

Study Area: Valley Electric Association  
Thermal Overloads



Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2023 Summer Peak	2026 Summer Peak	2031 Summer Peak	2023 Spring Off-Peak	2026 Spring Off-Peak	2031 Spring Off-Peak	2023 SP with Forecasted Load Addition	2026 SP with Forecasted Load Addition	2023 OP Heavy Renewable & Min Gas Gen	
Amargosa 230/138kV transformer	Base Case	P0	Base Case	<100	<100	<100	<100	<100	109.11	<100	<100	<100	Generation redispatch precontingency; RAS proposed in GIDAP process; will evaluate further in policy study for potential upgrade
	NWEST 230.0 to DESERT VIEW 230.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	251.24	<100	<100	<100	
	SLOAN_CANYON230-kV BRKR	P4	Stuck Breaker	<100	<100	<100	<100	<100	164.31	<100	<100	<100	
Northwest - Desert View 230kV line	Base Case	P0	Base Case	<100	<100	<100	<100	<100	109.26	<100	<100	<100	
	TROUT CANYON 230.0 to SLOAN CANYON 230.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	109.46	<100	<100	<100	
	SLOAN_CANYON230-kV BRKR	P4	Stuck Breaker	<100	<100	<100	<100	<100	109.42	<100	<100	<100	
Mercury SW - IS Tap 138kV line	Base Case	P0	Base Case	<100	<100	<100	<100	<100	135.37	<100	<100	<100	
	NWEST 230.0 to DESERT VIEW 230.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	432.03	<100	<100	<100	
	TROUT CANYON 230.0 to SLOAN CANYON 230.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	184.41	<100	<100	<100	
	SLOAN CANYON 230-kV Bus Fault	P4	Stuck Breaker	<100	<100	<100	<100	<100	184.36	<100	<100	<100	
Pahrump - Innovation 230kV line	NWEST 230.0 to DESERT VIEW 230.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	104.32	<100	<100	<100	
Pahrump - Gamebird 230kV line	NWEST 230.0 to DESERT VIEW 230.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	102.66	<100	<100	<100	
Amargosa - Sandy - Gamebird 138kV line	NWEST 230.0 to DESERT VIEW 230.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	177.36	<100	<100	<100	
Innovation 230/138kV transformer	NWEST 230.0 to DESERT VIEW 230.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	180.82	<100	<100	<100	
	INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	119.43	<100	<100	<100	
Innovation - Desert View 230kV line	Base Case	P0	Base Case	<100	<100	<100	<100	<100	123.84	<100	<100	<100	
	IS TAP 138.0 to MERCRYSW 138.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	100.31	<100	<100	<100	
	TROUT CANYON 230.0 to SLOAN CANYON 230.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	124.68	<100	<100	<100	
	P4-2-10_SLOAN_CANYON230-kV BRKR	P4	Stuck Breaker	<100	<100	<100	<100	<100	124.53	<100	<100	<100	
Innovation - Mercury SW 138kV	line_1_Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	115.18	<100	<100	<100	
Trout Canyon - Sloan Canyon 230kV	line_1_Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	176.35	<100	<100	<100	
	line_18_Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1	P1	N-1	<100	<100	<100	<100	<100	128.7	<100	<100	<100	
Amargosa - Sandy 138kV line	Trout Canyon - Sloan Canyon 230kV line and Northwest - Desert View 230kV line	P6	N-1-1	<100	<100	Diverge	<100	<100	<100	<100	<100	102.38	Monitor load growth in the area; 2nd Pahrump - Trout Canyon - Sloan Canyon 230kV; radialize system after the first contingency; for the overload in sensitivity case, rely on Sloan Canyon RAS
	Trout Canyon - Sloan Canyon 230kV line and Pahrump - Innovation 230kV line	P6	N-1-1	<100	<100	<100	<100	<100	<100	<100	<100	112.11	Sloan Canyon RAS
Amargosa 230/138kV transformer	Gamebird - Pahrump 138kV and Gamebird 230/138kV transformer	P6	N-1-1	107.36	110.95	167.54	<100	<100	<100	131.58	142.56	<100	Radialize system after the first contingency
Pahrump 230/138kV transformer No.1	Pahrump 230/138kV transformer No.2 and Gamebird 230/138kV transformer	P6	N-1-1	<100	<100	118.48	<100	<100	<100	<100	<100	<100	Monitor load growth in the area; utilize the short-term emergency rating of the transformer and perform manual load shedding
Pahrump 230/138kV transformer No.2	Pahrump 230/138kV transformer No.1 and Gamebird 230/138kV transformer	P6	N-1-1	<100	<100	116.9	<100	<100	<100	<100	<100	<100	
Gamebird 230/138kV transformer	Trout Canyon - Sloan Canyon 230kV line and Pahrump - Gamebird 230kV line	P6	N-1-1	<100	<100	<100	<100	<100	<100	<100	<100	125.72	Sloan Canyon RAS
Gamebird - Pahrump 138kV line	Trout Canyon - Sloan Canyon 230kV line and Pahrump - Gamebird 230kV line	P6	N-1-1	<100	<100	<100	<100	<100	<100	<100	<100	101.28	Sloan Canyon RAS
Jackass Flats - Mercury SW 138kV line	Pahrump - Vista 138kV line and Jackass Flats - Stockwash 138kV line	P6	N-1-1	<100	<100	<100	<100	107.8	<100	<100	<100	<100	Generation redispatch following first contingency
	Trout Canyon - Sloan Canyon 230kV line and Pahrump - Innovation 230kV line	P6	N-1-1	<100	<100	106.74	<100	<100	<100	<100	<100	129.4	Monitor load growth in the area; transmission reconfiguration; for the overload in sensitivity case, rely on Sloan Canyon RAS

