



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 Winter Peak	2025 Winter Peak	2030 Winter Peak	2022 Spring Off-Peak	2025 Spring Off-Peak	2025 SP High CEC Forecast	2025 SpOP Hi Renew & Min Gas Gen	2022 SP Heavy Renewable & Min Gas Gen	2030 Retirement of QF Generations	2030 Summer Peak w/o Facility Rerates	

In accordance with TPL-001-4- Requirement R2.6, this area relies on the past studies from the 2019-20 Transmission Planning Process.
<http://www.caiso.com/Documents/AppendixC-BoardApprovedt2019-2020TransmissionPlan.pdf>

Study Area: PG&E Humboldt

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 Winter Peak	2025 Winter Peak	2030 Winter Peak	2022 Spring Off-Peak	2025 Spring Off-Peak	2025 SP High CEC Forecast	2025 SpOP Hi Renew & Min Gas Gen	2022 SP Heavy Renewable & Min Gas Gen	2030 Retirement of QF Generations	2030 Summer Peak w/o Facility Rerates	
FRT SWRD 60 kV	GRBRVLE 60.00KV ID=7H & GRBRVLE 60.00KV ID=5H & GRBRVLE 60.00KV ID=8H & GRBRVLE 60.00KV ID=V SHUNT DEVICES	P1	N-1	0.88	0.92	0.8899	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8899	Garberville SVC setting change or additional reactive support
FTSWRDJT 60 kV		P1	N-1	0.882	0.9217	0.8906	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8906	Garberville SVC setting change or additional reactive support
GRBRVLE 60 kV		P1	N-1	0.8587	0.9084	0.8709	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8709	Garberville SVC setting change or additional reactive support
KEKAWAKA 60 kV		P1	N-1	0.8797	0.924	0.8835	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8835	Garberville SVC setting change or additional reactive support

In accordance with TPL-001-4- Requirement R2.6, this area relies on the past studies from the 2019-20 Transmission Planning Process. The results shown here are for new contingencies and new sensitivity scenario only.

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Study Area: PG&E Humboldt

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 Winter Peak	2025 Winter Peak	2030 Winter Peak	2022 Spring Off-Peak	2025 Spring Off-Peak	2025 SP High CEC Forecast	2025 SpOP Hi Renew & Min Gas Gen	2022 SP Heavy Renewable & Min Gas Gen	2030 Retirement of QF Generations	
FRT SWRD 60 kV	GRBRVLE 60.00KV ID=7H & GRBRVLE 60.00KV ID=5H & GRBRVLE 60.00KV ID=8H & GRBRVLE 60.00KV ID=V SHUNT DEVICES	P1	N-1	9.896	9.330	10.367	NA	NA	NA	NA	NA	NA	NA	NA	NA	Garberville SVC setting change or additional reactive support
FRUITLND 60 kV		P1	N-1	< 8%	< 8%	8.391	NA	NA	NA	NA	NA	NA	NA	NA	NA	Garberville SVC setting change or additional reactive support
FRUTLDJT 60 kV		P1	N-1	7.897	< 8%	8.375	NA	NA	NA	NA	NA	NA	NA	NA	NA	Garberville SVC setting change or additional reactive support
FTSWRDJT 60 kV		P1	N-1	9.897	9.323	10.357	NA	NA	NA	NA	NA	NA	NA	NA	NA	Garberville SVC setting change or additional reactive support
GRBRVLE 60 kV		P1	N-1	13.029	12.276	13.435	NA	NA	NA	NA	NA	NA	NA	NA	NA	Garberville SVC setting change or additional reactive support
KEKAWAKA 60 kV		P1	N-1	11.418	10.553	11.862	NA	NA	NA	NA	NA	NA	NA	NA	NA	Garberville SVC setting change or additional reactive support

In accordance with TPL-001-4- Requirement R2.6, this area relies on the past studies from the 2019-20 Transmission Planning Process. The results shown here are for new contingencies and new sensitivity scenario only.

