Power Supply Procurement Plan
2020

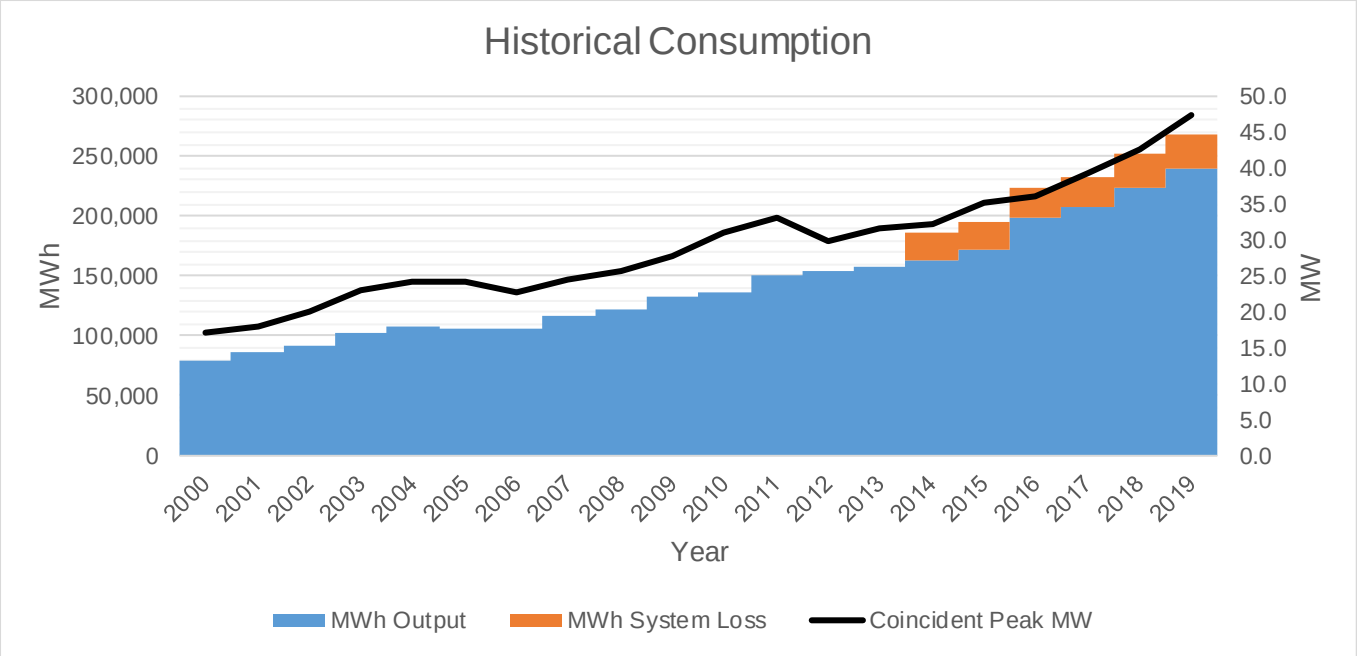
ZAMSURECO-I
Cerilles Street, Pagadian City

Grid

Historical Consumption Data

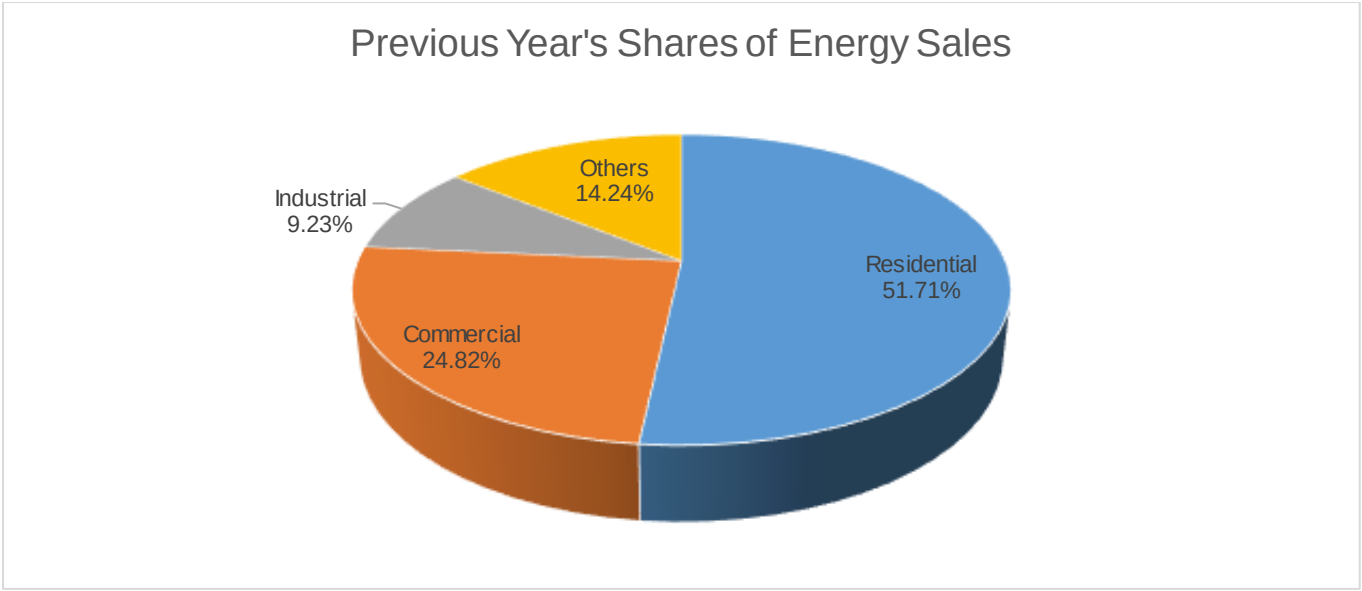
	Coincident Peak MW	MWh Offtake	WESM	MWh Input	MWh Output	MWh System Loss	Load Factor	Discrepancy	Transm'n Loss	System Loss
2000	17.13	91,923	0	91,923	79,470	0	61%	-13.55%	0.00%	0.00%
2001	18.06	98,507	0	98,507	85,753	0	62%	-12.95%	0.00%	0.00%
2002	19.92	106,838	0	106,838	91,480	0	61%	-14.38%	0.00%	0.00%
2003	23.15	116,711	0	116,711	102,151	0	58%	-12.48%	0.00%	0.00%
2004	24.19	122,837	0	122,837	107,221	0	58%	-12.71%	0.00%	0.00%
2005	24.12	126,260	0	126,260	106,562	0	60%	-15.60%	0.00%	0.00%
2006	22.74	126,736	0	126,736	105,532	0	64%	-16.73%	0.00%	0.00%
2007	24.38	132,728	0	132,728	116,825	0	62%	-11.98%	0.00%	0.00%
2008	25.80	137,218	0	137,218	121,479	0	61%	-11.47%	0.00%	0.00%
2009	27.68	148,325	0	148,325	132,475	0	61%	-10.69%	0.00%	0.00%
2010	31.08	154,160	0	154,160	136,308	0	57%	-11.58%	0.00%	0.00%
2011	33.00	167,227	0	167,227	150,253	0	58%	-10.15%	0.00%	0.00%
2012	29.73	173,818	0	173,818	154,148	0	67%	-11.32%	0.00%	0.00%
2013	31.53	179,356	0	179,356	158,291	0	65%	-11.74%	0.00%	0.00%
2014	32.15	185,551	0	185,551	163,825	21,616	66%	-0.06%	0.00%	11.65%
2015	35.07	194,702	0	194,702	172,656	22,046	63%	0.00%	0.00%	11.32%
2016	36.22	223,836	0	223,836	198,855	24,981	71%	0.00%	0.00%	11.16%
2017	39.44	231,647	0	231,647	207,106	25,442	67%	0.39%	0.00%	10.98%
2018	42.76	253,011	0	253,011	222,766	29,377	68%	-0.34%	0.00%	11.61%
2019	47.39	273,581	0	273,581	239,737	28,654	66%	-1.90%	0.00%	10.47%

In the year 2006, there was significant decrease in demand. However, from 2008 to 2014, the Cooperative experienced significant jump in terms of load growth due to influx of a number of investments and transfer of Regional Government Center from Zamboanga City to Pagadian City. ZAMSURECO-I's load factor on the average is 63%, this is because more than 80% of its customers are residential.



