7	< 100	< 100	< 100	102.6	106.5	
22609 OTAYMESA 230 22466 MLMS3TAP 230 1 1	TL23041B_TL23041B OTAYMESA-MLSXTAP ckt 1	P2.1	Line Section w/o Fault	< 100	< 100	100.1	< 100	< 100	< 100	< 100	< 100	< 100	
	IV_GEN1_ALL_Gen IV GEN1 STG ID 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P3	G-1/N-1	< 100	< 100	100.1	< 100	< 100	< 100	< 100	< 100	< 100	
	PEC_ALL_Gen PEN_CT1/CT2/ST ID 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P3	G-1/N-1	< 100	< 100	100.0	< 100	< 100	< 100	< 100	< 100	< 100	
	PV_UNIT1_Gen PALOVRD1 ID 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P3	G-1/N-1	< 100	< 100	100.6	< 100	< 100	< 100	< 100	< 100	< 100	
	TL23041_Line SX-OM-ML 230kV ck 1 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	103.9	102.8	135.1	111.1	< 100	< 100	< 100	102.3	103.3	
22609 OTAYMESA 230 22467 MLSXTAP 230 1 1	IV_GEN1_ALL_Gen IV GEN1 STG ID 1 AND TL23042_Line BB-OM-ML 230kV ck 1	P3	G-1/N-1	< 100	< 100	100.0	< 100	< 100	< 100	< 100	< 100	< 100	
	PEC_ALL_Gen PEN_CT1/CT2/ST ID 1 AND TL23042_Line BB-OM-ML 230kV ck 1	P3	G-1/N-1	< 100	< 100	100.1	< 100	< 100	< 100	< 100	< 100	< 100	
	PV_UNIT1_Gen PALOVRD1 ID 1 AND TL23042_Line BB-OM-ML 230kV ck 1	P3	G-1/N-1	< 100	< 100	100.6	< 100	< 100	< 100	< 100	< 100	< 100	
	TL23042_Line BB-OM-ML 230kV ck 1 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	103.0	101.8	134.3	110.5	< 100	< 100	< 100	101.6	102.3	
22500 MISSION 138 22120 CARLTNHS 138 1 1	TL13819_Line LC-SN 138kV ck 1 AND SX_BK60_Tran SX 230/138kV ck 1	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	103.6	< 100	Battery energy storage curtailment after P1 contingency or propose a RAS to trip the battery energy storage (under charging mode) for Q1673 resource.
22832 SYCAMORE 230 22831 SYCAMORE 138 1 1	TL50001_Line ECO-ML 500kV ck 1 AND TL23071_Line SX-PQ 230kV ck 1	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	104.4	< 100	

Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2024 Summer Peak Heavy Renewable & Minimum Gas Generation	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	
19020 BLYTHE 161 21731 VEGA_3_SS 161 1 1	TL50002_Line NG-IV 500kV ck 1	P1	N-1	< 100	< 100	< 100	< 100	< 100	102.3	< 100	< 100	< 100	Rely on congestion management to protect against the loss of TL50002 or IV-500-8022 stuck breaker. Additional system adjustments can be used after the first contingency for P3 events, such as the reduction or curtailment of renewable energy connected at Imperial Valley substation.
	SX BESSG_Gen SX BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	106.9	< 100	< 100	< 100	
	PV_UNIT1_Gen PALOVRD1 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	106.0	< 100	< 100	< 100	
	SG BESSG_Gen SG BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	105.4	< 100	< 100	< 100	
	ES BESS_Gen ES BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	104.9	< 100	< 100	< 100	
	OM_GEN4_Gen OM GEN4_BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	104.8	< 100	< 100	< 100	
	IV-500-8022_CB IMPERIAL VALLEY 500KV 8022	P4	Fault + Stuck Breaker	< 100	< 100	< 100	< 100	< 100	103.3	< 100	< 100	< 100	
21331 ELCENTSW 161 21059 PILOTKNB 161 1 1	TL50002_Line NG-IV 500kV ck 1	P1	N-1	< 100	< 100	< 100	< 100	< 100	126.1	< 100	< 100	< 100	Rely on congestion management to protect against the loss of TL50002 or IV-500-8022 stuck breaker. Additional system adjustments can be used after the first contingency for P3 events, such as the reduction or curtailment of renewable energy connected at Imperial Valley substation.