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Study Area: PG&E Humboldt

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance					Potential Mitigation Solutions
			Baseline Scenarios			Sensitivity Scenarios		
			2025 Summer Peak	2030 Summer Peak	2025 Spring Off-Peak	2025 SP High CEC Forecast	2025 SpOP Hi Renew & Min Gas Gen	
LP SAMOA Unit 1 (Bus #31158)	P1-1	N-1	No Issue	No Issue	No Issue	No Issue	No Issue	No Violation
HMBLDT B - HUMB_BS1 115 kV Line	P1-2	N-1	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	No Issue	Potential WECC/NERC criteria violation	No Issue	Under Review with PTO
HUMB_BS1/HUMB_G1 115/13.8 kV No.1 Transformer	P1-3	N-1	No Issue	No Issue	No Issue	No Issue	No Issue	No Violation
Bus Fault at HUMBOLDT 115 kV	P2-2	Bus	No Issue	No Issue	No Issue	No Issue	Potential WECC/NERC criteria violation	Under Review with PTO
Internal fault at Non-bus-tie-breaker #182 at HUMBOLDT 115 kV	P2-3	Non-Bus-Tie Breaker	No Issue	No Issue	No Issue	No Issue	Potential WECC/NERC criteria violation	Under Review with PTO
LP SAMOA Unit 1 and HUMB_G1 Unit 1	P3-1	G-1/N-1	No Issue	No Issue	No Issue	No Issue	No Issue	No Violation
LP SAMOA Unit 1 and HUMBOLDT -HMBLDT B 115 kV No.1 Line	P3-2	G-1/N-1	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	No Issue	Potential WECC/NERC criteria violation	No Issue	Under Review with PTO
LP SAMOA Unit 1 and HUMB_BS1/HUMB_G1 115/13.8 kV No.1 Transformer	P3-3	G-1/N-1	No Issue	No Issue	No Issue	No Issue	No Issue	No Violation
LP SAMOA Unit 1 and HUMBOLDT 60 kV ID v SVD	P3-4	G-1/N-1	No Issue	No Issue	No Issue	No Issue	No Issue	No Violation
Breaker stuck for CB #182 protecting HUMBOLDT-BRDGVLE 115 kV No.1 Line	P4-2	Stuck Breaker	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	No Issue	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Under Review with PTO
Breaker stuck for CB #322 protecting HUMBOLDT/HUMBOLDT 60/115 kV No.2 Transformer	P4-3	Stuck Breaker	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	No Issue	No Issue	Potential WECC/NERC criteria violation	Under Review with PTO
Breaker stuck for CB #6222 protecting HUMBOLDT 60 kV ID v SVD	P4-4	Stuck Breaker	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	No Issue	Potential WECC/NERC criteria violation	No Issue	Under Review with PTO
Breaker stuck for CB #172 protecting Bus Section HUMBOLDT 115 kV	P4-5	Stuck Breaker	No Issue	No Issue	No Issue	No Issue	Potential WECC/NERC criteria violation	Under Review with PTO
Breaker stuck for CB #BAE071 protecting HUMB_G1 Unit 1	P4-1	Stuck Breaker	No Issue	No Issue	No Issue	No Issue	Potential WECC/NERC criteria violation	Under Review with PTO
HUMB_G1 Unit 1	P5-1	Non-Redundant Relay	No Issue	No Issue	No Issue	No Issue	No Issue	No Violation
HUMBOLDT -HMBLDT B 115 kV No.1 Line	P5-2	Non-Redundant Relay	No Issue	No Issue	No Issue	No Issue	No Issue	No Violation
HUMBOLDT/HUMBOLDT 115/60 kV No.2 Transformer	P5-3	Non-Redundant Relay	No Issue	Potential WECC/NERC criteria violation	No Issue	No Issue	No Issue	Under Review with PTO
HUMBOLDT 60 kV ID v SVD	P5-5	Non-Redundant Relay	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Under Review with PTO
HUMBOLDT -HMBLDT B 115 kV No.1 Line and HUMBOLDT -BRDGVLE 115 kV No.1 Line	P6-1	N-1-1	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	No Issue	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Under Review with PTO
HUMBOLDT -HMBLDT B 115 kV No.1 Line and HUMBOLDT/HUMBOLDT 115/60 kV No.2 Transformer	P6-2	N-1-1	No Issue	No Issue	No Issue	No Issue	No Issue	No Violation

Study Area: PG&E Humboldt



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: PG&E Humboldt



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