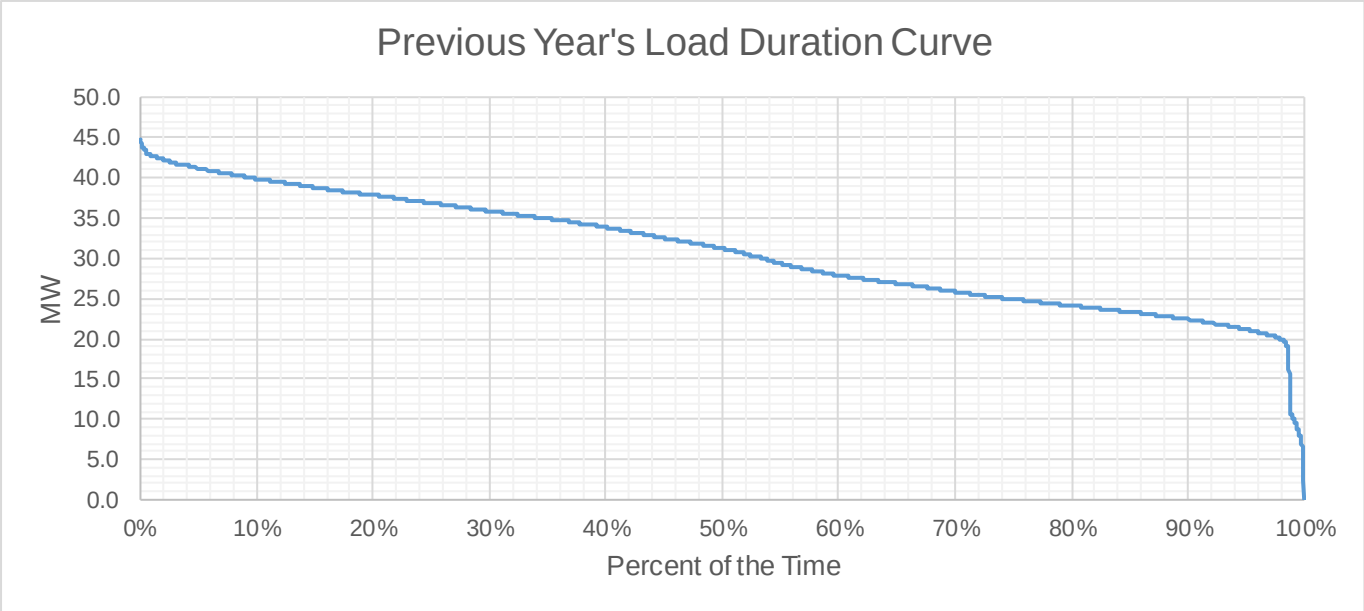
MWh Output increased from year 2000 to year 2004 at an average rate of 7%, and decrease by year 2005 by 1%. But, by year 2007, the MWh Output continued to increase at an average rate of 6% until year 2019. Meanwhile, MWh System Loss increased at an average rate of 5%.

Historically, Transmission Loss ranged to 0% while System Loss ranged from 10.47% to 11.65%. System Loss peaked at 11.65% on year 2014 due to a number of factors such as inefficient line components, high technical losses, and pilferage among others.

