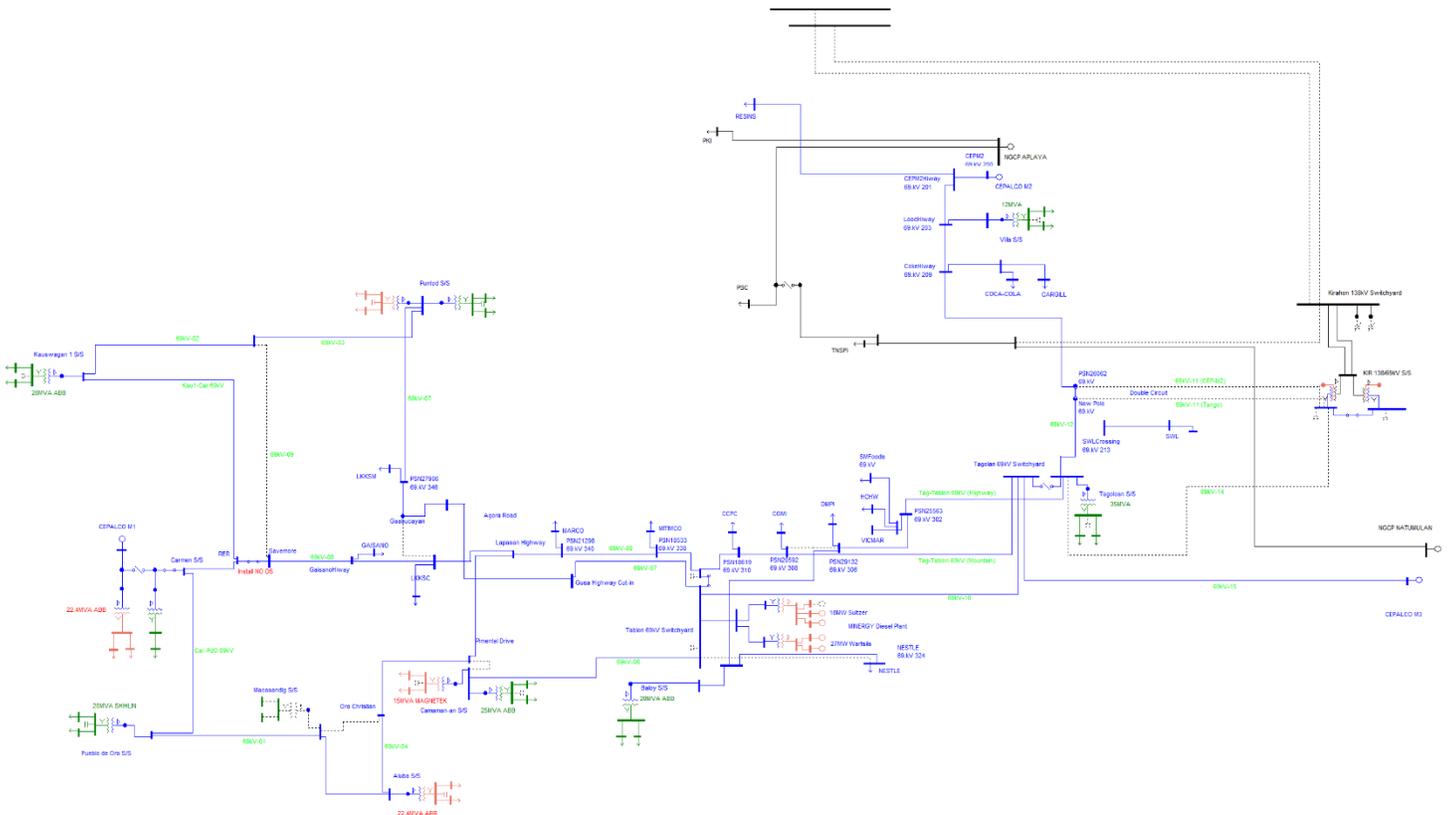
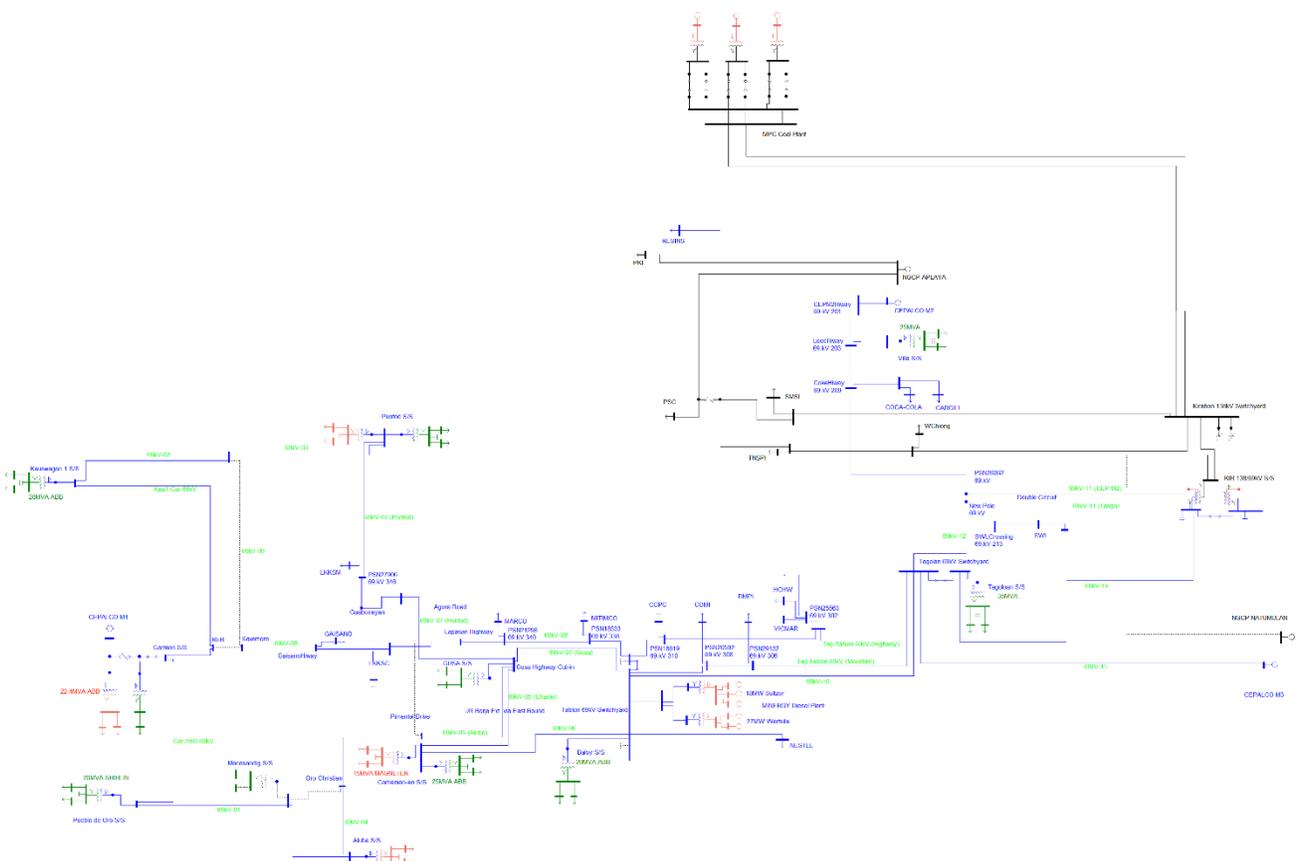


