



2023 & 2027 Final LCR Study Results Humboldt Area

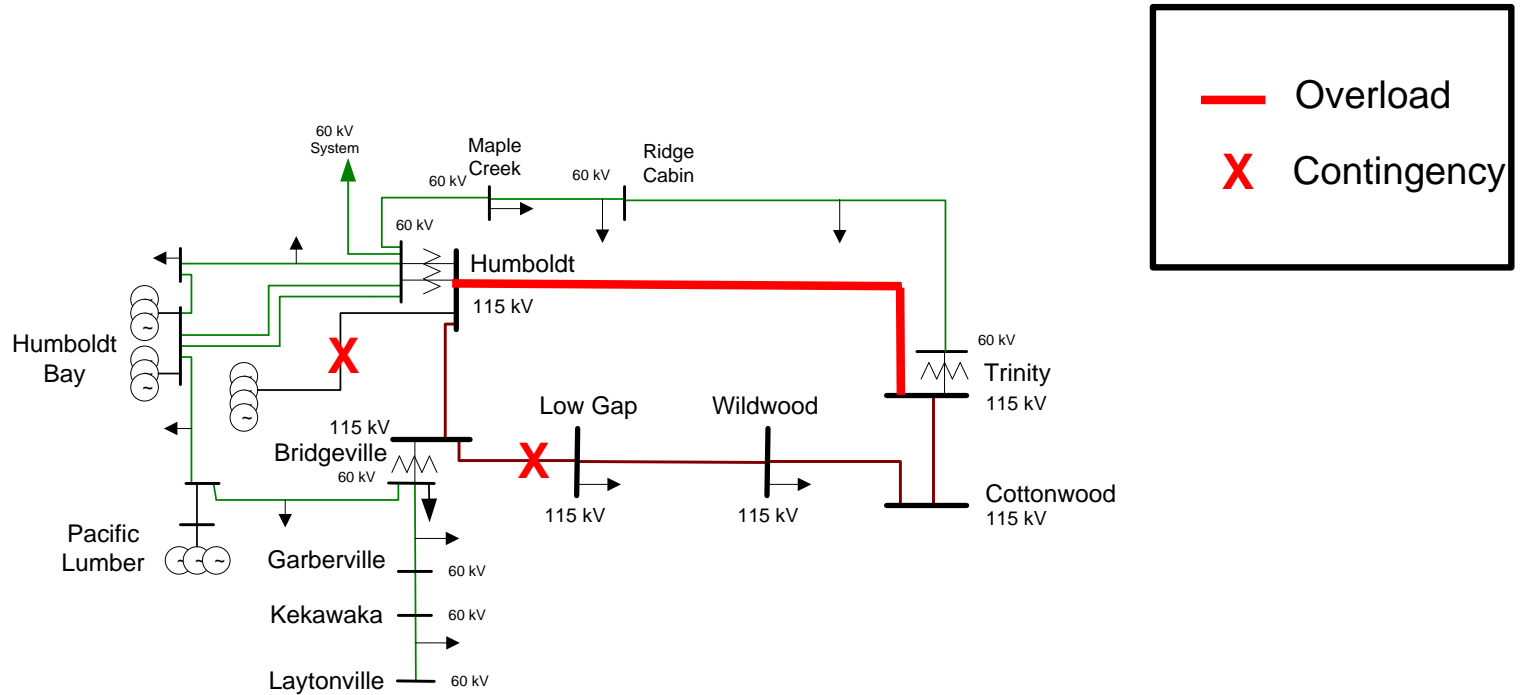
Krithika Gurusankar

Regional Transmission Engineer

Stakeholder Call

April 12, 2022

Humboldt Area Transmission System



Humboldt: Load and Resources - 2023

Load (MW)		Generation (MW)	
Gross Load	167	Market	178
AAEE	-3	Wind	0
Behind the meter DG	0	Muni	0
Net Load	164	QF	0
Transmission Losses	11	Total Qualifying Capacity	178
Pumps	0		
Load + Losses + Pumps	175		

Humboldt: Load and Resources - 2027

Load (MW)		Generation (MW)	
Gross Load	176	Market	178
AAEE	-8	Wind	0
Behind the meter DG	0	Muni	0
Net Load	168	QF	0
Transmission Losses	12	Total Qualifying Capacity	178
Pumps	0		
Load + Losses + Pumps	180		

Topology changes - 2023

Transmission Additions:

- No new transmission additions

Resource Additions:

- No new resource additions

Resource Retirements:

- No new retirements

Topology changes - 2027

Transmission Additions:

- Maple Creek Reactive Support (rescoped to Willow Creek 60 kV Substation)

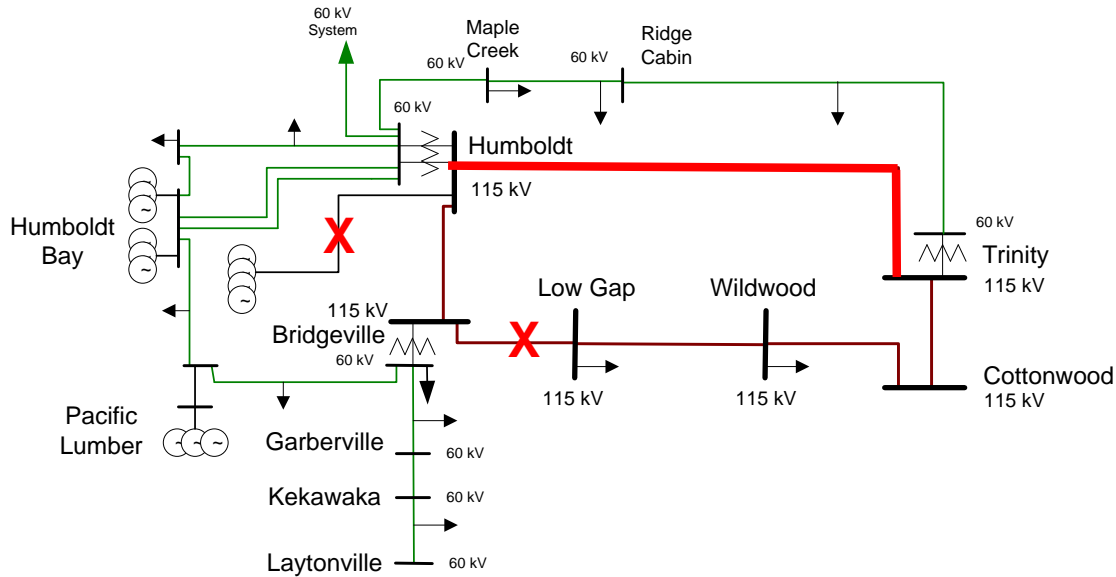
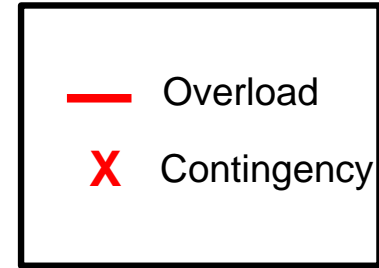
Resource Additions:

- No new resource additions

Resource Retirements:

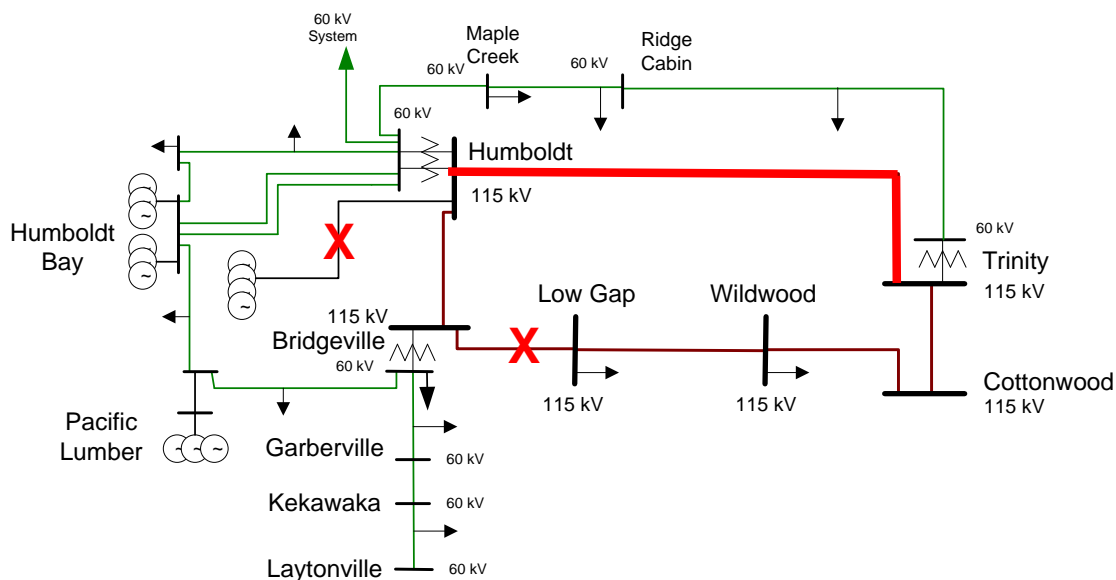
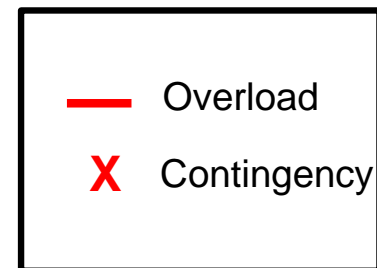
- No new retirements