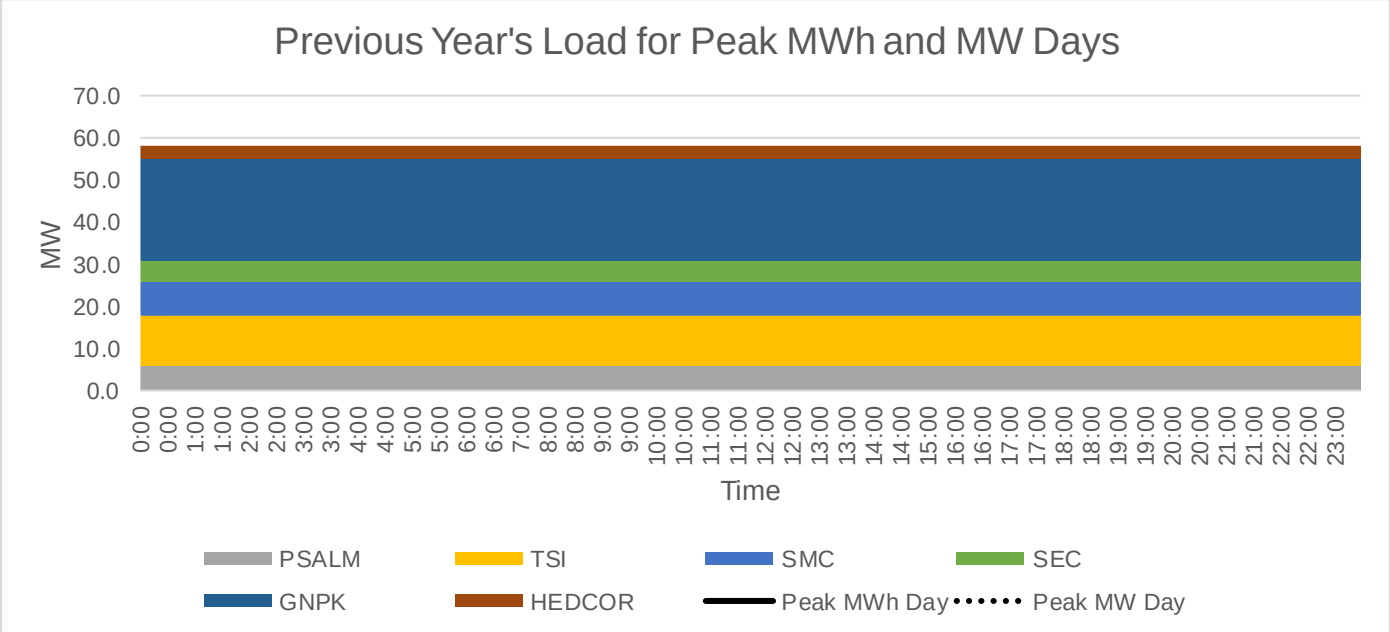


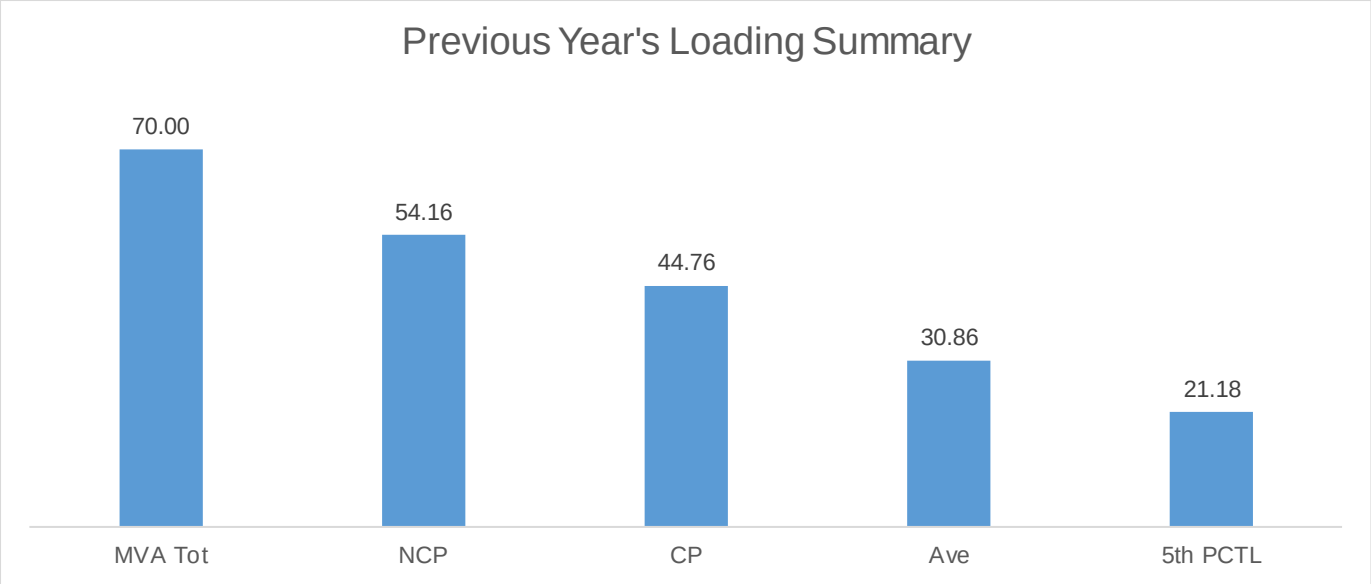
Residential customers account for the bulk of energy sales at 51.71% due to the high number of connections. In contrast, industrial customers accounted for only 9.23% of energy sales as there are only few industrial connections within the coverage area of ZAMSURECO-I.

Previous Year's Load Profile



Based on the Load Duration Curve, the minimum load is around 22.5 MW. And the maximum load is 44.756 MW for the last historical year.





The Non-coincident Peak Demand is 54.16 MW, which is around 77% of the total substation capacity of 70 MVA at a power factor of 0.9. The load factor or the ratio between the Average Load of 30.86 MW and the Non-coincident Peak Demand is 57% of. A safe estimate of the true minimum load is the fifth percentile load of 21.18 MW which is 39% of the Non-coincident Peak Demand.

Metering Point	Substation MVA	Substation Peak MW
SWITCH SS1	5	4.702
TIGUMA SS2	10	9.078
BALANGASAN SS4	10	9.245
SAN MIGUEL SS5	10	7.434
STA. MARIA SS6	10	8.080
CULO SS7	10	8.048
SAN JOSE SS8	10	4.072
UPPER BAYAO SS9	5	3.497

The substations loaded above 70% are Switch, Tiguma and Balangasan Substation. The overloading problem of Tiguma and Balangasan Substations will be addressed by the installation of additional 10 MVA substation transformer at Brgy. Sta. Maria, Pagadian City and 10 MVA substation transformer at Brgy. Tiguma, Pagadian City.On the other hand, the overloading problem of Switch substation will be addressed by the energization of 10MVA substation at Brgy. Romarate, Aurora Zamboanga del Sur.

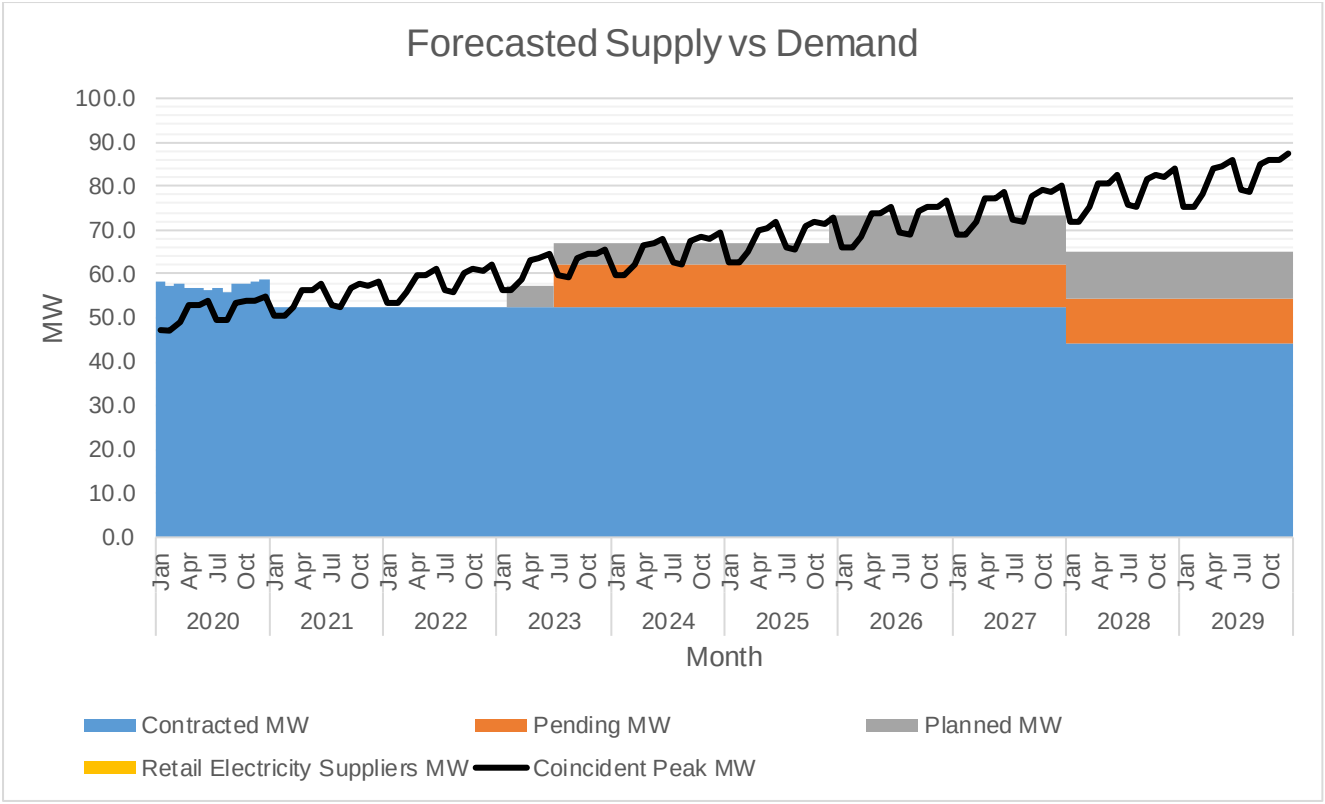
San Jose Substation (SS8) energization date was on March 8, 2019. While, Upper Bayao Substation (SS9) energication date was on April 5, 2019.