	PV_UNIT1_Gen PALOVRD1 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	134.0	< 100	< 100	< 100	
	SX BESSG_Gen SX BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	133.1	< 100	< 100	< 100	
	SG BESSG_Gen SG BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	130.9	< 100	< 100	< 100	
	ES BESS_Gen ES BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	130.0	< 100	< 100	< 100	
	OM_GEN4_Gen OM GEN4_BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	129.9	< 100	< 100	< 100	
	CP BESSG_Gen CP BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	129.1	< 100	< 100	< 100	
	VC GEN _Gen VC GEN1/GEN2 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	128.3	< 100	< 100	< 100	
	OCO_GEN1_Gen OCO GEN ID G1/G2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	124.0	< 100	< 100	< 100	
	DW GEN5_Gen DW GEN5 ID G1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	122.5	< 100	< 100	< 100	
	IV_GEN3_Gen IV GEN3 ID G1/G2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	121.7	< 100	< 100	< 100	
	DW GEN1_Gen DW GEN1 ID G1/G2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	121.5	< 100	< 100	< 100	
	DU_GEN1_Gen DU GEN1 ID G1/G2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	121.1	< 100	< 100	< 100	
	DW GEN6_Gen DW GEN6 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	120.8	< 100	< 100	< 100	
	ECO W _Gen ECO W1/W2 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	120.8	< 100	< 100	< 100	
	DW GEN3_Gen DW GEN3 ID 1/2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	120.1	< 100	< 100	< 100	
	DW GEN2_Gen DW GEN2 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	118.8	< 100	< 100	< 100	
	DW GEN4_Gen DW GEN2 ID 1/2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	117.2	< 100	< 100	< 100	
	IV PVG _Gen IV PV ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	115.3	< 100	< 100	< 100	
	IV-500-8022_CB IMPERIAL VALLEY 500KV 8022	P4	Fault + Stuck Breaker	< 100	< 100	< 100	< 100	< 100	127.6	< 100	< 100	< 100	

Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2024 Summer Peak Heavy Renewable & Minimum Gas Generation	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	
21072 YUCCA161 161 21059 PILOTKNB 161 1 1	TL50002_Line NG-IV 500kV ck 1	P1	N-1	< 100	< 100	< 100	< 100	< 100	106.3	< 100	< 100	< 100	Rely on congestion management to protect against the loss of TL50002 or IV-500-8022 stuck breaker. Additional system adjustments can be used after the first contingency for P3 events, such as the reduction or curtailment of renewable energy connected at Imperial Valley substation.
	PV_UNIT1_Gen PALOVRD1 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	114.2	< 100	< 100	< 100	
	SX BESSG_Gen SX BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	110.6	< 100	< 100	< 100	
	SG BESSG_Gen SG BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	109.3	< 100	< 100	< 100	
	ES BESS_Gen ES BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	108.8	< 100	< 100	< 100	
	OM_GEN4_Gen OM GEN4_BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	108.6	< 100	< 100	< 100	
	DW GEN5_Gen DW GEN5 ID G1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	104.1	< 100	< 100	< 100	
	IV_GEN3_Gen IV GEN3 ID G1/G2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	103.6	< 100	< 100	< 100	
	DW GEN1_Gen DW GEN1 ID G1/G2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	103.5	< 100	< 100	< 100	
	DU_GEN1_Gen DU GEN1 ID G1/G2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	103.2	< 100	< 100	< 100	
	DW GEN6_Gen DW GEN6 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	103.1	< 100	< 100	< 100	
	ECO W _Gen ECO W1/W2 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	103.0	< 100	< 100	< 100	
	DW GEN3_Gen DW GEN3 ID 1/2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	102.6	< 100	< 100	< 100	
	DW GEN2_Gen DW GEN2 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	101.8	< 100	< 100	< 100	
	DW GEN4_Gen DW GEN2 ID 1/2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	100.9	< 100	< 100	< 100	
	IV-500-8022_CB IMPERIAL VALLEY 500KV 8022	P4	Fault + Stuck Breaker	< 100	< 100	< 100	< 100	< 100	107.2	< 100	< 100	< 100	
	TL50002_Line NG-IV 500kV ck 1	P1	N-1	< 100	< 100	< 100	< 100	< 100	109.5	< 100	< 100	< 100	
	PV_UNIT1_Gen PALOVRD1 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	115.8	< 100	< 100	< 100	
	SX BESSG_Gen SX BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	113.0	< 100	< 100	< 100	
	SG BESSG_Gen SG BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	111.9	< 100	< 100	< 100	
	ES BESS_Gen ES BESS ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	111.5	< 100	< 100	< 100	
	IV_GEN3_Gen IV GEN3 ID G1/G2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	107.3	< 100	< 100	< 100	

Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2024 Summer Peak Heavy Renewable & Minimum Gas Generation	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	
21072 YUCCA161 161 84846 YUCCA W 69.0 1 1	DW GEN1_Gen DW GEN1 ID G1/G2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	107.2	< 100	< 100	< 100	Rely on congestion management to protect against the loss of TL50002 or IV-500-8022 stuck breaker. Additional system adjustments can be used after the first contingency for P3 events, such as the reduction or curtailment of renewable energy connected at Imperial Valley substation.