Humboldt Area: Requirements – 2023



Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	P6	Thermal overload on Humboldt -Trinity 115 kV line	Cottonwood – Bridgeville 115 kV line + Humboldt – Humboldt Bay 115kV line	111
2023	P6	Thermal overload of Humboldt -Trinity 115 kV	Cottonwood – Bridgeville 115 kV line + Humboldt – Humboldt Bay 115kV line	141

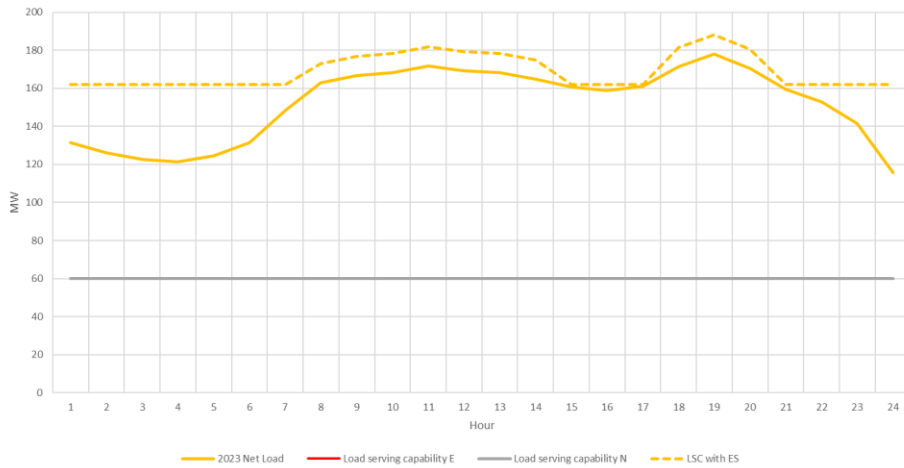
Humboldt Area: Requirements – 2027



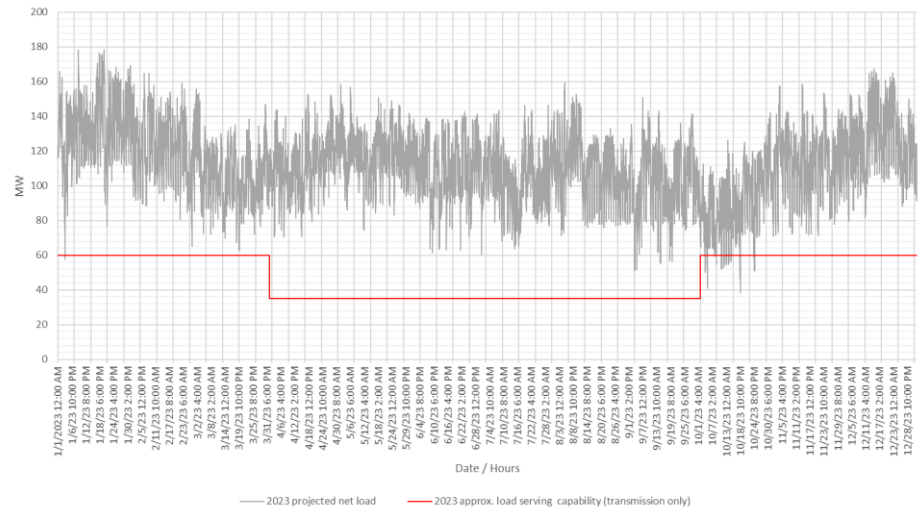
Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	P6	Thermal overload on Humboldt -Trinity 115 kV line	Cottonwood – Bridgeville 115 kV line + Humboldt – Humboldt Bay 115kV line	128
2027	P6	Thermal overload of Humboldt -Trinity 115 kV	Cottonwood – Bridgeville 115 kV line + Humboldt – Humboldt Bay 115kV line	147