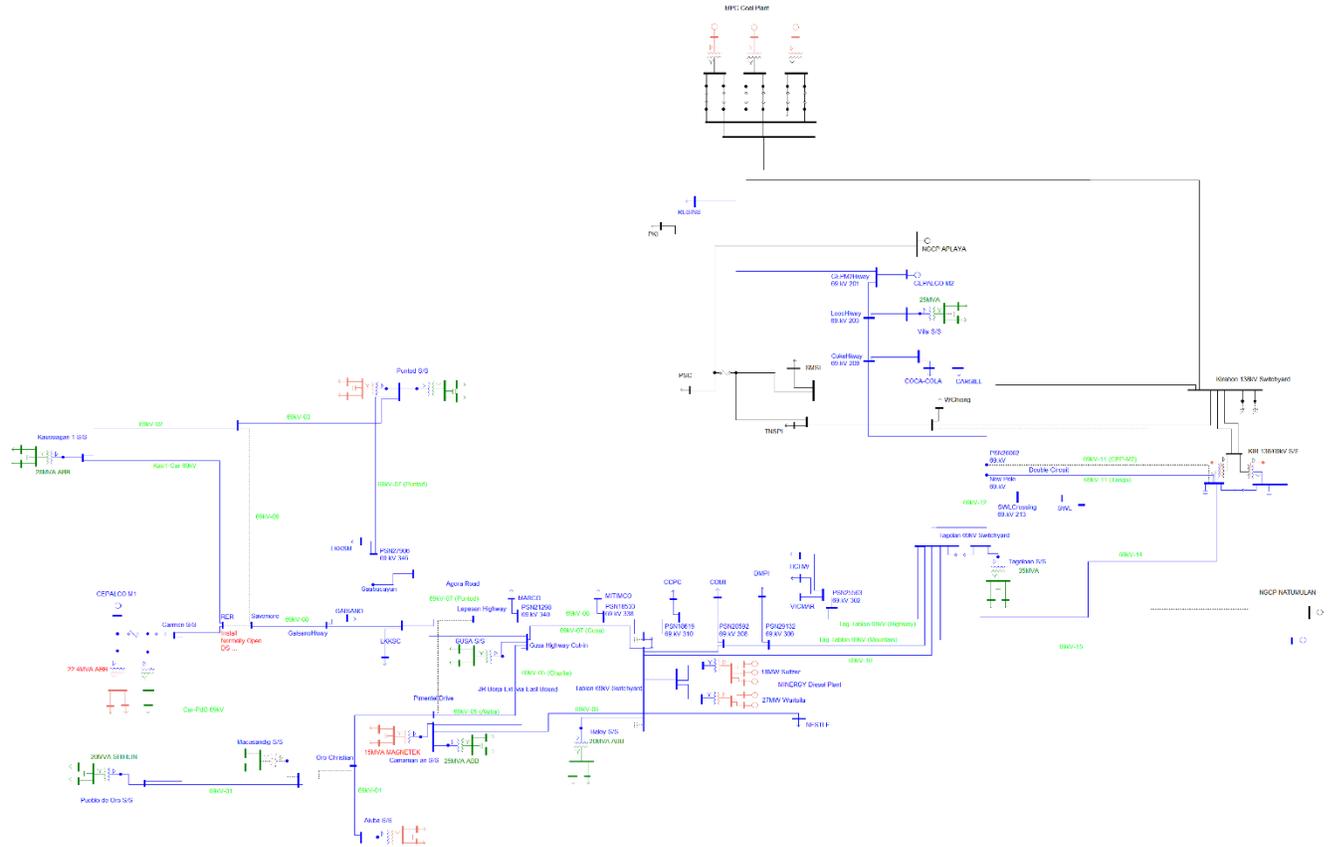
Available Single Line Diagram of CEPALCO's Distribution System as submitted. (2016)