Forecasted Consumption Data

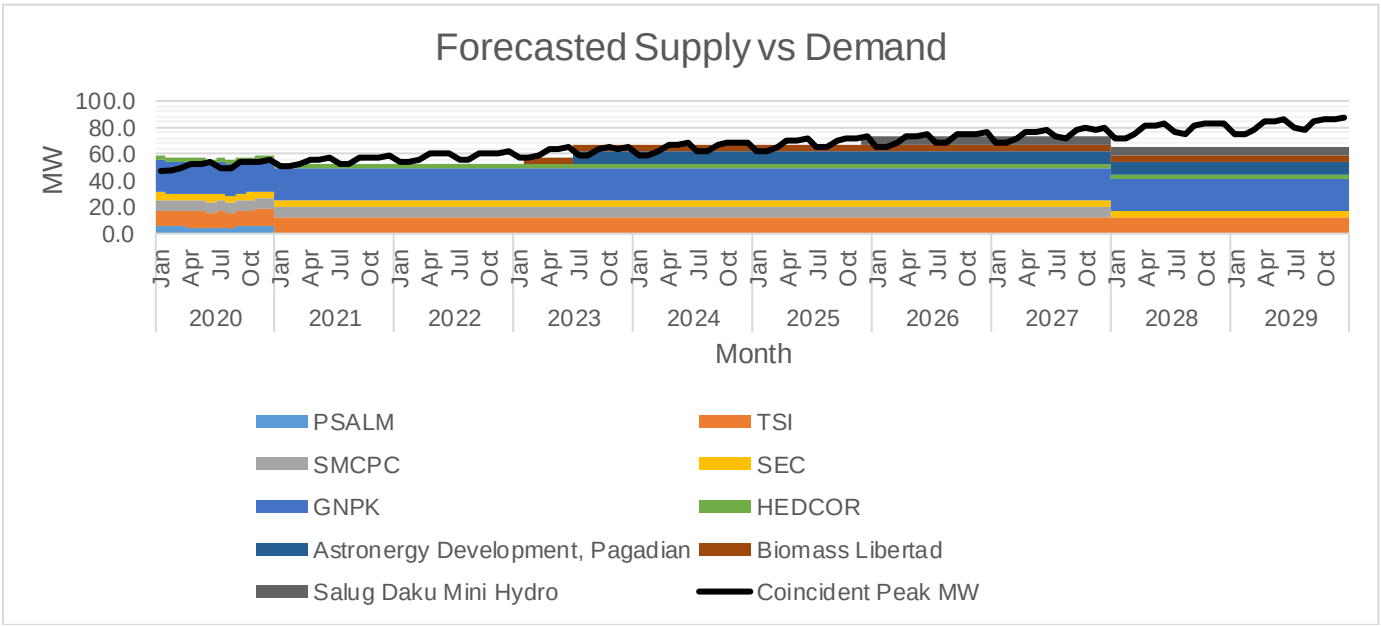
		Coincident Peak MW	Contracted MW	Pending MW	Planned MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
2020	Jan	47.21	58.08	0.00	0.000	123%	123%	10.87
	Feb	47.24	57.30	0.00	0.000	121%	121%	10.06
	Mar	49.18	57.83	0.00	0.000	118%	118%	8.65
	Apr	52.83	56.87	0.00	0.000	108%	108%	4.04
	May	52.98	56.67	0.00	0.000	107%	107%	3.69
	Jun	54.06	56.36	0.00	0.000	104%	104%	2.30
	Jul	49.72	56.61	0.00	0.000	114%	114%	6.89
	Aug	49.39	56.06	0.00	0.000	114%	114%	6.67
	Sep	53.35	57.67	0.00	0.000	108%	108%	4.33
	Oct	54.12	57.98	0.00	0.000	107%	107%	3.86
	Nov	53.89	58.21	0.00	0.000	108%	108%	4.32
	Dec	54.92	58.75	0.00	0.000	107%	107%	3.83
2021	Jan	50.28	52.24	0.00	0.000	104%	104%	1.96
	Feb	50.31	52.24	0.00	0.000	104%	104%	1.93
	Mar	52.38	52.24	0.00	0.000	100%	100%	-0.14
	Apr	56.27	52.24	0.00	0.000	93%	93%	-4.03
	May	56.43	52.24	0.00	0.000	93%	93%	-4.19
	Jun	57.58	52.24	0.00	0.000	91%	91%	-5.34
	Jul	52.96	52.24	0.00	0.000	99%	99%	-0.72
	Aug	52.61	52.24	0.00	0.000	99%	99%	-0.37
	Sep	56.82	52.24	0.00	0.000	92%	92%	-4.58
	Oct	57.65	52.24	0.00	0.000	91%	91%	-5.41
	Nov	57.40	52.24	0.00	0.000	91%	91%	-5.16
	Dec	58.50	52.24	0.00	0.000	89%	89%	-6.26
2022	Jan	53.37	52.24	0.00	0.000	98%	98%	-1.13
	Feb	53.40	52.24	0.00	0.000	98%	98%	-1.16
	Mar	55.60	52.24	0.00	0.000	94%	94%	-3.36
	Apr	59.73	52.24	0.00	0.000	87%	87%	-7.49
	May	59.90	52.24	0.00	0.000	87%	87%	-7.66
	Jun	61.12	52.24	0.00	0.000	85%	85%	-8.88
	Jul	56.21	52.24	0.00	0.000	93%	93%	-3.97
	Aug	55.84	52.24	0.00	0.000	94%	94%	-3.60
	Sep	60.31	52.24	0.00	0.000	87%	87%	-8.07
	Oct	61.19	52.24	0.00	0.000	85%	85%	-8.95
	Nov	60.93	52.24	0.00	0.000	86%	86%	-8.69
	Dec	62.09	52.24	0.00	0.000	84%	84%	-9.85
2023	Jan	56.47	52.24	0.00	0.000	93%	93%	-4.23
	Feb	56.50	52.24	0.00	5.000	92%	101%	0.74
	Mar	58.82	52.24	0.00	5.000	89%	97%	-1.58
	Apr	63.19	52.24	0.00	5.000	83%	91%	-5.95
	May	63.37	52.24	0.00	5.000	82%	90%	-6.13
	Jun	64.67	52.24	0.00	5.000	81%	89%	-7.43
	Jul	59.48	52.24	10.00	5.000	88%	113%	7.76
	Aug	59.08	52.24	10.00	5.000	88%	114%	8.16

		Coincident Peak MW	Contracted MW	Pending MW	Planned MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
	Sep	63.81	52.24	10.00	5.000	82%	105%	3.43
	Oct	64.74	52.24	10.00	5.000	81%	104%	2.50
	Nov	64.46	52.24	10.00	5.000	81%	104%	2.78
	Dec	65.69	52.24	10.00	5.000	80%	102%	1.55
2024	Jan	59.57	52.24	10.00	5.000	88%	113%	7.67
	Feb	59.61	52.24	10.00	5.000	88%	113%	7.63
	Mar	62.06	52.24	10.00	5.000	84%	108%	5.18
	Apr	66.67	52.24	10.00	5.000	78%	101%	0.57
	May	66.85	52.24	10.00	5.000	78%	101%	0.39
	Jun	68.22	52.24	10.00	5.000	77%	99%	-0.98
	Jul	62.75	52.24	10.00	5.000	83%	107%	4.49
	Aug	62.32	52.24	10.00	5.000	84%	108%	4.92
	Sep	67.32	52.24	10.00	5.000	78%	100%	-0.08
	Oct	68.30	52.24	10.00	5.000	76%	98%	-1.06
	Nov	68.01	52.24	10.00	5.000	77%	99%	-0.77
	Dec	69.30	52.24	10.00	5.000	75%	97%	-2.06
2025	Jan	62.68	52.24	10.00	5.000	83%	107%	4.56
	Feb	62.72	52.24	10.00	5.000	83%	107%	4.52
	Mar	65.30	52.24	10.00	5.000	80%	103%	1.94
	Apr	70.15	52.24	10.00	5.000	74%	96%	-2.91
	May	70.34	52.24	10.00	5.000	74%	96%	-3.10
	Jun	71.78	52.24	10.00	5.000	73%	94%	-4.54
	Jul	66.02	52.24	10.00	5.000	79%	102%	1.22
	Aug	65.58	52.24	10.00	5.000	80%	103%	1.66
	Sep	70.83	52.24	10.00	5.000	74%	95%	-3.59
	Oct	71.86	52.24	10.00	5.000	73%	94%	-4.62
	Nov	71.56	52.24	10.00	5.000	73%	94%	-4.32
	Dec	72.92	52.24	10.00	11.000	72%	100%	0.32
2026	Jan	65.79	52.24	10.00	11.000	79%	111%	7.45
	Feb	65.83	52.24	10.00	11.000	79%	111%	7.41
	Mar	68.54	52.24	10.00	11.000	76%	107%	4.70
	Apr	73.63	52.24	10.00	11.000	71%	99%	-0.39
	May	73.84	52.24	10.00	11.000	71%	99%	-0.60
	Jun	75.35	52.24	10.00	11.000	69%	97%	-2.11
	Jul	69.30	52.24	10.00	11.000	75%	106%	3.94
	Aug	68.84	52.24	10.00	11.000	76%	106%	4.40
	Sep	74.35	52.24	10.00	11.000	70%	99%	-1.11
	Oct	75.43	52.24	10.00	11.000	69%	97%	-2.19
	Nov	75.11	52.24	10.00	11.000	70%	98%	-1.87
	Dec	76.54	52.24	10.00	11.000	68%	96%	-3.30
2027	Jan	68.91	52.24	10.00	11.000	76%	106%	4.33
	Feb	68.95	52.24	10.00	11.000	76%	106%	4.29
	Mar	71.79	52.24	10.00	11.000	73%	102%	1.45
	Apr	77.12	52.24	10.00	11.000	68%	95%	-3.88
	May	77.34	52.24	10.00	11.000	68%	95%	-4.10
	Jun	78.92	52.24	10.00	11.000	66%	93%	-5.68

