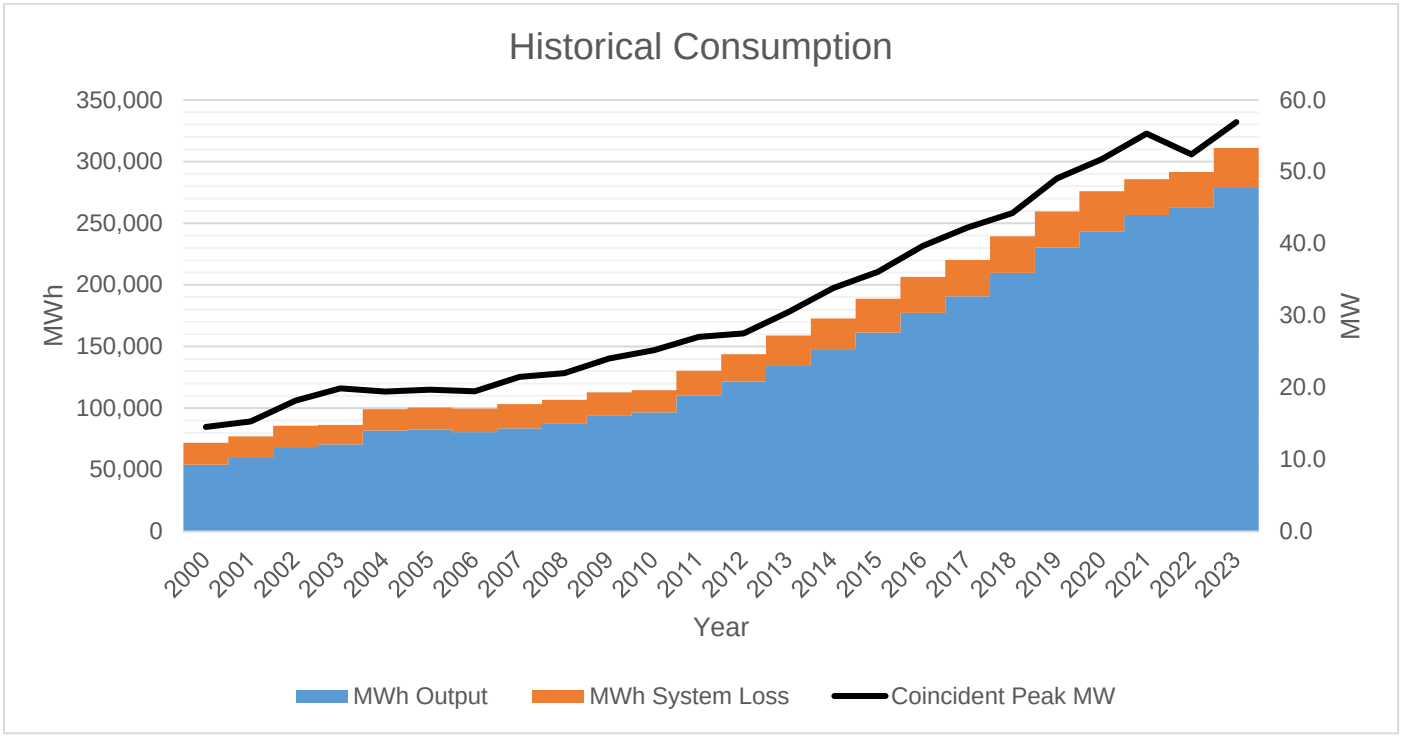
Power Supply Procurement Plan 2024

ISABELA II ELECTRIC COOPERATIVE
Alibagu, City of Ilagan, Isasbela

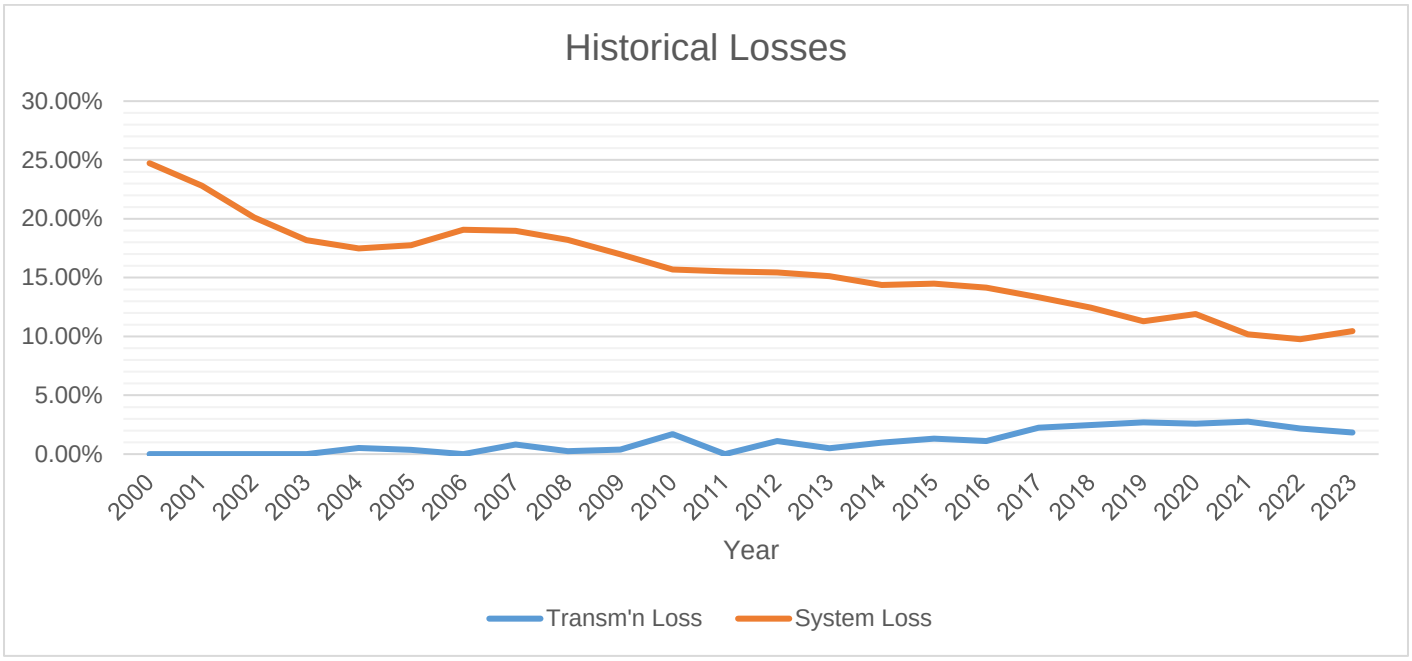
Historical Consumption Data

	Coincident Peak MW	MWh Offtake	WESM	MWh Input	MWh Output	MWh System Loss	Load Factor	Discrepancy	Transm'n Loss	System Loss
2000	14.54	72,014	0	72,014	54,210	17,804	57%	0.00%	0.00%	24.72%
2001	15.30	77,212	0	77,212	59,601	17,611	58%	0.00%	0.00%	22.81%
2002	18.21	85,810	0	85,810	68,555	17,255	54%	0.00%	0.00%	20.11%
2003	19.92	86,486	0	86,486	70,760	15,726	50%	0.00%	0.00%	18.18%
2004	19.47	99,766	0	99,237	81,878	17,359	58%	0.00%	0.53%	17.49%
2005	19.72	100,825	0	100,451	82,612	17,839	58%	0.00%	0.37%	17.76%
2006	19.49	99,689	0	99,679	80,678	19,001	58%	0.00%	0.01%	19.06%
2007	21.51	104,144	0	103,296	83,703	19,593	55%	0.00%	0.81%	18.97%
2008	22.03	106,995	0	106,722	87,301	19,421	55%	0.00%	0.26%	18.20%