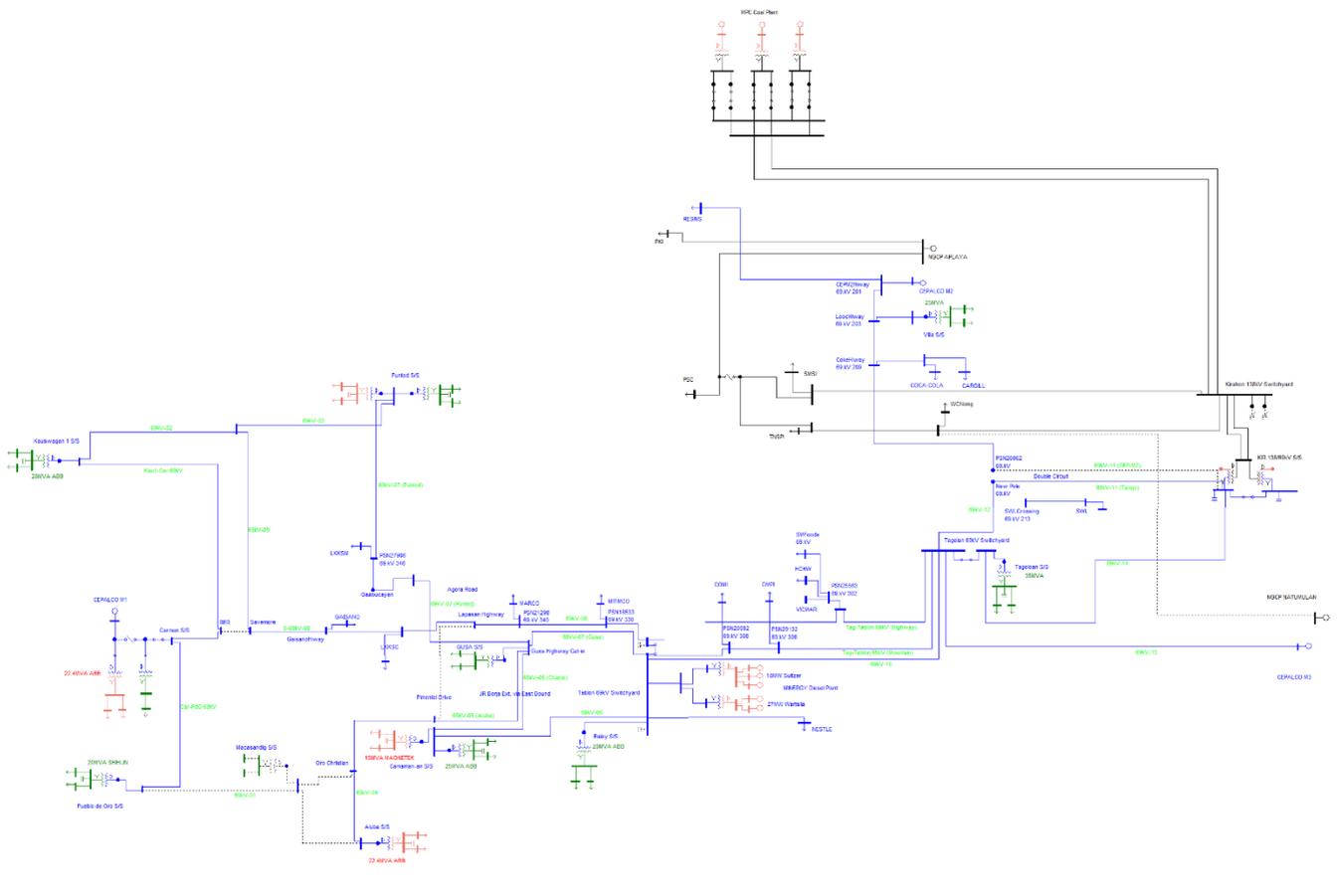
Available Single Line Diagram of CEPALCO's Distribution System as submitted. (2017)