		Coincident Peak MW	Contracted MW	Pending MW	Planned MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
	Jul	72.58	52.24	10.00	11.000	72%	101%	0.66
	Aug	72.10	52.24	10.00	11.000	72%	102%	1.14
	Sep	77.87	52.24	10.00	11.000	67%	94%	-4.63
	Oct	79.01	52.24	10.00	11.000	66%	93%	-5.77
	Nov	78.67	52.24	10.00	11.000	66%	93%	-5.43
	Dec	80.17	52.24	10.00	11.000	65%	91%	-6.93
2028	Jan	72.03	44.24	10.00	11.000	61%	91%	-6.79
	Feb	72.07	44.24	10.00	11.000	61%	91%	-6.83
	Mar	75.04	44.24	10.00	11.000	59%	87%	-9.80
	Apr	80.61	44.24	10.00	11.000	55%	81%	-15.37
	May	80.84	44.24	10.00	11.000	55%	81%	-15.60
	Jun	82.49	44.24	10.00	11.000	54%	79%	-17.25
	Jul	75.87	44.24	10.00	11.000	58%	86%	-10.63
	Aug	75.36	44.24	10.00	11.000	59%	87%	-10.12
	Sep	81.40	44.24	10.00	11.000	54%	80%	-16.16
	Oct	82.58	44.24	10.00	11.000	54%	79%	-17.34
	Nov	82.23	44.24	10.00	11.000	54%	79%	-16.99
	Dec	83.79	44.24	10.00	11.000	53%	78%	-18.55
2029	Jan	75.15	44.24	10.00	11.000	59%	87%	-9.91
	Feb	75.20	44.24	10.00	11.000	59%	87%	-9.96
	Mar	78.29	44.24	10.00	11.000	57%	83%	-13.05
	Apr	84.11	44.24	10.00	11.000	53%	78%	-18.87
	May	84.34	44.24	10.00	11.000	52%	77%	-19.10
	Jun	86.06	44.24	10.00	11.000	51%	76%	-20.82
	Jul	79.16	44.24	10.00	11.000	56%	82%	-13.92
	Aug	78.63	44.24	10.00	11.000	56%	83%	-13.39
	Sep	84.92	44.24	10.00	11.000	52%	77%	-19.68
	Oct	86.16	44.24	10.00	11.000	51%	76%	-20.92
	Nov	85.79	44.24	10.00	11.000	52%	76%	-20.55
	Dec	87.43	44.24	10.00	11.000	51%	75%	-22.19



Above graph shows that from 2020, the Cooperative's existing supply is sufficient to cover its demand requirements. However, demand is seen to catch up with supply by year 2021.



Of the available supply, the largest is 24.24 MW from GNPK. This is followed by 12 MW from TSI.

		MWh Offtake	MWh Output	MWh System Loss	Transm'n Loss	System Loss
2020	Jan	23,584	20,490	2,799	1.25%	12.02%
	Feb	23,272	20,431	2,503	1.45%	10.92%
	Mar	21,986	19,802	2,144	0.18%	9.77%
	Apr	24,520	22,472	2,069	-0.09%	8.43%
	May	25,432	22,024	2,776	2.48%	11.19%

		MWh Offtake	MWh Output	MWh System Loss	Transm'n Loss	System Loss
	Jun	24,999	22,299	2,741	-0.17%	10.95%
	Jul	23,133	20,872	1,943	1.37%	8.52%
	Aug	23,905	21,323	2,079	2.11%	8.88%
	Sep	24,909	21,892	2,435	2.34%	10.01%
	Oct	26,177	22,790	2,773	2.35%	10.85%
	Nov	26,214	23,050	2,499	2.54%	9.78%
	Dec	25,408	22,535	2,419	1.79%	9.69%
2021	Jan	25,120	21,824	3,019	1.10%	12.15%
	Feb	24,788	21,762	2,673	1.43%	10.94%
	Mar	23,418	21,091	2,256	0.30%	9.66%
	Apr	26,117	23,936	2,172	0.04%	8.32%
	May	27,088	23,458	3,018	2.26%	11.40%
	Jun	26,627	23,751	2,966	-0.34%	11.10%
	Jul	24,640	22,231	2,045	1.48%	8.42%
	Aug	25,462	22,711	2,158	2.33%	8.68%
	Sep	26,532	23,317	2,573	2.42%	9.94%
	Oct	27,882	24,274	3,007	2.16%	11.02%
	Nov	27,921	24,551	2,678	2.48%	9.83%
	Dec	27,062	24,002	2,592	1.73%	9.75%
2022	Jan	26,662	23,164	3,237	0.98%	12.26%
	Feb	26,310	23,098	2,841	1.41%	10.95%
	Mar	24,856	22,386	2,367	0.41%	9.56%
	Apr	27,720	25,406	2,274	0.15%	8.21%
	May	28,752	24,899	3,258	2.07%	11.57%
	Jun	28,262	25,210	3,189	-0.48%	11.23%
	Jul	26,153	23,596	2,145	1.57%	8.33%
	Aug	27,025	24,106	2,236	2.53%	8.49%
	Sep	28,161	24,749	2,710	2.49%	9.87%
	Oct	29,594	25,765	3,238	2.00%	11.17%
	Nov	29,635	26,059	2,855	2.43%	9.87%
	Dec	28,724	25,476	2,764	1.68%	9.79%
2023	Jan	28,209	24,508	3,452	0.89%	12.34%
	Feb	27,836	24,438	3,006	1.41%	10.95%
	Mar	26,298	23,685	2,477	0.52%	9.47%
	Apr	29,329	26,880	2,375	0.25%	8.12%
	May	30,420	26,343	3,495	1.91%	11.71%
	Jun	29,902	26,672	3,408	-0.60%	11.33%
	Jul	27,670	24,966	2,245	1.66%	8.25%
	Aug	28,593	25,505	2,314	2.71%	8.32%
	Sep	29,795	26,185	2,844	2.57%	9.80%
	Oct	31,311	27,260	3,467	1.87%	11.28%
	Nov	31,355	27,571	3,030	2.41%	9.90%
	Dec	30,390	26,954	2,933	1.66%	9.81%
2024	Jan	29,760	25,855	3,663	0.81%	12.41%
	Feb	29,367	25,781	3,169	1.42%	10.95%
	Mar	27,743	24,987	2,585	0.62%	9.38%
	Apr	30,941	28,357	2,475	0.35%	8.03%

