

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
				2021 Summer Peak	2024 Summer Peak	2029 Summer Peak	2021 Spring Off-Peak	2024 Spring Off-Peak	2021 SP with Forecasted Load Addition	2024 SP with Forecasted Load Addition	2024 Summer OP Hi Renew & Min Gas Gen	
Amargosa 230/138kV Transformer	Gamebird-Pahrump 138kV Line	P1	N-1	111.28	109.95	119.42	<100	<100	119.04	137.7	<100	Option 1: New Gamebird Transformer Project Option 2: New Charleston-Vista 138kV Line Option 3: Amargosa transformer upgrade
	Northwest-Desert View 230kV Line	P1	N-1	<100	<100	<100	<100	<100	<100	<100	110.29	Sensitivity case only. Utilize Innovation RAS
	Trout Canyon-Sloan Canyon 230kV Line	P1	N-1	N/A	N/A	<100	N/A	N/A	N/A	N/A	109.48	Sensitivity case only. Utilize Sloan Canyon RAS
	Pahrump-Gamebird & Pahrump-Vista 138kV lines; BKR PA222	P4	Stuck Breaker	111.25	109.92	119.42	<100	<100	119	137.75	<100	Option 1: New Gamebird Transformer Project Option 2: New Charleston-Vista 138kV Line Option 3: Amargosa transformer upgrade
	PAHRUMP 138/230kV Tran Bnk. 1 & PAHRUMP-GAMEBIRD 138; BKR PA232	P4	Stuck Breaker	111.28	109.96	119.46	<100	<100	119.03	137.7	<100	Option 1: New Gamebird Transformer Project Option 2: New Charleston-Vista 138kV Line Option 3: Amargosa transformer upgrade
	Northwest-Desert View & Pahrump-Sloan Canyon/Sloan Canyon-Trout Canyon 230kV lines	P6	N-1-1	108.36	109.24	172.07	<100	105.59	113.26	131.75	Nonconv	New Gamebird Transformer Project. Existing UVLS 2024OP High Renewable scenario: utilize Innovation RAS and Sloan Canyon RAS
	Pahrump-Gamebird 138kV and Sloan Canyon-Mead 230kV lines	P7	DCTL	111.28	109.95	119.42	<100	<100	119.04	137.7	<100	Option 1: New Gamebird Transformer Project Option 2: New Charleston-Vista 138kV Line Option 3: Amargosa transformer upgrade
Pahrump 230/138kV Transformer No.1	Pahrump 230/138kV Transformer No.2	P1	N-1	<100	<100	101.56	<100	<100	<100	<100	<100	New Gamebird Transformer Project
	PAHRUMP 138/230kV Tran Bnk. 2 & PAHRUMP-INNOVATION 230; BKR PA122	P4	Stuck Breaker	<100	<100	<100	<100	<100	<100	<100	110.12	Sensitivity case only. Utilize Sloan Canyon RAS
	Pahrump230/138kV Transformer No.2 & Vista-Johnnie-ValleyTP 138kV lines	P6	N-1-1	<100	105.88	120.74	<100	<100	<100	123.83	<100	New Gamebird Transformer Project
Pahrump 230/138kV Transformer No.2	Pahrump 230/138kV Transformer No.1	P1	N-1	<100	<100	101.27	<100	<100	<100	<100	<100	New Gamebird Transformer Project
	PAHRUMP 138/230kV Tran Bnk. 1 & PAHRUMP-INNOVATION 230; BKR PA132	P4	Stuck Breaker	<100	<100	<100	<100	<100	<100	<100	108.41	Sensitivity case only. Utilize Sloan Canyon RAS
	Pahrump230/138kV Transformer No.1 & Vista-Johnnie-ValleyTP 138kV lines	P6	N-1-1	<100	105.94	120.13	<100	<100	<100	123.03	<100	New Gamebird Transformer Project
Jackass-Mercury SW 138kV Line	Pahrump-Vista 138kV line	P1	N-1	<100	<100	101.3	168.24	<100	<100	<100	140.13	Congestion management, RAS to curtail generation and line upgrade
	Vista-Johnnie-ValleyTP 138kV line	P1	N-1	<100	<100	<100	155.57	<100	<100	<100	147.4	
	Stockade Wash-Jackass 138kV line	P1	N-1	<100	<100	<100	105.17	<100	<100	<100	<100	
	Pahrump-Innovation 230kV line	P1	N-1	<100	<100	<100	<100	<100	<100	<100	143.93	Sensitivity case only. Utilize Innovation RAS
	Sloan Canyon 230kV breaker	P4	Stuck Breaker	<100	<100	<100	<100	<100	<100	<100	130.12	Sensitivity case only. Utilize Sloan Canyon RAS
	PAHRUMP-VISTA 138 & PAHRUMP-GAMEBIRD 138; BKR PA222	P4	Stuck Breaker	<100	<100	101.02	168.67	<100	<100	<100	140.35	Congestion management, RAS to curtail generation and line upgrade
	PAHRUMP 138/230kV Tran Bnk. 2 & PAHRUMP-VISTA 138-kV Line; BKR PA212	P4	Stuck Breaker	<100	<100	101.37	168.21	<100	<100	<100	140.13	
	Pahrump-Vista 138kV & Pahrump-Innovation 230kV lines	P7	DCTL	<100	<100	100.79	168.33	<100	<100	<100	139.37	
	Vista-Johnnie-ValleyTP 138kV & Pahrump-Innovation 230kV lines	P7	DCTL	<100	<100	<100	155.76	<100	<100	<100	146.64	
Pahrump-Carpenter Canyon 230kV Line	Trout Canyon-Sloan Canyon 230kV line	P1	N-1	N/A	N/A	<100	N/A	N/A	N/A	N/A	136.85	Sensitivity case only. Utilize Sloan Canyon RAS
	Sloan Canyon 230kV breaker	P4	Stuck Breaker	N/A	N/A	<100	N/A	N/A	N/A	N/A	136.85	
	Trout Canyon-Sloan-Canyon 230kV & ValleyTP-Lathrop SS 138kV lines	P6	N-1-1	N/A	N/A	<100	N/A	N/A	N/A	N/A	138.58	
	Northwest-Desert View 230kV line	P1	N-1	N/A	N/A	<100	N/A	N/A	N/A	N/A	119.95	Sensitivity case only. Utilize Innovation RAS
	Innovation-Desert View 230kV line	P1	N-1	N/A	N/A	<100	N/A	N/A	N/A	N/A	108.12	
	Pahrump-Carpenter Canyon 230kV line	P1	N-1	N/A	N/A	<100	N/A	N/A	N/A	N/A	136.84	Sensitivity case only. Utilize Sloan Canyon RAS



Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)					Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2021 Summer Peak	2024 Summer Peak	2029 Summer Peak	2021 Spring Off-Peak	2024 Spring Off-Peak	2021 SP with Forecasted Load Addition	2024 SP with Forecasted Load Addition	2024 Summer OP Hi Renew & Min Gas Gen	
Trout Canyon-Sloan Canyon 230kV Line	INNOVATION -PAHRUMP 230 & INNNOVATION-DESERT VIEW 230 & INNOVATION TRANS	P4	Stuck Breaker	N/A	N/A	<100	N/A	N/A	N/A	N/A	136.85	Sensitivity case only. Utilize Innovation RAS
	PAHRUMP 138/230kV Tran Bnk. 1 & PAHRUMP-INNOVATION 230; BKR PA132	P4	Stuck Breaker	N/A	N/A	<100	N/A	N/A	N/A	N/A	104.6	
	PAHRUMP 138/230kV Tran Bnk. 2 & PAHRUMP-INNOVATION 230; BKR PA122	P4	Stuck Breaker	N/A	N/A	<100	N/A	N/A	N/A	N/A	104.12	
	Pahrump-Carpenter Canyon 230kV & Gamebird-Sandy 138kV lines	P7	DCTL	N/A	N/A	<100	N/A	N/A	N/A	N/A	136.85	Sensitivity case only. Utilize Sloan Canyon RAS
Amargosa-Sandy-Gamebird 138kV Line	Carpenter Canyon-Trout Canyon & Northwest-Desert View 230kV lines	P6	N-1-1	N/A	N/A	<100	N/A	N/A	N/A	N/A	102.36	Sensitivity case only. Utilize Innovation RAS and Sloan Canyon RAS
Innovation 230/138kV Transformer	Carpenter Canyon-Trout Canyon & Northwest-Desert View 230kV lines	P6	N-1-1	N/A	N/A	<100	N/A	N/A	N/A	N/A	127.54	
Innovation-Desert View 230kV Line	Pahrump-Gamebird 138kV & Carpenter Canyon-Trout Canyon 230kV lines	P6	N-1-1	N/A	N/A	<100	N/A	N/A	N/A	N/A	120.36	Sensitivity case only. Utilize Sloan Canyon RAS



Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2021 Summer Peak	2024 Summer Peak	2029 Summer Peak	2021 Spring Off-Peak	2024 Spring Off-Peak	2021 SP with Forecasted Load Addition	2024 SP with Forecasted Load Addition	2024 Summer OP Hi Renew & Min Gas Gen	
Charleston-Thousandaire-Gamebird-Sandy 138kV buses	Pahrump-Gamebird 138kV line	P1	N-1	0.855	0.818	0.7995	>0.9	0.8929	0.8425	0.7447	0.8908	Option 1: New Gamebird Transformer Project Option 2: New Charleston-Vista 138kV Line Option 3: Amargosa transformer upgrade and reactive support
Charleston-Thousandaire-Gamebird, Vista-Jackass138kV buses	Northwest-Desert View & Pahrump-Sloan Canyon/Sloan Canyon-Trout Canyon 230kV lines	P6	N-1-1	>0.9	0.8983	0.6709	>0.9	0.8511	>0.9	0.8456	Nonconv	New Gamebird Transformer Project Existing UVLS Or Amargosa transformer upgrade and reactive support 2024OP High Renewable: Innovation RAS and Sloan Canyon RAS