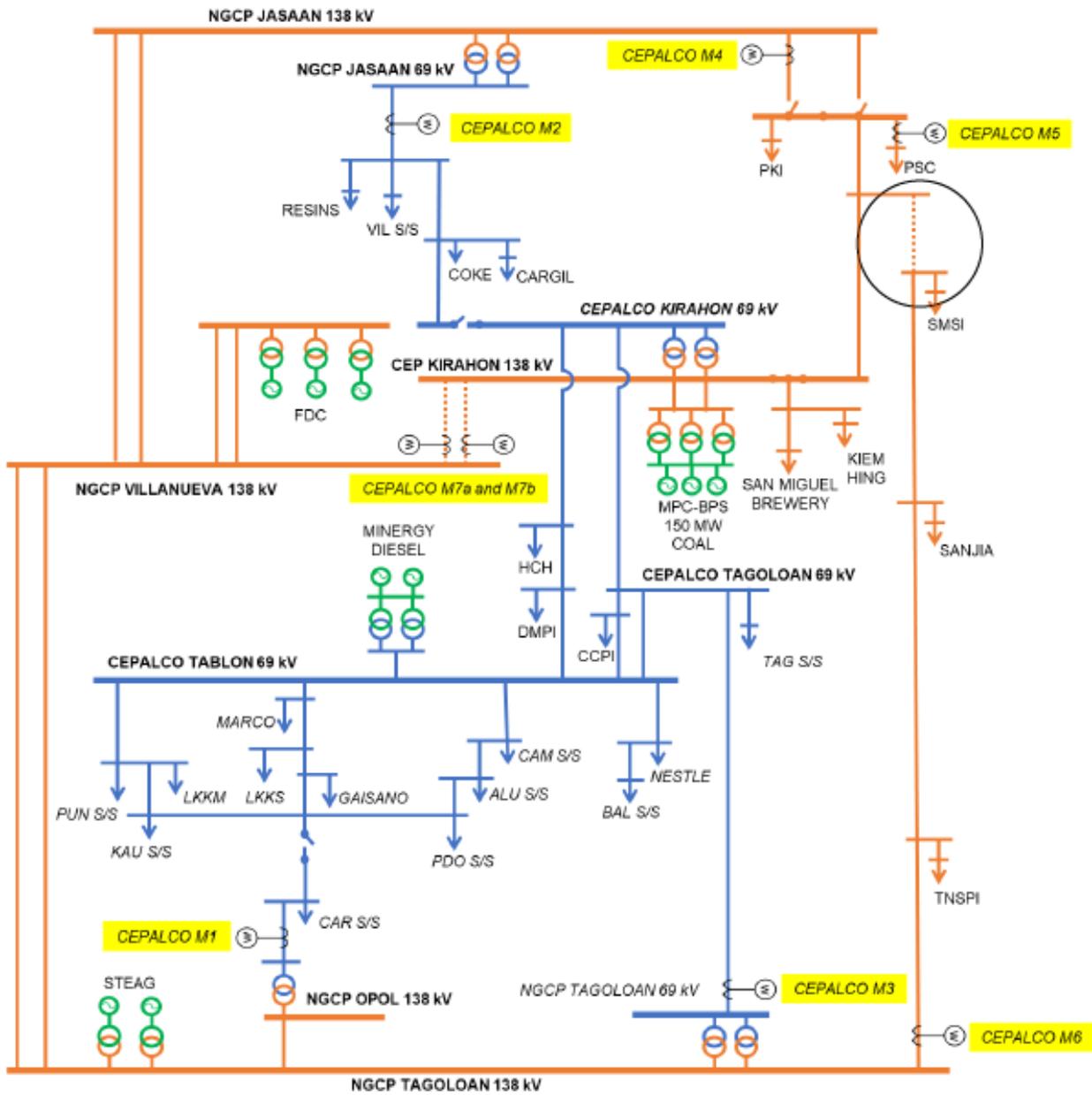
Available Single Line Diagram of CEPALCO's Distribution System as submitted. (2018)