		MWh Offtake	MWh Output	MWh System Loss	Transm'n Loss	System Loss
	May	32,092	27,791	3,727	1.79%	11.83%
	Jun	31,546	28,138	3,624	-0.69%	11.41%
	Jul	29,191	26,338	2,343	1.75%	8.17%
	Aug	30,165	26,906	2,391	2.87%	8.16%
	Sep	31,432	27,624	2,977	2.64%	9.73%
	Oct	33,032	28,758	3,692	1.76%	11.38%
	Nov	33,078	29,086	3,202	2.39%	9.92%
	Dec	32,061	28,436	3,100	1.64%	9.83%
2025	Jan	31,313	27,205	3,871	0.76%	12.46%
	Feb	30,899	27,127	3,330	1.43%	10.93%
	Mar	29,191	26,291	2,692	0.71%	9.29%
	Apr	32,556	29,837	2,573	0.45%	7.94%
	May	33,767	29,242	3,956	1.69%	11.92%
	Jun	33,192	29,607	3,837	-0.76%	11.47%
	Jul	30,715	27,713	2,439	1.83%	8.09%
	Aug	31,739	28,311	2,467	3.03%	8.02%
	Sep	33,073	29,066	3,108	2.72%	9.66%
	Oct	34,756	30,259	3,913	1.68%	11.45%
	Nov	34,805	30,604	3,372	2.38%	9.92%
	Dec	33,734	29,920	3,264	1.63%	9.84%
2026	Jan	32,869	28,556	4,075	0.72%	12.49%
	Feb	32,434	28,474	3,488	1.46%	10.91%
	Mar	30,641	27,597	2,797	0.81%	9.20%
	Apr	34,173	31,319	2,670	0.54%	7.85%
	May	35,444	30,694	4,180	1.61%	11.99%
	Jun	34,841	31,078	4,046	-0.81%	11.52%
	Jul	32,240	29,089	2,535	1.91%	8.01%
	Aug	33,316	29,717	2,542	3.17%	7.88%
	Sep	34,716	30,510	3,237	2.79%	9.59%
	Oct	36,482	31,762	4,130	1.62%	11.51%
	Nov	36,534	32,125	3,538	2.38%	9.92%
	Dec	35,410	31,406	3,425	1.63%	9.83%
2027	Jan	34,426	29,909	4,275	0.70%	12.51%
	Feb	33,971	29,823	3,643	1.49%	10.88%
	Mar	32,093	28,904	2,900	0.90%	9.12%
	Apr	35,792	32,803	2,765	0.63%	7.77%
	May	37,123	32,149	4,401	1.55%	12.04%
	Jun	36,491	32,550	4,250	-0.85%	11.55%
	Jul	33,768	30,467	2,628	1.99%	7.94%
	Aug	34,894	31,125	2,616	3.31%	7.75%
	Sep	36,360	31,955	3,364	2.86%	9.52%
	Oct	38,211	33,267	4,343	1.57%	11.55%
	Nov	38,265	33,647	3,702	2.39%	9.91%
	Dec	37,087	32,894	3,584	1.64%	9.82%
2028	Jan	35,985	31,263	4,472	0.69%	12.51%
	Feb	35,509	31,173	3,795	1.52%	10.85%
	Mar	33,546	30,213	3,002	0.99%	9.04%

		MWh Offtake	MWh Output	MWh System Loss	Transm'n Loss	System Loss
	Apr	37,412	34,288	2,859	0.71%	7.70%
	May	38,804	33,604	4,617	1.50%	12.08%
	Jun	38,143	34,024	4,452	-0.87%	11.57%
	Jul	35,297	31,846	2,720	2.07%	7.87%
	Aug	36,474	32,534	2,689	3.43%	7.63%
	Sep	38,006	33,402	3,488	2.94%	9.46%
	Oct	39,941	34,773	4,553	1.54%	11.58%
	Nov	39,997	35,170	3,863	2.41%	9.90%
	Dec	38,766	34,383	3,739	1.66%	9.81%
2029	Jan	37,544	32,618	4,666	0.70%	12.51%
	Feb	37,048	32,525	3,945	1.56%	10.82%
	Mar	35,000	31,523	3,102	1.07%	8.96%
	Apr	39,034	35,774	2,951	0.79%	7.62%
	May	40,486	35,060	4,830	1.47%	12.11%
	Jun	39,797	35,498	4,649	-0.88%	11.58%
	Jul	36,826	33,227	2,811	2.14%	7.80%
	Aug	38,055	33,944	2,761	3.55%	7.52%
	Sep	39,654	34,850	3,611	3.01%	9.39%
	Oct	41,672	36,280	4,758	1.52%	11.59%
	Nov	41,731	36,694	4,021	2.43%	9.88%
	Dec	40,447	35,874	3,892	1.68%	9.79%

Using their historical trend different models was developed in forecasting both for load and customer. This forecasted model was tested for validity and those models that didn't pass the statistical criteria including those that deviate from ±3% forecasting error were rejected. The different and final forecasting models that were used and validated are on Table 8. The final forecasting model is then used in determining the new and future facilities in the distribution system.

The ZAMSURECO-I's demand and energy forecast follows a polynomial-cubic trend with optimized horizon and is given by the following formula:

$$L(t) = -387{,}005{,}795.443 * t^{1.0059206} - 86{,}504{,}896.562 * t^{0.9557256} + 10{,}463{,}628.778 * t^{0.8431449} + 463{,}163{,}708.380 * t + 4{,}980$$

Forecast Parameters:
MAPE: **0.40% (Standard: <3%)**
Adj R^2 : **0.99 (Standard: at least 0.99)**

The forecasted load for load flow simulation is allocated per feeder using the historical distribution trend of load per feeder. The allocated energy per feeder is now then allocated to per substation. See ***Table 8*** for the details of the forecasting and the different models used.

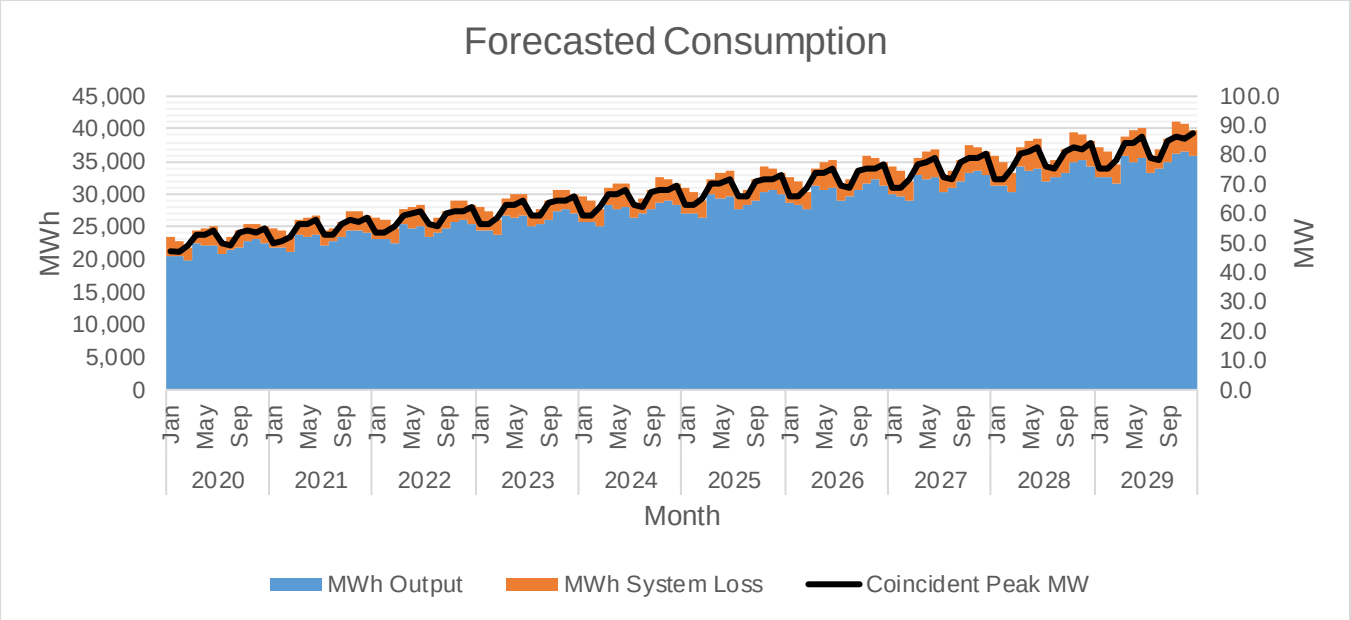
Table 8. Summary of Selected Forecasting Models