Study Area: Template

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2023 Summer Peak	2026 Summer Peak	2031 Summer Peak	2023 Spring Off-Peak	2026 Spring Off-Peak	2031 Spring Off-Peak	2023 SP with Forecasted Load Addition	2026 SP with Forecasted Load Addition	2023 OP Heavy Renewable & Min Gas Gen	
Gamebird, Pahrump, Innovation, Trout Canyon and Desert View 230kV	Trout Canyon - Sloan Canyon 230kV and Northwest - Desert View 230kV	P6	N-1-1	0.84	>0.9	Diverge	0.85	>0.9	>0.9	0.82	>0.9	>0.9	radialize system after the first contingency; 2nd Pahrump - Trout Canyon - Sloan Canyon 230kV
Charleston, Thousandaire, Pahrump 138kV	Pahrump - Innovation 230kV and Gamebird - Trout Canyon 230kV	P6	N-1-1	0.84	0.84	0.68	>0.9	>0.9	>0.9	0.79	0.77	>0.9	Existing UVLS
Charleston, Thousandaire, Sandy 138kV	Gamebird 230/138kV transformer and Gamebird - Pahrump 230kV line	P6	N-1-1	0.81	0.82	0.74	>0.9	>0.9	>0.9	0.73	0.72	>0.9	

Study Area: Valley Electric Association

Voltage Deviation



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
				2023 Summer Peak	2026 Summer Peak	2031 Summer Peak	2023 Spring Off-Peak	2026 Spring Off-Peak	2031 Spring Off-Peak	2026 SP High CEC Forecast	2023 SP Heavy Renewable & Min Gas Gen	2023 OP Heavy Renewable & Min Gas Gen	
None													