Available Single Line Diagram of CEPALCO's Distribution System as submitted. (2019)



Simplified Single Line Diagram of CEPALCO's Subtransmission system relative to the Grid (2021)



**For the forecasted peak demand of CEPALCO’s substations, refer to its Application under ERC Case No. 2022-016 RC for the complete and detailed discussion. Shown hereunder are samples of what is contained in the Application**

Actual historical MW and MVAR demand per feeder recorded coincident to the peak per sub-system

Substation	34.5 kV System			13.8 kV System		
	Feeder	MW	MVAR	Feeder	MW	MVAR
ALUBA				ALUF1	5.88	1.10
				ALUF2	0.93	0.22
BALOY	BALF1	5.76	2.34			
	BALF2	10.10	4.65			
CAMAMAN-AN	CAMF3	6.44	1.12	CAMF1	5.40	1.40
	CAMF4	8.13	1.41	CAMF2	5.93	1.67
CARMEN	CARF3			CARF1	5.94	1.26
	CARF4	4.55	0.52	CARF2	1.56	0.33
KAUSWAGAN	KAUF1	4.91	1.06			
	KAUF2	8.13	1.33			
PUEBLO DE ORO	PUEF1	6.00	1.17			
	PUEF2	7.68	1.35			
PUNTO D	PUNF3	3.59	0.84	PUNF1	3.68	0.78
	PUNF4	8.43	1.65	PUNF2	4.67	0.43
	PUNF5	1.59	0.16			
TAGOLOAN	TAGF1	11.08	5.22			
	TAGF2	9.36	4.41			
VILLANUEVA	VILF1	2.98	0.78			
	VILF2	3.01	1.54			

Derived MW forecast per feeder

Feeder	2021 Actual	% Share	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
ALUF1	5.88	4%	6.0	6.3	6.7	7.0	7.4	7.9	8.3	8.7	9.1	9.6	10.1
ALUF2	0.93	1%	0.9	1.0	1.1	1.1	1.2	1.2	1.3	1.4	1.4	1.5	1.6
BALF1	5.76	4%	5.9	6.2	6.5	6.9	7.3	7.7	8.1	8.5	9.0	9.4	9.9
BALF2	10.10	7%	10.3	10.9	11.5	12.1	12.8	13.5	14.2	14.9	15.7	16.6	17.4
CAMF1	5.40	4%	5.5	5.8	6.1	6.5	6.8	7.2	7.6	8.0	8.4	8.8	9.3
CAMF2	5.93	4%	6.1	6.4	6.7	7.1	7.5	7.9	8.3	8.8	9.2	9.7	10.2
CAMF3	6.44	5%	6.6	6.9	7.3	7.7	8.1	8.6	9.1	9.5	10.0	10.6	11.1
CAMF4	8.13	6%	8.3	8.8	9.2	9.7	10.3	10.9	11.4	12.0	12.6	13.3	14.0
CARF1	5.94	4%	6.1	6.4	6.7	7.1	7.5	7.9	8.4	8.8	9.2	9.7	10.2
CARF2	1.56	1%	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.6	2.7
CARF4	4.55	3%	4.6	4.9	5.2	5.4	5.8	6.1	6.4	6.7	7.1	7.5	7.8
KAUF1	4.91	4%	5.0	5.3	5.6	5.9	6.2	6.6	6.9	7.3	7.6	8.0	8.5
KAUF2	8.13	6%	8.3	8.8	9.2	9.7	10.3	10.9	11.4	12.0	12.6	13.3	14.0
PUEF1	6.00	4%	6.1	6.5	6.8	7.2	7.6	8.0	8.4	8.9	9.3	9.8	10.3
PUEF2	7.68	6%	7.8	8.3	8.7	9.2	9.7	10.3	10.8	11.4	11.9	12.6	13.2
PUNF1	3.68	3%	3.8	4.0	4.2	4.4	4.7	4.9	5.2	5.4	5.7	6.0	6.3
PUNF2	4.67	3%	4.8	5.0	5.3	5.6	5.9	6.2	6.6	6.9	7.3	7.7	8.0
PUNF3	3.59	3%	3.7	3.9	4.1	4.3	4.5	4.8	5.0	5.3	5.6	5.9	6.2
PUNF4	8.43	6%	8.6	9.1	9.6	10.1	10.7	11.3	11.9	12.5	13.1	13.8	14.5
PUNF5	1.59	1%	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.5	2.6	2.7