	DU_GEN1_Gen DU GEN1 ID G1/G2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	106.9	< 100	< 100	< 100	
	DW GEN6_Gen DW GEN6 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	106.8	< 100	< 100	< 100	
	ECO W _Gen ECO W1/W2 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	106.7	< 100	< 100	< 100	
	DW GEN3_Gen DW GEN3 ID 1/2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	106.4	< 100	< 100	< 100	
	DW GEN2_Gen DW GEN2 ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	105.7	< 100	< 100	< 100	
	DW GEN4_Gen DW GEN2 ID 1/2 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	104.9	< 100	< 100	< 100	
	IV PVG _Gen IV PV ID 1 AND TL50002_Line NG-IV 500kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	103.9	< 100	< 100	< 100	
	IV-500-8022_CB IMPERIAL VALLEY 500KV 8022	P4	Fault + Stuck Breaker	< 100	< 100	< 100	< 100	< 100	110.2	< 100	< 100	< 100	
	HAA-NG_Line HAA-NG 500kV ck 1 AND HAA-HDWSH_HASSYAMP to HDWSH 500 ck 1	P6	N-1-1	< 100	105.3	< 100	< 100	< 100	< 100	< 100	< 100	107.6	Rely on system adjustments after the first contingency of the P6 event, such as dispatching battery energy storage connected at the Imperial Valley substation. The use of energy storage is subject to verification that it has sufficient MWh capability and can be fully charged when needed.
20017 MEP-230 230 20238 HRA-230 230 1 1	TL23042_Line BB-OM-ML 230kV ck 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P6	N-1-1	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	144.9	< 100	Use of existing 230 kV Otay Mesa Gen Drop RAS or rely on congestion management after the first contingency for the P6 events.
	TL23041+23042_Lines SX-OM-ML 230kV ck 1 + BB-OM-ML 230kV ck 1	P7	DCTL	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	145.0	< 100	
20017 MEP-230 230 20392 TOY-230 230 1 1	TL23042_Line BB-OM-ML 230kV ck 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P6	N-1-1	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	125.1	< 100	
	TL23041+23042_Lines SX-OM-ML 230kV ck 1 + BB-OM-ML 230kV ck 1	P7	DCTL	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	125.2	< 100	
20238 HRA-230 230 20392 TOY-230 230 1 1	TL23042_Line BB-OM-ML 230kV ck 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P6	N-1-1	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	123.2	< 100	Use of existing 230 kV Otay Mesa Gen Drop RAS or rely on congestion management after the first contingency for the P6 events.
	TL23041+23042_Lines SX-OM-ML 230kV ck 1 + BB-OM-ML 230kV ck 1	P7	DCTL	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	123.2	< 100	
20102 RUM-230 230 20118 ROA-230 230 1 1	ROA-HRA_ROA-230 to HRA-230 ck 1	P1	N-1	< 100	< 100	< 100	< 100	136.5	< 100	< 100	< 100	< 100	For the 2024 Summer Peak Base and Sensitivity Cases, rely on existing TL50001 Gen Drop RAS or system adjustments after the first contingency of CENACE's TL La Rosita - Herradura ckt 1 or ckt 2, such as adjusting Imperial Valley phase shifting transformers or reducing generation output in the greater Imperial Valley area as needed to limit southbound flow from SDGE to CENACE through TL23050 (Imperial Valley - La Rosita). Since the WECC Seed Case used for the 2027 Spring Off-Peak Base Case is the WECC 2024 Light Spring 1 Case, it doesn't include TL La Rosita - Herradura ckt 2, which is included in the WECC 2025 Heavy Summer 3 Case used for the 2024 Summer Peak Base Case. Thus, overloads for the 2027 Spring Off-Peak Base Case will not be present if TL La Rosita - Herradura ckt 2 is in operation.
	TL50001_Line ECO-ML 500kV ck 1	P1	N-1	< 100	< 100	< 100	< 100	112.4	< 100	< 100	< 100	< 100	
	TL50004_Line IV-ECO 500kV ck 1	P1	N-1	< 100	< 100	< 100	< 100	109.4	< 100	< 100	< 100	< 100	
	ECO-4T_ECO 4T BK83 & TL50004	P4	Fault + Stuck Breaker	< 100	< 100	< 100	< 100	111.3	< 100	< 100	< 100	< 100	
	IV-500-8022_CB IMPERIAL VALLEY 500KV 8022	P4	Fault + Stuck Breaker	< 100	< 100	< 100	< 100	105.3	< 100	< 100	< 100	< 100	
	IV-500-8032_CB IMPERIAL VALLEY 500KV 8032	P4	Fault + Stuck Breaker	< 100	< 100	< 100	< 100	111.3	< 100	< 100	< 100	< 100	
	ML7013_ML 7013 CB - BK 80&81	P4	Fault + Stuck Breaker	< 100	< 100	< 100	< 100	112.4	< 100	< 100	< 100	< 100	
	ML8013_ML 8013 CB - BK 80&TL50001	P4	Fault + Stuck Breaker	< 100	< 100	< 100	< 100	112.6	< 100	< 100	< 100	< 100	
	ML8023_ML 8023 CB - BK 81&TL50001	P4	Fault + Stuck Breaker	< 100	< 100	< 100	< 100	112.5	< 100	< 100	< 100	< 100	
	OCO-1E_OCO 1E TL50003 & TL50005	P4	Fault + Stuck Breaker	< 100	< 100	< 100	< 100	104.6	< 100	< 100	< 100	< 100	

Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2024 Summer Peak Heavy Renewable & Minimum Gas Generation	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	
	OCO-2T_OCO 2T TL50003 & TL50006	P4	Fault + Stuck Breaker	< 100	< 100	< 100	< 100	104.6	< 100	< 100	< 100	< 100	
	SCR-2T_SUNCREST 2T BK81 & TL50003	P4	Fault + Stuck Breaker	< 100	< 100	< 100	< 100	105.0	< 100	< 100	< 100	< 100	
	ROA-HRA_ROA-230 to HRA-230 ck 1 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	< 100	< 100	< 100	< 100	171.9	< 100	100.5	< 100	< 100	
	ROA-HRA2_ROA-230 to HRA-230 ck 2 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	109.7	< 100	< 100	< 100	< 100	< 100	111.5	< 100	< 100	
	TL23082_Line IV-IV PST 230kV ck 1 OR TL23050_Line IV PST-ROA 230kV ck 1 AND ROA-HRA_ROA-230 to HRA-230 ck 1	P6	N-1-1	< 100	< 100	< 100	110.5	105.6	< 100	< 100	110.4	< 100	CENACE would need to rely on system adjustments in their system after the first contingency for P6 events of TL's 23082/23050 Imperial Valley - La Rosita and TL La Rosita - Herradura ckt 1 even if TL 23040 Otay Mesa - Tijuana is disconnected.