Description	Forecasted Model	Validity Tests				Accuracy Test
		Adj R^2	t-statistic		p-value	MAPE
		(>0.99)	(| t | > 2)		(<0.1)	(<5%)
ANNUAL ENERGY PURCHASED (MWH)	Y = e(t)-1 + b(t) + a	0.991	e	3.374	0.028	0.90%
			b	16.169	0.000	
			a	17.068	0.000	

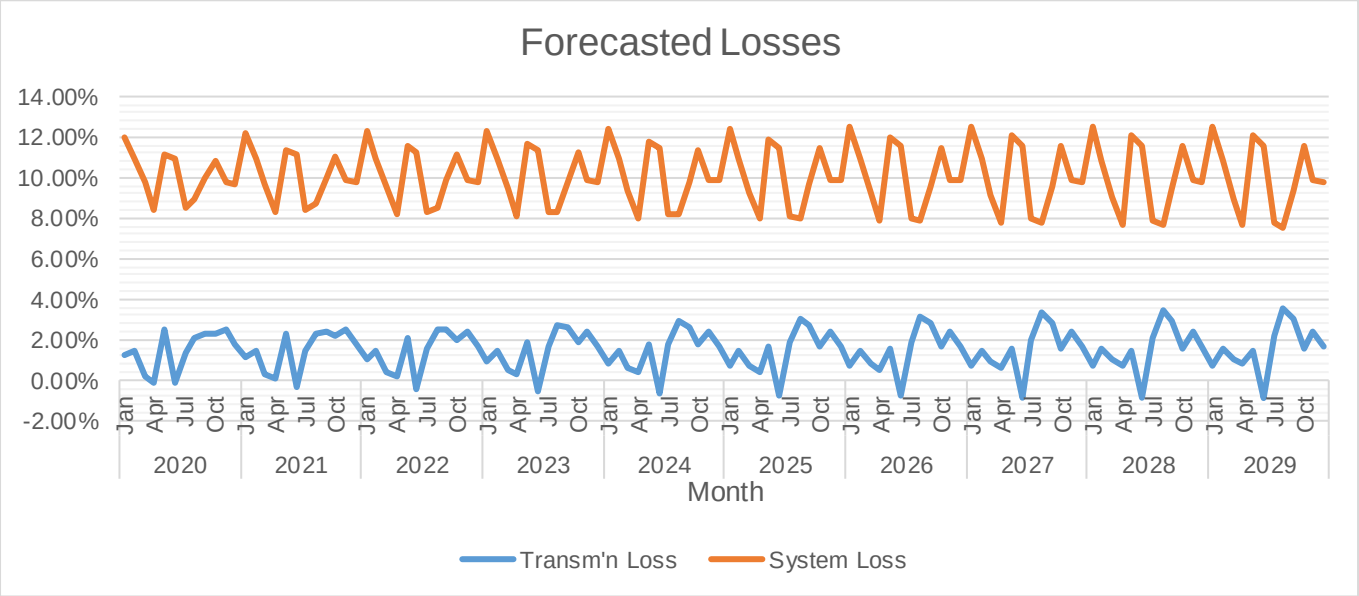
NUMBER OF CUSTOMER (ENTIRE SYSTEM)	Y = dln(t)3 + cln(t)2 + bln(t) + a	1.00	d	4.608	0.019	0.49%
			c	-2.902	0.062	
			B	3.761	0.033	
			a	93.584	0.000	

The Annual Coincident Peak of ZAMSURECO-I usually occurs in the month of December. Starting month of September, operation of seasonal loads start to increase in preparation for Yuletide season. This results in abrupt increase of load, usually reaching peak in December as almost all households are turning on their decorative lightings and electric-powered decorations.

From January to May, an increasing Coincident Peak is observed because of relatively hot weather that is experienced during this period. An abrupt decrease in Coincident Peak occurs in the month of June up to August because of the change of weather from hot season to rainy season.
The assumed load factor is 60% because the average load factor for the last 10 years is close to 60%.



From 2020 up to 2029, the system demand is seen to be steadily increasing. Likewise, Energy consumption and energy losses follow the same trend. However, the Cooperative sees to it that system loss percentage average annually is kept below the ERC-prescribed system loss cap.



Transmission Loss is expected to meet at 1.5% annual average while System Loss is expected to meet at 10% annual average.

Power Supply

Case No.	Type	GenCo	Minimum MW	Minimum MWh/yr	PSA Start	PSA End
PSALM	Base	Power Sector Assets and Liabilities Management Corporation	2.90	50,736	12/26/2018	12/25/2020
HEDCOR	Intermediate	Hedcor, Inc.	1.20	12,960	12/1/2017	12/1/2020
TSI	Base	Therma South, Inc.	4.80	82,944	9/1/2015	9/1/2040
SMCPC	Base	San Miguel Consolidated Power Corporation	3.20	55,296	7/1/2017	7/1/2027
SEC	Base	Sarangani Energy Corporation	2.00	34,560	8/1/2019	8/1/2044
GNPK	Base	GN Power Kauswagan Ltd.	9.60	25,091	6/1/2019	6/1/2039

The PSA with PSALM/NPC is renewed after expiration of CSEE. PSALM/NPC is the cheapest source of baseload power supply.

PSA with TSI was the first baseload power supply agreement that ZAMSURECO-I entered into. TSI was the first IPP to offer baseload power supply in Mindanao. During that time, ECs are in dire need of baseload power due to power supply crisis that hit the entire Mindanao Grid, resulting in power curtailment of 6-8 hours per day.

PSA with SMCPC was signed sometime in 2015. It underwent competitive selection process (CSP). Its power plant went full commercial operation in year 2017. It helped ZAMSURECO-I achieve power supply sufficiency, effectively ending the power supply crisis.

PSA with HEDCOR is a renewable energy supply agreement and is ZAMSURECO-I's first and only contract with a FIT-Eligible power producer. Its settlement is different from other power suppliers since portion of the cost will be charged against FIT-All which is currently being collected by TRANSCO. The remaining portion of the bill is computed using ACRR.

The contract with SEC was intended to ensure sufficient power supply and to diversify the Cooperative's sources of power. SEC is owned by Alsons Power which owns several peaking plants in Mindanao. One of its peaking plants is located in Zamboanga Peninsula (Zampen) and was previously utilized by the transmission system operator for voltage regulation, keeping the supply voltage in Zampen within acceptable level especially during peaking periods.