Feeder	2021 Actual	% Share	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
TAGF1	11.08	8%	11.3	11.9	12.6	13.2	14.0	14.8	15.6	16.4	17.2	18.2	19.1
TAGF2	9.36	7%	9.6	10.1	10.6	11.2	11.8	12.5	13.2	13.8	14.6	15.3	16.1
VILF1	2.98	2%	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.9	5.1
VILF2	3.01	2%	3.1	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.7	4.9	5.2
<b>TOTAL</b>	<b>138.71</b>	<b>100%</b>	<b>141.7</b>	<b>149.6</b>	<b>157.3</b>	<b>165.8</b>	<b>175.5</b>	<b>185.3</b>	<b>195.1</b>	<b>205.0</b>	<b>215.7</b>	<b>227.3</b>	<b>238.9</b>

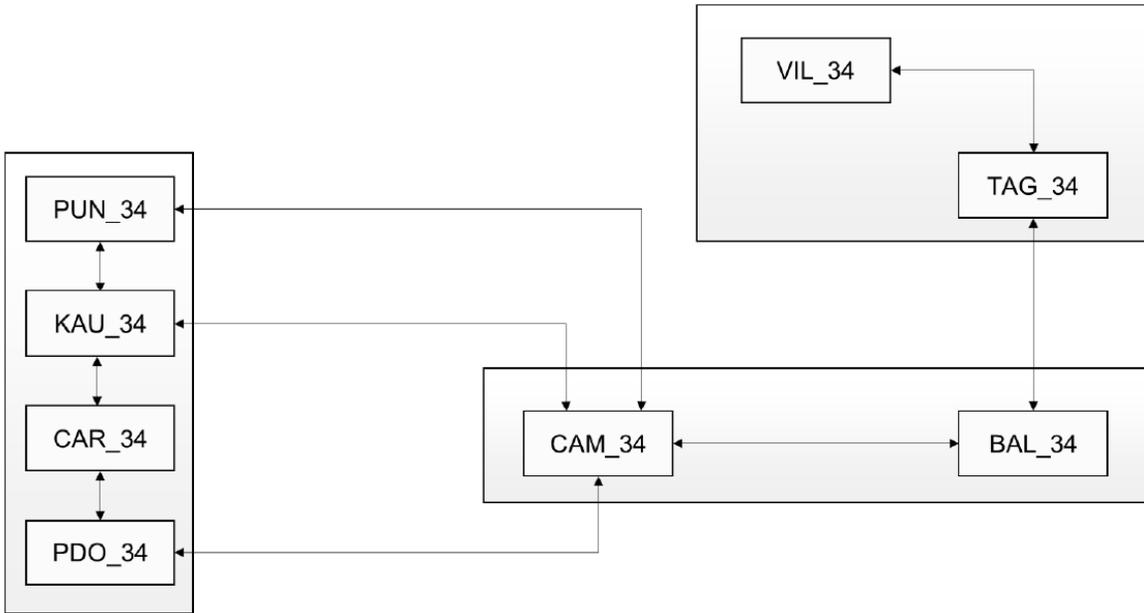


Loading performance of the interconnected 69kV/34.5kV zone substations during N-1 event