	TL23042_Line BB-OM-ML 230kV ck 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P6	N-1-1	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	144.1	< 100	Use of existing 230 kV Otay Mesa Gen Drop RAS or rely on congestion management after the first contingency for the P6 events.
	TL23041+23042_Lines SX-OM-ML 230kV ck 1 + BB-OM-ML 230kV ck 1	P7	DCTL	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	144.2	< 100	
20238 HRA-230 230 20102 RUM-230 230 1 1	ROA-HRA_ROA-230 to HRA-230 ck 1	P1	N-1	< 100	< 100	< 100	< 100	115.2	< 100	< 100	< 100	< 100	For the 2024 and 2027 Summer Peak Base and Sensitivity Cases, rely on existing TL50001 Gen Drop RAS or system adjustments after the first contingency of CENACE's TL La Rosita - Herradura ckt 2 or TL 50003 Ocotillo - Suncrest, such as adjusting Imperial Valley phase shifting transformers or reducing generation output in the greater Imperial Valley area as needed to limit southbound flow from SDGE to CENACE through TL23050 (Imperial Valley - La Rosita).
	ROA-HRA_ROA-230 to HRA-230 ck 1 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	< 100	< 100	< 100	< 100	150.1	< 100	< 100	< 100	< 100	
	ROA-HRA2_ROA-230 to HRA-230 ck 2 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	103.3	< 100	< 100	< 100	< 100	< 100	105.1	< 100	< 100	Since the WECC Seed Case used for the 2027 Spring Off-Peak Base Case is the WECC 2024 Light Spring 1 Case, it doesn't include TL La Rosita - Herradura ckt 2, which is included in the WECC 2025 Heavy Summer 3 Case used for the 2024 Summer Peak Base Case. Thus, overloads for the 2027 Spring Off-Peak Base Case will not be present if TL La Rosita - Herradura ckt 2 is in operation.
	TL50003_Line OCO-SCR 500kV ck 1 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	100.7	< 100	< 100	< 100	117.4	< 100	101.4	< 100	100.6	
	TL23082_Line IV-IV PST 230kV ck 1 OR TL23050_Line IV PST-ROA 230kV ck 1 AND ROA-HRA_ROA-230 to HRA-230 ck 1	P6	N-1-1	< 100	< 100	< 100	123.2	< 100	< 100	< 100	123.1	< 100	CENACE would need to rely on system adjustments in their system after the first contingency for P6 events of TL's 23082/23050 Imperial Valley - La Rosita and TL La Rosita - Herradura ckt 1 even if TL 23040 Otay Mesa - Tijuana is disconnected.
	TL23042_Line BB-OM-ML 230kV ck 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P6	N-1-1	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	157.4	< 100	Use of existing 230 kV Otay Mesa Gen Drop RAS or rely on congestion management after the first contingency for the P6 events.
	TL23041+23042_Lines SX-OM-ML 230kV ck 1 + BB-OM-ML 230kV ck 1	P7	DCTL	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	157.6	< 100	
20238 HRA-230 230 20118 ROA-230 230 1 1	ROA-RUM_ROA-230 to RUM-230 ck 1	P1	N-1	< 100	< 100	< 100	< 100	128.4	< 100	< 100	< 100	< 100	For the 2024 Summer Peak Base and Sensitivity Cases, rely on existing TL50001 Gen Drop RAS or system adjustments after the first contingency of CENACE's TL La Rosita - Herradura ckt 2, such as adjusting Imperial Valley phase shifting transformers or reducing generation output in the greater Imperial Valley area as needed to limit southbound flow from SDGE to CENACE through TL23050 (Imperial Valley - La Rosita).