Humboldt Area: Load Profiles - 2023

Humboldt LCR Area:
 2023 projected pk day load profile & approx. LSC (transmission + LCR Gen + ES)
 Approx. size of storage that can be added to this area from charging restriction perspective =
 18 MW and 173 MWh. Approx. max 4-hr storage = 9

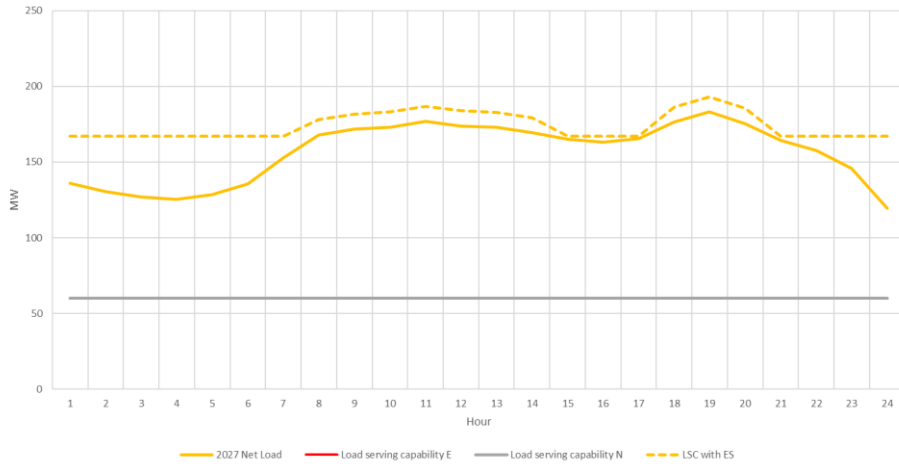


Humboldt LCR Area:
 2023 projected load profile & approx. load serving capability (transmission only)

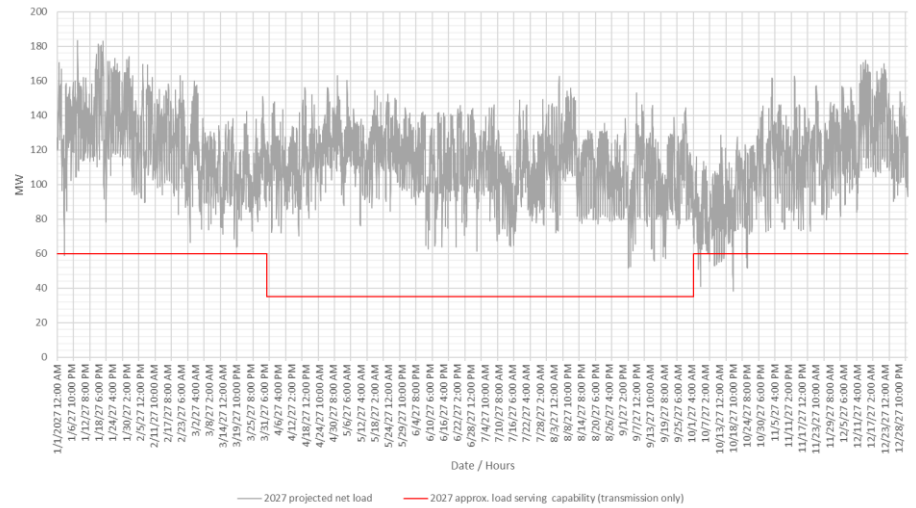


Humboldt Area: Load Profiles - 2027

Humboldt LCR Area:
 2027 projected pk day load profile & approx. LSC (transmission + LCR Gen + ES)
 Approx. size of storage that can be added to this area from charging restriction perspective =
 18 MWh and 170 MWh. Approx. max 4-hr storage = 9



Humboldt LCR Area:
 2027 projected load profile & approx. load serving capability (transmission only)



Changes between years

Subarea	2022		2023	
	Load	LCR	Load	LCR
Humboldt	144	111	175	141

Subarea	2026		2027	
	Load	LCR	Load	LCR
Humboldt	161	128	180	147

The increase in 2023 LCR need is mostly due to load forecast increase.
The increase in 2027 LCR need is mostly due to load forecast increase.

Humboldt Area Total LCR Need - 2023

2022	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total (MW)
LCR Need	111	0	111

2023	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total (MW)
LCR Need	141	0	141

Humboldt Area Total LCR Need - 2027

2026	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total (MW)
LCR Need	128	0	128

2027	Existing Generation Capacity Needed (MW)	Deficiency (MW)	Total (MW)
LCR Need	147	0	147