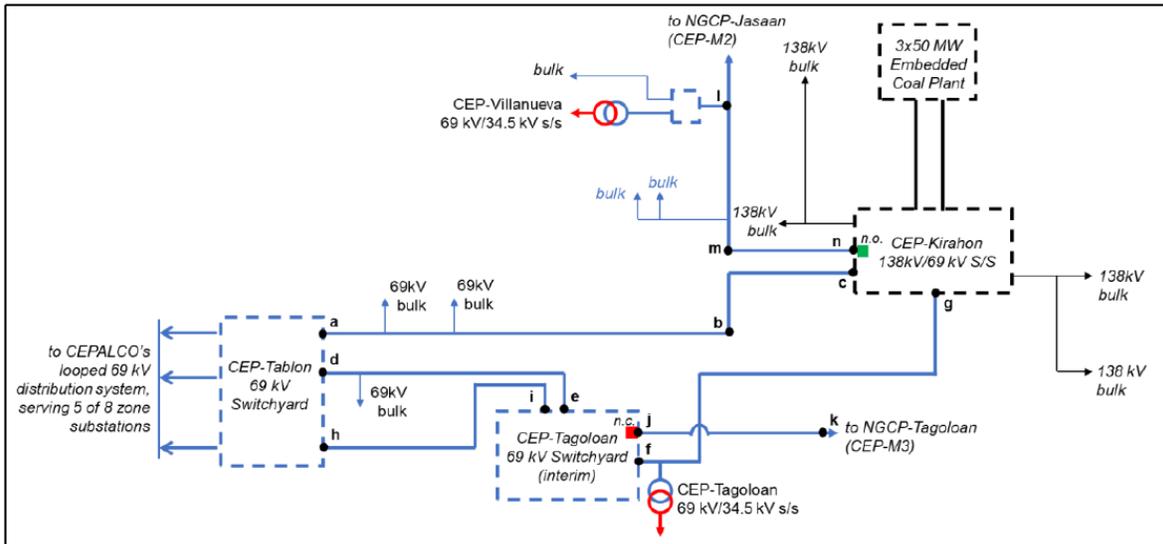
Substation	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Case 1: BALOY 69kV/34.5kV 25 MVA Transformer Outage											
BAL34											
CAM34	85.88%	88.99%	92.99%	98.16%	104.73%	112.25%	119.44%	126.54%	134.14%	142.74%	150.06%
CAR34	48.08%	52.78%	54.09%	55.31%	58.42%	61.93%	65.27%	68.52%	71.96%	75.80%	79.68%
KAU34	54.64%	55.47%	56.79%	57.99%	61.52%	65.53%	69.27%	72.86%	76.65%	80.91%	85.06%
PUE34	75.01%	79.10%	89.44%	102.34%	107.52%	113.44%	119.07%	124.62%	130.57%	137.37%	144.42%
PUN34	76.98%	80.09%	85.54%	87.72%	93.19%	99.41%	105.31%	111.08%	117.20%	124.05%	130.42%
TAG34	88.24%	96.43%	99.03%	101.51%	107.77%	114.91%	121.71%	128.38%	135.50%	143.51%	150.87%
VIL34	76.62%	95.21%	97.87%	100.42%	106.78%	114.01%	120.87%	127.60%	134.76%	142.79%	150.12%
Case 2: CAMAMAN-AN 69kV/34.5kV 25 MVA Transformer Outage											
BAL34	72.17%	73.53%	75.58%	77.52%	82.63%	88.45%	93.96%	99.32%	105.03%	111.46%	117.17%
CAM34											
CAR34	48.08%	52.78%	54.09%	55.31%	58.42%	61.93%	65.27%	68.52%	71.96%	75.80%	79.68%
KAU34	89.72%	91.28%	93.68%	95.92%	102.03%	108.98%	115.52%	121.85%	128.56%	136.09%	143.07%
PUE34	75.01%	79.09%	89.43%	102.34%	107.52%	113.44%	119.07%	124.62%	130.57%	137.37%	144.42%
PUN34	70.36%	74.58%	81.11%	85.65%	90.79%	96.65%	102.24%	107.73%	113.60%	120.21%	126.38%
TAG34	84.84%	94.93%	97.47%	99.90%	106.03%	113.02%	119.66%	126.16%	133.08%	140.86%	148.09%
VIL34	59.55%	73.38%	75.10%	76.74%	80.86%	85.53%	89.96%	94.30%	98.93%	104.11%	109.45%
Case 3: CARMEN 69kV/34.5kV 10 MVA Transformer Outage											
BAL34	72.17%	73.53%	75.58%	77.52%	82.63%	88.45%	93.96%	99.32%	105.03%	111.46%	117.17%
CAM34	61.84%	64.28%	67.35%	71.54%	76.05%	81.18%	86.06%	90.83%	95.90%	101.59%	106.80%
CAR34											
KAU34	74.05%	76.79%	78.65%	80.36%	85.17%	90.64%	95.76%	100.69%	105.91%	111.77%	117.50%
PUE34	58.48%	62.20%	72.02%	84.49%	88.43%	92.93%	97.21%	101.43%	105.96%	111.17%	116.87%
PUN34	58.12%	60.83%	65.67%	67.28%	71.32%	75.90%	80.24%	84.49%	88.98%	94.00%	98.83%
TAG34	84.84%	94.93%	97.47%	99.90%	106.03%	113.02%	119.66%	126.16%	133.08%	140.86%	148.09%
VIL34	59.55%	73.38%	75.10%	76.74%	80.86%	85.53%	89.96%	94.30%	98.93%	104.11%	109.45%
Case 4: KAUSWAGAN 69kV/34.5kV 25 MVA Transformer Outage											
BAL34	72.17%	73.53%	75.58%	77.52%	82.63%	88.45%	93.96%	99.32%	105.03%	111.46%	117.17%