	RUM-HRA_RUM-230 to HRA-230 ck 1	P1	N-1	< 100	< 100	< 100	< 100	119.2	< 100	< 100	< 100	< 100	
	ROA-RUM_ROA-230 to RUM-230 ck 1 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	< 100	< 100	< 100	< 100	164.6	< 100	< 100	< 100	< 100	Since the WECC Seed Case used for the 2027 Spring Off-Peak Base Case is the WECC 2024 Light Spring 1 Case, it doesn't include TL La Rosita - Herradura ckt 2, which is included in the WECC 2025 Heavy Summer 3 Case used for the 2024 Summer Peak Base Case. Thus, overloads for the 2027 Spring Off-Peak Base Case will not be present if TL La Rosita - Herradura ckt 2 is in operation.
	ROA-HRA2_ROA-230 to HRA-230 ck 2 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	106.5	< 100	< 100	< 100	< 100	< 100	108.3	< 100	< 100	

Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2024 Summer Peak Heavy Renewable & Minimum Gas Generation	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	
	TL23082_Line IV-IV PST 230kV ck 1 OR TL23050_Line IV PST-ROA 230kV ck 1 AND ROA-HRA_ROA-230 to HRA-230 ck 1	P6	N-1-1	< 100	< 100	< 100	123.0	< 100	< 100	< 100	122.9	< 100	CENACE would need to rely on system adjustments in their system after the first contingency for P6 events of TL's 23082/23050 Imperial Valley - La Rosita and TL La Rosita - Herradura ckt 1 even if TL 23040 Otay Mesa - Tijuana is disconnected.
	TL23042_Line BB-OM-ML 230kV ck 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P6	N-1-1	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	156.7	< 100	Use of existing 230 kV Otay Mesa Gen Drop RAS or rely on congestion management after the first contingency for the P6 events.
	TL23041+23042_Lines SX-OM-ML 230kV ck 1 + BB-OM-ML 230kV ck 1	P7	DCTL	< 100	< 100	< 100	Diverge	< 100	< 100	< 100	156.9	< 100	
22609 OTAYMESA 230 20149 TJI-230 230 1 1	TL23042_Line BB-OM-ML 230kV ck 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P6	N-1-1	102.2	< 100	102.4	Diverge	< 100	< 100	< 100	< 100	< 100	Use of existing 230 kV Otay Mesa Gen Drop RAS or rely on congestion management after the first contingency for the P6 events.
	TL23041+23042_Lines SX-OM-ML 230kV ck 1 + BB-OM-ML 230kV ck 1	P7	DCTL	102.2	< 100	102.4	Diverge	< 100	< 100	< 100	< 100	< 100	
	TL50003_Line OCO-SCR 500kV ck 1 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	< 100	103.0	144.9	< 100	< 100	< 100	< 100	108.8	105.0	Rely on existing TL50003 Gen Drop RAS or TL50001 Gen Drop RAS. If this is not enough to mitigate the overloads, congestion management and additional system adjustments can be used after the first contingency for the P6 events, such as reducing generation output in the greater Imperial Valley area while dispatching conventional gas units, preferred resources, and battery energy storage in the San Diego area, and adjusting the Imperial Valley phase shifting transformers if needed. The use of energy storage is subject to verification that it has sufficient MWh capability and can be fully charged when needed.
22356 IMPRLVLY 230 22357 IV PFC1 230 1 1	TL50003_Line OCO-SCR 500kV ck 1 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	< 100	< 100	109.5	< 100	< 100	< 100	< 100	< 100	< 100	
22357 IV PFC1 230 22358 IV PFC 230 1 1	TL50003_Line OCO-SCR 500kV ck 1 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	110.9	< 100	124.9	< 100	< 100	< 100	110.3	101.3	< 100	
22357 IV PFC1 230 22358 IV PFC 230 2 1	TL50003_Line OCO-SCR 500kV ck 1 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	110.9	< 100	124.9	< 100	< 100	< 100	110.3	101.8	< 100	
22358 IV PFC 230 20118 ROA-230 230 1 1	TL50003_Line OCO-SCR 500kV ck 1 AND TL50001_Line ECO-ML 500kV ck 1	P6	N-1-1	< 100	< 100	109.5	< 100	< 100	< 100	< 100	< 100	< 100	
22024 B 69.0 22420 SILVERGT 69.0 1 1	Bus_OT230_NS_Old Town 230kV N+S Bus	P5	Non-Redundant Relay	100.6	102.7	117.8	< 100	< 100	< 100	< 100	< 100	105.5	Add redundancy to protection systems.
22380 KETTNER 69.0 22024 B 69.0 1 1	Bus_OT230_NS_Old Town 230kV N+S Bus	P5	Non-Redundant Relay	108.9	112.7	132.2	< 100	< 100	< 100	< 100	< 100	116.4	
22420 SILVERGT 69.0 22868 URBAN 69.0 1 1	Bus_OT230_NS_Old Town 230kV N+S Bus	P5	Non-Redundant Relay	< 100	< 100	114.1	< 100	< 100	< 100	< 100	< 100	102.1	
22556 NAVSTMTR 69.0 22824 SWTWTRTP 69.0 1 1	Bus_SG230_SILVERGATE-SG 230kV Bus	P5	Non-Redundant Relay	101.0	103.9	< 100	< 100	< 100	< 100	< 100	< 100	105.8	Add redundancy to protection systems to mitigate overloads for 2024 and 2027 Summer Peak Base Cases. Sweetwater Reliability Enhancement project (December 2027) would also help mitigate these overloads.