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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
				2021 Summer Peak	2024 Summer Peak	2029 Summer Peak	2021 Spring Off-Peak	2024 Spring Off-Peak	2021 SP with Forecasted Load Addition	2024 SP with Forecasted Load Addition	2024 Summer OP Hi Renew & Min Gas Gen	

No violations

Study Area: Valley Electric Association

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance					Potential Mitigation Solutions
			Baseline Scenarios			Sensitivity Scenarios		
			2024 Summer Peak	2029 Summer Peak	2024 Spring Off-Peak	2024 SP with Forecasted Load Addition	2024 Summer OP Hi Renew & Min Gas Gen	
Pahrump-Innovation 230kV Fault	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Pahrump-Sloan Canyon/Carpenter Canyon 230kV	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Pahrump 230/138kV Transformer No.1	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Pahrump 230/138kV Transformer No.2	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Amargosa-Sandy 138kV	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Pahrump-Vista 138kV	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Pahrump-Gamebird 138kV	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Vista-Johnnie-Valley 138kV	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Innovation-Desert View 230kV	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Innovation 230/138kV Transformer	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Northwest-Desert View 230kV	P1	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
PAHRUMP-VISTA 138 & PAHRUMP-GAMEBIRD 138; BKR PA222	P4	Stuck Breaker	Stable	Stable	Stable	Stable	Stable	No Violation
PAHRUMP 138/230kV Tran Bnk. 1 & PAHRUMP-Sloan Canyon/Carpenter Canyon 230-kV Line; BKR PA112	P4	Stuck Breaker	Stable	Stable	Stable	Stable	Stable	No Violation
PAHRUMP 138/230kV Tran Bnk. 1 & PAHRUMP-INNOVATION 230; BKR PA132	P4	Stuck Breaker	Stable	Stable	Stable	Stable	Stable	No Violation
PAHRUMP 138/230kV Tran Bnk. 2 & PAHRUMP-INNOVATION 230; BKR PA122	P4	Stuck Breaker	Stable	Stable	Stable	Stable	Stable	No Violation
PAHRUMP 138/230kV Tran Bnk. 2 & PAHRUMP-Sloan Canyon/Carpenter Canyon 230; BKR PA142	P4	Stuck Breaker	Stable	Stable	Stable	Stable	Stable	No Violation
PAHRUMP 138/230kV Tran Bnk. 2 & PAHRUMP-VISTA 138-kV Line; BKR PA212	P4	Stuck Breaker	Stable	Stable	Stable	Stable	Stable	No Violation
PAHRUMP 138/230kV Tran Bnk. 1 & PAHRUMP-GAMEBIRD 138; BKR PA232	P4	Stuck Breaker	Stable	Stable	Stable	Stable	Stable	No Violation
INNOVATION -PAHRUMP 230 & INNNOVATION-DESERT VIEW 230 & INNOVATION TRANS	P4	Stuck Breaker	Stable	Stable	Stable	Stable	Stable	No Violation
Pahrump 230kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation
Sloan Canyon 230kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation
Desert View 230kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation
Innovation 230kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation
Innovation 138kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation
Pahrump 138kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation
Amargosa 138kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation
Lathrop 138kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation
Sandy 138kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation
Valley 138kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation
Valley SS 138kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation

Study Area: Valley Electric Association

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance					Potential Mitigation Solutions
			Baseline Scenarios			Sensitivity Scenarios		
			2024 Summer Peak	2029 Summer Peak	2024 Spring Off-Peak	2024 SP with Forecasted Load Addition	2024 Summer OP Hi Renew & Min Gas Gen	
Vista 138kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation
Gamebird 138kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation
Thousandaire 138kV Bus	P5.5	Non-Redundant Relay	Stable	Stable	Stable	Stable	Stable	No Violation
Pahrump-Innovation 230kV & Pahrump-Sloan Canyon/Carpenter Canyon 230kV	P6	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Northwestt-Desert View 230kV & Pahrump-Sloan Canyon/Carpenter Canyon 230kV	P6	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Pahrump-Sloan Canyon/Carpenter Canyon 230kV & Pahrump-Gamebird 138kV	P7	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Pahrump-Sloan Canyon/Carpenter Canyon 230kV & Gamebird-Sandy 138kV	P7	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Pahrump-Innovation 230kV & Pahrump-Vista 138kV	P7	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation
Pahrump-Innovation 230kV & Vista-ValleySS 138kV	P7	Normal Clearing	Stable	Stable	Stable	Stable	Stable	No Violation

Study Area: Valley Electric Association



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.

Study Area: **Valley Electric Association**



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 of more than 100 MW.