2009	24.07	113,303	0	112,866	93,710	19,156	54%	0.00%	0.39%	16.97%
2010	25.22	116,608	0	114,628	96,638	17,990	52%	0.00%	1.70%	15.69%
2011	27.07	130,494	0	130,480	110,203	20,277	55%	0.00%	0.01%	15.54%
2012	27.54	145,447	0	143,819	121,623	22,195	60%	0.00%	1.12%	15.43%
2013	30.52	159,775	0	158,971	134,943	24,028	59%	0.00%	0.50%	15.11%
2014	33.85	174,480	0	172,768	147,937	24,831	58%	0.00%	0.98%	14.37%
2015	36.11	191,277	16,272	188,772	161,407	27,365	60%	0.00%	1.31%	14.50%
2016	39.70	208,808	34,433	206,481	177,254	29,228	59%	0.00%	1.11%	14.16%
2017	42.26	225,235	49,569	220,164	190,829	29,335	59%	0.00%	2.25%	13.32%
2018	44.28	245,595	53,037	239,526	209,687	29,839	62%	0.00%	2.47%	12.46%
2019	49.09	266,792	32,359	259,606	230,304	29,302	60%	0.00%	2.69%	11.29%
2020	51.77	283,397	19,492	276,046	243,158	32,888	61%	0.00%	2.59%	11.91%
2021	55.34	293,947	31,138	285,828	256,720	29,108	59%	0.00%	2.76%	10.18%
2022	52.42	297,991	24,019	291,528	263,061	28,467	63%	0.00%	2.17%	9.76%
2023	56.92	316,924	137,755	311,109	278,578	32,532	62%	0.00%	1.83%	10.46%

Peak demand increased from 49.09 MW in 2019 to 56.92 MW in 2023 at a rate of 3.92% to due to increase of demand of electricity. MWh Offtake increased from 266,792 MWh in 2019 to 316,924 MWh in 2023 at a rate of 4.42% annually for the past five years. Within the same period, Load Factor ranged from 59% to 63%. There was an abrupt change in consumption on 2020 due to the effects of pandemic, also a sudden decrease in growth MWH offtake last 2021 and 2022 due to insufficient power supply in the grid and an increase in generation rate in peso per kilo-watt-hour following also next period year, due to the War in Russia and Ukraine, and the banned in the importation of coal from Indonesia.