22820 SWEETWTR 69.0 22824 SWTWTRTP 69.0 1 1	Bus_SG230_SILVERGATE-SG 230kV Bus	P5	Non-Redundant Relay	106.8	110.2	< 100	< 100	< 100	< 100	< 100	< 100	112.3	
22046 BASILONE 69.0 22848 TALEGATP 69.0 1 1	TL23052_TALEGA - S.ONOFRE ck 1 AND TL23007_TL23007 CAPSTRNO - SONGS ck 1	P6	N-1-1	< 100	< 100	< 100	107.2	< 100	< 100	< 100	193.8	< 100	TL695B Japanese Mesa-Talega Tap Reconductor project (December 2024).
22808 STUARTTP 69.0 22400 LASPULGS 69.0 1 1	TL23052_TALEGA - S.ONOFRE ck 1 AND TL23007_TL23007 CAPSTRNO - SONGS ck 1	P6	N-1-1	151.3	< 100	< 100	102.5	< 100	< 100	< 100	167.8	< 100	TL690E, Stuart Tap-Las Pulgas 69 kV Reconductor project (March 2026).
22208 EL CAJON 69.0 22408 LOSCOCHS 69.0 1 1	TL632_TL632 GR-LC ck 2	P1	N-1	< 100	< 100	< 100	< 100	< 100	< 100	115.2	< 100	< 100	Rely on pre-contingency congestion management by dispatching an El Cajon gas fired unit.
	KU_GEN_Gen KUMEYAAY ID 1 AND TL632_TL632 GR-LC ck 2	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	108.7	< 100	< 100	
	EC GEN1_Gen EC GEN1 ID 1 AND TL632_TL632 GR-LC ck 2	P3	G-1/N-1	106.1	108.0	< 100	< 100	< 100	< 100	< 100	< 100	113.7	Rely on system adjustments after the first contingency for the P3 events by dispatching El Cajon and Q1047 battery energy storage. The use of energy storage is subject to verification that it has sufficient MWh capability and can be fully charged when needed. TL632 Granite Loop-In and TL6914 Reconfiguration project (November 2028) mitigates the overloads in the long-term.
	EC GEN2_Gen EC GEN2 ID 1 AND TL632_TL632 GR-LC ck 2	P3	G-1/N-1	106.5	107.3	< 100	< 100	< 100	< 100	< 100	< 100	112.9	
22604 OTAY 69.0 22616 OTAYLKTP 69.0 1 1	TL0649D_TL0649D OTAYLKTP-SANYSDRO ck 1	P2.1	Line Section w/o Fault	102.0	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	Rely on existing TL649 RAS to curtail Border gas generation unit 3.
22740 SANYSDRO 69.0 22616 OTAYLKTP 69.0 1 1	TL623_Line OY-IB-SYO 69kV ck 1	P1	N-1	102.8	< 100	111.2	< 100	< 100	< 100	< 100	< 100	103.4	
	TL6910_Line BD-SLT 69kV ck 1	P1	N-1	101.0	< 100	100.6	< 100	< 100	< 100	< 100	< 100	< 100	

Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2024 Summer Peak Heavy Renewable & Minimum Gas Generation	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	
[illegible]	TL0623A_TL0623A OTAY-OTAY TP ck 1	P2.1	Line Section w/o Fault	104.1	101.1	108.7	< 100	< 100	< 100	< 100	< 100	103.9	Model the ISO approved "Reconductor TL649D and TL623C (San Ysidro - Otay Lake Tap - Otay)".
	TL0623C_TL0623C OTAY TP-SANYSDRO ck 1	P2.1	Line Section w/o Fault	102.8	< 100	111.2	< 100	< 100	< 100	< 100	< 100	103.4	
22740 SANYSDRO 69.0 22608 OTAY TP 69.0 1 1	TL649_Line OY-OL-SYO-BD 69kV ck 1	P1	N-1	103.4	< 100	111.6	< 100	< 100	< 100	< 100	< 100	103.9	
	TL0649D_TL0649D OTAYLKTP-SANYSDRO ck 1	P2.1	Line Section w/o Fault	103.4	< 100	111.7	< 100	< 100	< 100	< 100	< 100	103.9	
22688 RINCON 69.0 22404 LILAC 69.0 1 1	TL681_Line AS-VC-FE 69kV ck 1	P1	N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	103.5	< 100	
	TL0681B_TL0681B ASH TP-VALCNTR ck 1	P2.1	Line Section w/o Fault	< 100	< 100	< 100	< 100	< 100	< 100	< 100	103.5	< 100	
	PA_GEN1_Gen PA GEN1 ID 1 AND TL681_Line AS-VC-FE 69kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	100.8	< 100	
	PA_GEN2_Gen PA GEN2 ID 1 AND TL681_Line AS-VC-FE 69kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	100.8	< 100	
22688 RINCON 69.0 22870 VALCNTR 69.0 1 1	TL681_Line AS-VC-FE 69kV ck 1	P1	N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	120.4	< 100	
	TL0681B_TL0681B ASH TP-VALCNTR ck 1	P2.1	Line Section w/o Fault	< 100	< 100	< 100	< 100	< 100	< 100	< 100	120.4	< 100	
22870 VALCNTR 69.0 22012 ASH TP 69.0 1 1	TL683_Line RIN-LI 69kV ck 1	P1	N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	118.1	< 100	Use Valley Center RAS to trip the battery energy storage (under charging mode) at Valley Center and congestion management to protect against the overloading of TL683 Rincon - Lilac which currently is not monitored by the RAS.