Study Area: Valley Electric Association

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance						Potential Mitigation Solutions
			Baseline Scenarios				Sensitivity Scenarios		
			2026 Summer Peak	2031 Summer Peak	2023 Spring Off-Peak	2031 Spring Off-Peak	2026 SP with Forecasted Load Addition	2023 OP Heavy Renewable & Min Gas Gen	
Pahrump-Innovation 230kV Fault	P1	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Pahrump-Gamebird 230kV	P1	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Pahrump 230/138kV Transformer No.1	P1	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Pahrump 230/138kV Transformer No.2	P1	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Amargosa-Sandy 138kV	P1	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Pahrump-Vista 138kV	P1	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Pahrump-Gamebird 138kV	P1	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Vista-Johnnie-Valley 138kV	P1	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Innovation-Desert View 230kV	P1	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Innovation 230/138kV Transformer	P1	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Northwest-Desert View 230kV	P1	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
PAHRUMP-VISTA 138 & PAHRUMP-GAMEBIRD 138; BKR PA222	P4	Stuck Breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
PAHRUMP 138/230kV Tran Bnk. 1 & PAHRUMP-Sloan Canyon/Carpenter Canyon 230-kV Line; BKR PA112	P4	Stuck Breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
PAHRUMP 138/230kV Tran Bnk. 1 & PAHRUMP-INNOVATION 230; BKR PA132	P4	Stuck Breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
PAHRUMP 138/230kV Tran Bnk. 2 & PAHRUMP-INNOVATION 230; BKR PA122	P4	Stuck Breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
PAHRUMP 138/230kV Tran Bnk. 2 & PAHRUMP-Sloan Canyon/Carpenter Canyon 230; BKR PA142	P4	Stuck Breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
PAHRUMP 138/230kV Tran Bnk. 2 & PAHRUMP-VISTA 138-kV Line; BKR PA212	P4	Stuck Breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
PAHRUMP 138/230kV Tran Bnk. 1 & PAHRUMP-GAMEBIRD 138; BKR PA232	P4	Stuck Breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
INNOVATION -PAHRUMP 230 & INNNOVATION-DESERT VIEW 230 & INNOVATION TRANS	P4	Stuck Breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
GAMEBIRD 138/230kV Tran Bnk. 1 & PAHRUMP-Gamebird 230-kV Line; BKR PA112	P4	Stuck Breaker	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Pahrump 230kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Sloan Canyon 230kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Desert View 230kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Innovation 230kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Gamebird 230kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Innovation 138kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation

Study Area: Valley Electric Association

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance						Potential Mitigation Solutions
			Baseline Scenarios				Sensitivity Scenarios		
			2026 Summer Peak	2031 Summer Peak	2023 Spring Off-Peak	2031 Spring Off-Peak	2026 SP with Forecasted Load Addition	2023 OP Heavy Renewable & Min Gas Gen	
Pahrump 138kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Amargosa 138kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Lathrop 138kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Sandy 138kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Valley 138kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Valley SS 138kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Vista 138kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Gamebird 138kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Thousandaire 138kV Bus	P5.5	Non-Redundant Relay	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Pahrump-Innovation 230kV & Pahrump-Gamebird 230kV	P6	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Northwestt-Desert View 230kV & Pahrump-Gamebird 230kV	P6	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Pahrump-Gamebird 230kV & Pahrump-Gamebird 138kV	P7	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Pahrump-Gamebird 230kV & Gamebird-Sandy 138kV	P7	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Pahrump-Innovation 230kV & Pahrump-Vista 138kV	P7	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation
Pahrump-Innovation 230kV & Vista-ValleySS 138kV	P7	Normal Clearing	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	Stable/WECC criteria met	No Violation

Study Area: Valley Electric Association



Single Contingency Load Drop

Worst Contingency	Category	Category Description	Amount of Load Drop (MW)									Potential Mitigation Solutions
			2023 Summer Peak	2026 Summer Peak	2031 Summer Peak	2023 Spring Off-Peak	2026 Spring Off-Peak	2031 Spring Off-Peak	2026 SP High CEC Forecast	2023 SP Heavy Renewable & Min Gas Gen	2023 OP Heavy Renewable & Min Gas Gen	

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

Study Area: **Valley Electric Association**



Single Source Substation with more than 100 MW Load

Substation	Load Served (MW)												Potential Mitigation Solutions
	2023 Summer Peak	2026 Summer Peak	2031 Summer Peak	2023 Winter Peak	2026 Winter Peak	2031 Winter Peak	2023 Spring Off-Peak	2026 Spring Off-Peak	2031 Spring Off-Peak	2026 SP High CEC Forecast	2023 SP Heavy Renewable & Min Gas Gen	2023 OP Heavy Renewable & Min Gas Gen	

No single source substation with more than 100 MW