CAM34	85.84%	90.31%	97.22%	102.10%	108.26%	115.27%	121.93%	128.45%	135.37%	143.15%	150.50%
CAR34	32.76%	37.19%	38.02%	38.81%	40.82%	43.10%	45.26%	47.36%	49.58%	52.05%	54.72%
KAU34											
PUE34	64.63%	68.47%	78.45%	91.07%	95.45%	100.46%	105.22%	109.91%	114.94%	120.71%	126.90%
PUN34	92.84%	94.81%	97.72%	100.53%	107.53%	115.54%	123.18%	130.72%	138.77%	147.84%	155.43%
TAG34	84.84%	94.93%	97.47%	99.90%	106.03%	113.02%	119.66%	126.16%	133.08%	140.86%	148.09%
VIL34	59.55%	73.38%	75.10%	76.74%	80.86%	85.53%	89.96%	94.30%	98.93%	104.11%	109.45%
Case 5: PUEBLO DE ORO 69kV/34.5kV 25 MVA Transformer Outage											
BAL34	72.17%	73.53%	75.58%	77.52%	82.63%	88.45%	93.96%	99.32%	105.03%	111.46%	117.17%
CAM34	82.12%	86.44%	91.58%	99.45%	105.37%	112.13%	118.59%	124.93%	131.71%	139.36%	146.51%
CAR34	80.99%	85.78%	105.26%	128.14%	134.28%	141.35%	148.15%	154.93%	162.31%	171.07%	179.85%
KAU34	67.26%	69.86%	71.51%	73.02%	77.34%	82.26%	86.85%	91.26%	95.93%	101.17%	106.36%
PUE34											
PUN34	72.95%	75.98%	81.31%	83.36%	88.49%	94.32%	99.85%	105.26%	110.99%	117.41%	123.43%
TAG34	84.84%	94.93%	97.47%	99.90%	106.03%	113.02%	119.66%	126.16%	133.08%	140.86%	148.09%
VIL34	59.55%	73.38%	75.10%	76.74%	80.86%	85.53%	89.96%	94.30%	98.93%	104.11%	109.45%
Case 6: PUNTOD 69kV/34.5kV 25 MVA Transformer Outage											
BAL34	72.17%	73.53%	75.58%	77.52%	82.63%	88.45%	93.96%	99.32%	105.03%	111.46%	117.17%
CAM34	85.84%	90.31%	97.22%	102.10%	108.26%	115.27%	121.93%	128.45%	135.37%	143.15%	150.50%
CAR34	32.76%	37.19%	38.02%	38.81%	40.82%	43.10%	45.26%	47.36%	49.58%	52.05%	54.72%
KAU34	89.72%	91.28%	93.68%	95.92%	102.03%	108.98%	115.52%	121.85%	128.56%	136.09%	143.07%
PUE34	64.63%	68.47%	78.45%	91.07%	95.45%	100.46%	105.22%	109.91%	114.94%	120.71%	126.90%
PUN34											
TAG34	84.84%	94.93%	97.47%	99.90%	106.03%	113.02%	119.66%	126.16%	133.08%	140.86%	148.09%
VIL34	59.55%	73.38%	75.10%	76.74%	80.86%	85.53%	89.96%	94.30%	98.93%	104.11%	109.45%



Simplified interconnection of CEPALCO's substations



**Figure 3.3-1: Simplified Single-Line Diagram (SLD) of CEPALCO's Sub-transmission System Area 1 (CBD to Eastern Portion)**



**Figure 3.3-2: Simplified Single-Line Diagram (SLD) of CEPALCO's Sub-transmission System Area 2 (CBD to Western Portion)**

