

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
				2022 Summer Peak	2025 Summer Peak	2030 Summer Peak	2022 Spring Off-Peak	2025 Spring Off-Peak	2022 SP Forecast Load Addition	2025 SP Forecast Load Addition	2025 OP Heavy Renewable	
Amargosa 230/138kV transformer	Nwest-Desert View 230kV	P1	N-1	<100	<100	<100	<100	<100	<100	<100	159.50	Sloan Canyon RAS and Innovation RAS
	Innovation-Desert View 230kV & Gamebird-Sloan Cyn/Trout Cyn 230kV lines	P6	N-1-1	106.88	145.99	166.74	<100	<100	118.77	169.09	Nonconv	New operating procedure to radialize system after the first contingency; for high renewable sensitivity case, Innovation RAS
	Pahrump-Gamebird 138kV & Gamebird 230/138kV Transformer	P6	N-1-1	108.67	110.55	125.25	<100	<100	128.25	152.74	<100	
Amargosa-Sandy 138kV line	Nwest-Desert View 230kV	P1	N-1	<100	<100	<100	<100	<100	<100	<100	113.07	Sloan Canyon RAS and Innovation RAS
	Innovation-Desert View 230kV & MercurySW-IS Tap 138kV lines	P6	N-1-1	<100	<100	<100	<100	<100	<100	<100	127.47	Innovation RAS and congestion management
Gamebird-Trout Canyon 230kV line	Trout Canyon-Sloan Canyon 230kV line	P1	N-1	<100	<100	<100	<100	<100	<100	<100	108.49	Sloan Canyon RAS
Trout Canyon-Sloan Canyon 230kV line	Gamebird-Trout Canyon 230kV line	P1	N-1	<100	<100	<100	<100	<100	<100	<100	108.90	Sloan Canyon RAS
Remaining Pahrump 230/138kV transformer	Pahrump 230/138kV transformer & Gamebird 230/138kV transformer	P6	N-1-1	<100	<100	107.51	<100	<100	<100	107.52	<100	Existing UVLS, load shedding
Jackass Flat-Mercury SW 138kV line	Nwest-Desert View 230kV & Innovation-Mercury SW 138kV lines	P6	N-1-1	<100	<100	<100	<100	<100	<100	<100	111.22	Innovation RAS and congestion management
System	Sloan Canyon-Trout Canyon 230kV& Innovation-Desert View/Innovation Pahrump/Pahrump 230kV lines	P6	N-1-1	N/A	N/A	<100	N/A	N/A	N/A	N/A	Nonconv	Sloan Canyon RAS and Innovation RAS, congestion management

Note: The off-peak sensitivity case with heavy renewable output and minimum gas generation commitment is based on the 2022 Spring Off-Peak Case rather than the 2025 Spring Off-Peak Case as indicated in the study plan.

Study Area: Valley Electric Association

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2022 Summer Peak	2025 Summer Peak	2030 Summer Peak	2022 Spring Off-Peak	2025 Spring Off-Peak	2022 SP Forecast Load Addition	2025 SP Forecast Load Addition	2025 OP Heavy Renewable	
Charleston-Thousandaire-Gamebird, Vista-Jackass138kV buses	Innovation-Desert View 230kV & Gamebird-Sloan Canyon/Trout Canyon 230kV	P6	N-1-1	0.8634	0.7984	0.681	>0.9	0.8829	0.8378	0.7031	>0.9	Existing UVLS
	Pahrump-Gamebird 138kV line & Gamebird 230/138kV transformer	P6	N-1-1	0.8191	0.8157	0.7913	>0.9	>0.9	0.7579	0.6789	>0.9	

Note: The off-peak sensitivity case with heavy renewable output and minimum gas generation commitment is based on the 2022 Spring Off-Peak Case rather than the 2025 Spring Off-Peak Case as indicated in the study plan.

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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
				2022 Summer Peak	2025 Summer Peak	2030 Summer Peak	2022 Spring Off-Peak	2025 Spring Off-Peak	2022 SP Forecast Load Addition	2025 SP Forecast Load Addition	2025 OP Heavy Renewable	

No violations

Note: The off-peak sensitivity case with heavy renewable output and minimum gas generation commitment is based on the 2022 Spring Off-Peak Case rather than the 2025 Spring Off-Peak Case as indicated in the study plan.

Study Area: Valley Electric Association

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance					Potential Mitigation Solutions
			Baseline Scenarios			Sensitivity Scenarios		
			2025 Summer Peak	2030 Summer Peak	2022 Spring Off-Peak	2025 SP Forecast Load Addition	2025 OP Heavy Renewable	
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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	No violation
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	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	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	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	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	No violation

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Transient Stability



Contingency	Category	Category Description	Transient Stability Performance					Potential Mitigation Solutions
			Baseline Scenarios			Sensitivity Scenarios		
			2025 Summer Peak	2030 Summer Peak	2022 Spring Off-Peak	2025 SP Forecast Load Addition	2025 OP Heavy Renewable	
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	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	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	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	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	No violation
Northwestt-Desert View 230kV & Pahrump-Gamebird 230kV	P6	Normal Clearing	WECC criteria violation at Stockwash, Mercury Dist 138kV buses	WECC criteria violation at Stockwash, Mercury Dist 138kV buses	Stable/WECC criteria met	WECC criteria violation at Stockwash, Mercury Dist 138kV buses	Stable/WECC criteria met	Existing UVLS
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	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	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	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	No violation

Note: The off-peak sensitivity case with heavy renewable output and minimum gas generation commitment is based on the 2022 Spring Off-Peak Case rather than the 2025 Spring Off-Peak Case as indicated in the study plan.

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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..	Select..	Select..	

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

Note: The off-peak sensitivity case with heavy renewable output and minimum gas generation commitment is based on the 2022 Spring Off-Peak Case rather than the 2025 Spring Off-Peak Case as indicated in the study plan.

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Single Source Substation with more than 100 MW Load

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

No single source substation with more than 100 MW

Note: The off-peak sensitivity case with heavy renewable output and minimum gas generation commitment is based on the 2022 Spring Off-Peak Case rather than the 2025 Spring Off-Peak Case as indicated in the study plan.