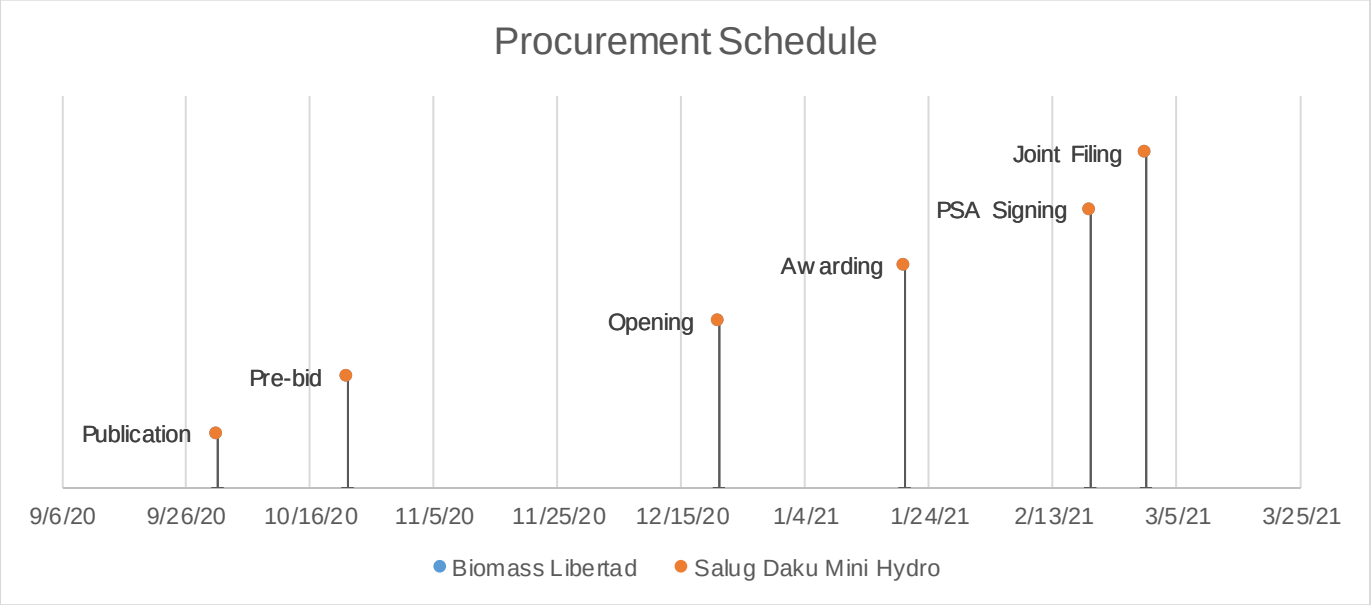
GNPK Contract was signed in 2012. It was a result of power supply aggregation initiative of AMRECO Member-ECs. With aggregation, the ECs were able to increase its bargaining power in supply contracting, thereby resulting in reduced generation charges.

Currently, the Cooperative's average generation charge is between 4 to 5 Pesos per kWh.

Power Supply Agreements - Pending

Case No.	Type	GenCo	Minimum MW	Minimum MWh/yr	PSA Start	PSA End
Astronergy Development, Pagadian	Intermediate	Other	4.00	5,896	7/1/2023	7/1/2048

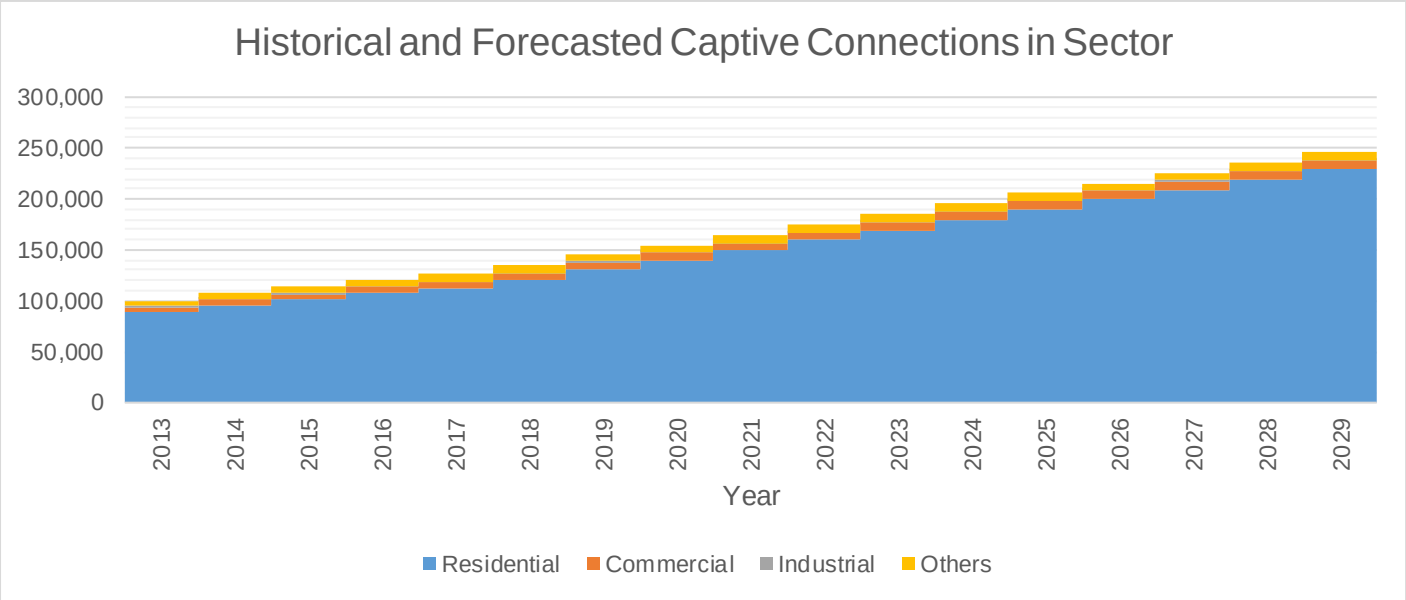
	GenCo 1	GenCo 2
Type	Intermediate	Intermediate
Minimum MW	2.00	2.40
Minimum MWh/yr	17,520	21,024
PSA Start	1/1/2022	12/1/2025
PSA End	1/1/2037	12/1/2045
Publication	10/1/2020	10/1/2020
Pre-bid	10/22/2020	10/22/2020
Opening	12/21/2020	12/21/2020
Awarding	1/20/2021	1/20/2021
PSA Signing	2/19/2021	2/19/2021
Joint Filing	2/28/2021	2/28/2021



The CSP Schedule is based on ZAMSURECO-I's commitment to tap/integrate renewable energy sources into its existing power supply portfolio, in line with RPS requirements set forth by the government, through DOE as implementing arm. Three of the proposed PSAs are engagement with renewable energy developers (for RPS compliance) while the fourth one is a CSP for the supply of peaking requirement, preferably, with a diesel-fired power plant.

Most of the CSP Publication schedules are set to October 2020 as a result of the issuance of Supreme Court ruling requiring all PSAs signed on or after 30 June 2015 to undergo competitive selection process. To facilitate the conduct of CSP for the 4 proposed PSAs as well as to save financial resources spent for publication, the 4 CSPs will be published simultaneously.

Captive Customer Connections



Throughout the entire planning period, the growth in number of residential customers is steadily increasing, growing at a rate similar to the growth trend of total energy consumption. This is expected because majority of ZAMSURECO-I's captive customers are residential.

The number of residential connections is expected to grow at an average rate of 8% annually. Said customer class is expected to account for 51% of the total consumption.