	TL6926_Line RIN-VC 69kV ck 1	P1	N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	119.0	< 100	
	PA_GEN1_Gen PA GEN1 ID 1 AND TL637_Line ST-CRE 69kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	106.7	< 100	
	PA_GEN1_Gen PA GEN1 ID 1 AND TL685_Line WR-ST 69kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	103.1	< 100	
	PA_GEN1_Gen PA GEN1 ID 1 AND TL688_Line ES-LI 69kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	110.1	< 100	
	PA_GEN2_Gen PA GEN2 ID 1 AND TL637_Line ST-CRE 69kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	106.7	< 100	
	PA_GEN2_Gen PA GEN2 ID 1 AND TL685_Line WR-ST 69kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	103.1	< 100	
	PA_GEN2_Gen PA GEN2 ID 1 AND TL688_Line ES-LI 69kV ck 1	P3	G-1/N-1	< 100	< 100	< 100	< 100	< 100	< 100	< 100	110.1	< 100	

Substation	Contingency (All and Worst P6)	Category	Category Description	High/Low Voltage	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
					2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2024 Summer Peak Heavy Renewable & Minimum Gas Generation	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	
RUM-230 230 kV	TL23042_Line BB-OM-ML 230kV ck 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P6	N-1-1	Low	0.9 < V < 1.1	0.9 < V < 1.1	0.9 < V < 1.1	Diverge	0.9 < V < 1.1	0.9 < V < 1.1	0.9 < V < 1.1	0.88	0.9 < V < 1.1	Use of existing 230 kV Otay Mesa Gen Drop RAS or rely on congestion management after the first contingency for the P6 events.
	TL23041+23042_Lines SX-OM-ML 230kV ck 1 + BB-OM-ML 230kV ck 1	P7	DCTL	Low	0.9 < V < 1.1	0.9 < V < 1.1	0.9 < V < 1.1	Diverge	0.9 < V < 1.1	0.9 < V < 1.1	0.9 < V < 1.1	0.88	0.9 < V < 1.1	

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
				2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2024 Summer Peak Heavy Renewable & Minimum Gas Generation	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	
HRA-230 230 kV	TL23042_Line BB-OM-ML 230kV ck 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P6	N-1-1	< 8	< 8	< 8	Diverge	< 8	< 8	< 8	10.17	< 8	Use of existing 230 kV Otay Mesa Gen Drop RAS or rely on congestion management after the first contingency for the P6 events.
	TL23041+23042_Lines SX-OM-ML 230kV ck 1 + BB-OM-ML 230kV ck 1	P7	DCTL	< 8	< 8	< 8	Diverge	< 8	< 8	< 8	10.20	< 8	
RUM-230 230 kV	TL23042_Line BB-OM-ML 230kV ck 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P6	N-1-1	< 8	< 8	< 8	Diverge	< 8	< 8	< 8	11.34	< 8	
	TL23041+23042_Lines SX-OM-ML 230kV ck 1 + BB-OM-ML 230kV ck 1	P7	DCTL	< 8	< 8	< 8	Diverge	< 8	< 8	< 8	11.42	< 8	
TOY-230 230 kV	TL23042_Line BB-OM-ML 230kV ck 1 AND TL23041_Line SX-OM-ML 230kV ck 1	P6	N-1-1	< 8	< 8	< 8	Diverge	< 8	< 8	< 8	9.12	< 8	
	TL23041+23042_Lines SX-OM-ML 230kV ck 1 + BB-OM-ML 230kV ck 1	P7	DCTL	< 8	< 8	< 8	Diverge	< 8	< 8	< 8	9.14	< 8	

Contingency	Category	Category Description	Transient Stability Performance						Potential Mitigation Solutions
			Baseline Scenarios				Sensitivity Scenarios		
			2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2032 Spring Off-Peak	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	
SLO Fault at DEVERS 500, trip DEVERS to VALLEYSC 500kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SLO Fault at PALO VERDE 500kV, trip PALO VERDE to COLRIVER 500kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
3PH Fault at IV 500kV, trip IMPRLVLY to ECO 500kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
3PH Fault at IV 500kV, trip IMPRLVLY to N.GILA 500kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SLO 3PH Fault at HAA 500kV, trip HAA - HDWSH 500kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SLO 3PH Fault at NG 500kV, trip NG - HAA 500kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SLO 3PH Fault at HDWSH 500kV, trip HDWSH-NG 500kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SLO at MIGUEL 500kV, trip MIGUEL to ECO 500kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
3PH Fault at IV 500kV, trip IMPRLVLY to OCOTILLO 500kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SLO Fault at PEN 230KV, trip PEN to ES 230kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
3PH Fault at PQ 230kV, trip PQ to OLD TOWN 230kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
3PH Fault at SANLUSRY 230kV, trip SA to EA 230kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
3PH Fault at TALEGA 230kV, trip S.ONOFRE to TALEGA 230kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SLO Fault at PQ 230kV, trip PQ to SX 230kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
3PH Fault at SILVERGT 230kV, trip SILVERGT to BAY BLVD 230kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SLO Fault at IV 230kV, trip IMPRLVLY PFC to ROA 230kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SLO Fault at TA 230kV, trip TA-ESC-CP 230kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
3PH Fault at MIGUEL 230, trip MIGUEL to BAY BLVD to OTAY MESA 230kV	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
3PH Fault at OLD TOWN 230kV, trip OT-MS-SG 500kV ck 1	P1	N-1	No issues	No issues	No issues	No issues	No issues	No issues	No violation
3PH Fault at ML230, trip ML230 bus	P2	Bus	No issues	No issues	No issues	No issues	No issues	No issues	No violation
BQ-138 Bus BATIQUITOS 138kV E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
BUE-138 BUS BUE 138kV N+S	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
CAN-138 BUS CANNON 138kV E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
CP-138 Bus CAPISTRANO 138kV N+S	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
ECO-138 BUS EAST COUNTY 138kv E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
FR-138 BUS FRIARS 138kV E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
GHL-138 BUS GRANT HILL 138kV N+S	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
MS-230 Bus MISSION 230kV N+S	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
MS-138 Bus MISSION 138kV N+S	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
PAR-138 BUS PALOMAR AIRPORT 138kV E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
PEN-230 BUS PALOMAR ENERGY 230kV E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation

Contingency	Category	Category Description	Transient Stability Performance						Potential Mitigation Solutions
			Baseline Scenarios				Sensitivity Scenarios		
			2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2032 Spring Off-Peak	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	
PI-138 BUS PICO 138kV E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
PV-138 BUS PROCTAR VALLEY 138kV E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
RMV-138 BUS RANCHO MISSION VIEJO 138kV E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SA-230 BUS SAN LUIS REY 230KV E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SN-138 BUS SANTEE 138kV E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SH-138 BUS SHADOW RIDGE 138kV E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SG-230 BUS SILVERGATE 230KV E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
SX-138 BUS SYCAMORE CANYON 138kV N+S	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
TA-138 BUS TALEGA 138kV E+W	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
TC-138 BUS TELEGRAPH CANYON 138kV N+S	P5.5	Non-Redundant Relay	No issues	No issues	No issues	No issues	No issues	No issues	No violation
3PH Fault at MIGUEL 230, trip both lines MIGUEL to MISSION 230kV	P7	DCTL	No issues	No issues	No issues	No issues	No issues	No issues	No violation
DLO Fault at SANLUSRY 230, trip TL23002 AND TL23006 SANLUSRY to S.ONOFRE 230kV	P7	DCTL	No issues	No issues	No issues	No issues	No issues	No issues	No violation
DLO Fault at S.ONOFRE 230, trip SO-SANTIAGO 230kV	P7	DCTL	No issues	No issues	No issues	No issues	No issues	No issues	No violation
3PH Fault at SANLUSRY 230kV, trip SANLUSRY to MISSION 230kV 1 & 2	P7	DCTL	No issues	No issues	No issues	No issues	No issues	No issues	No violation
Fault at OTAYMESA 230kV, trip TL23041 AND TL23042	P7	DCTL	No issues	No issues	No issues	No issues	No issues	No issues	No violation
DLO Fault at MIGUEL 230, trip MIGUEL to SYCAMORE and MIGUEL to SYCAMORE to OTAYMESA 230kV	P7	DCTL	No issues	No issues	No issues	No issues	No issues	No issues	No violation
DLO Fault at SANLUSRY 230kV, trip SA-EA AND SA-EATAP 230kV	P7	DCTL	No issues	No issues	No issues	No issues	No issues	No issues	No violation
DLO Fault at PEN230, trip PEN-AR 230kV AND PEN-ENCINATP 230kV	P7	DCTL	No issues	No issues	No issues	No issues	No issues	No issues	No violation

Worst Contingency	Category	Category Description	Amount of Load Drop (MW)									Potential Mitigation Solutions
			2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2024 Summer Peak Heavy Renewable & Minimum Gas Generation	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	

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

Substation	Load Served (MW)									Potential Mitigation Solutions
	2024 Summer Peak	2027 Summer Peak	2032 Summer Peak	2024 Spring Off-Peak	2027 Spring Off-Peak	2032 Spring Off-Peak	2024 Summer Peak Heavy Renewable & Minimum Gas Generation	2024 Spring Off-Peak Storage charging in load pockets	2027 Summer Peak High CEC forecasted load	

No single source substation with more than 100 MW