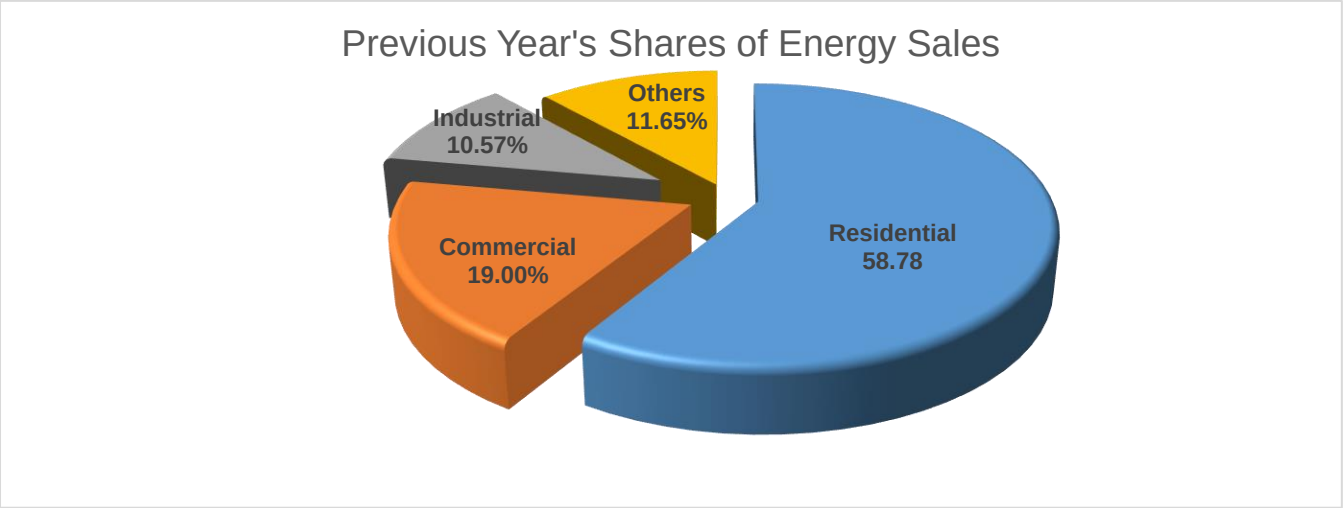


MWh Output increased from year 2007 to year 2023 at a rate of 7.85%, while MWh System Loss increased at a rate of 3.47% within the same period.

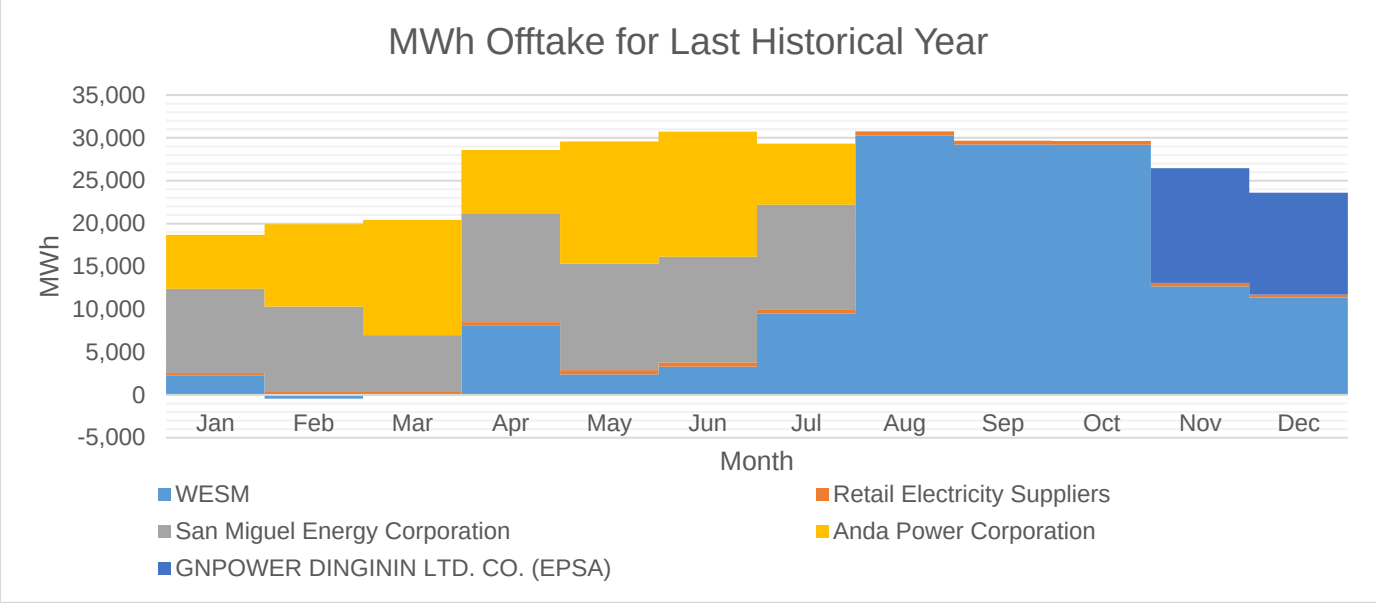


Historically, Transmission Loss ranged from 0.01% to 2.76% while System Loss ranged from 9.76% to 24.72%. For the past one (1) decade Transmission Loss peaked at 2.76% was recorded in year 2021, as a result of major maintenance shutdown of some generating plant, like Sual 2 owned by SMEC which cause us to source out our replacement power to WESM.

Meanwhile, System Loss peaked was recorded in the year 2015 at 14.50%, an outlook that the implementation of Capitalized projects is implemented for the past decade and with goal of the cooperative to reduced system loss and maintain system loss cap set forth by the commission or ERC.



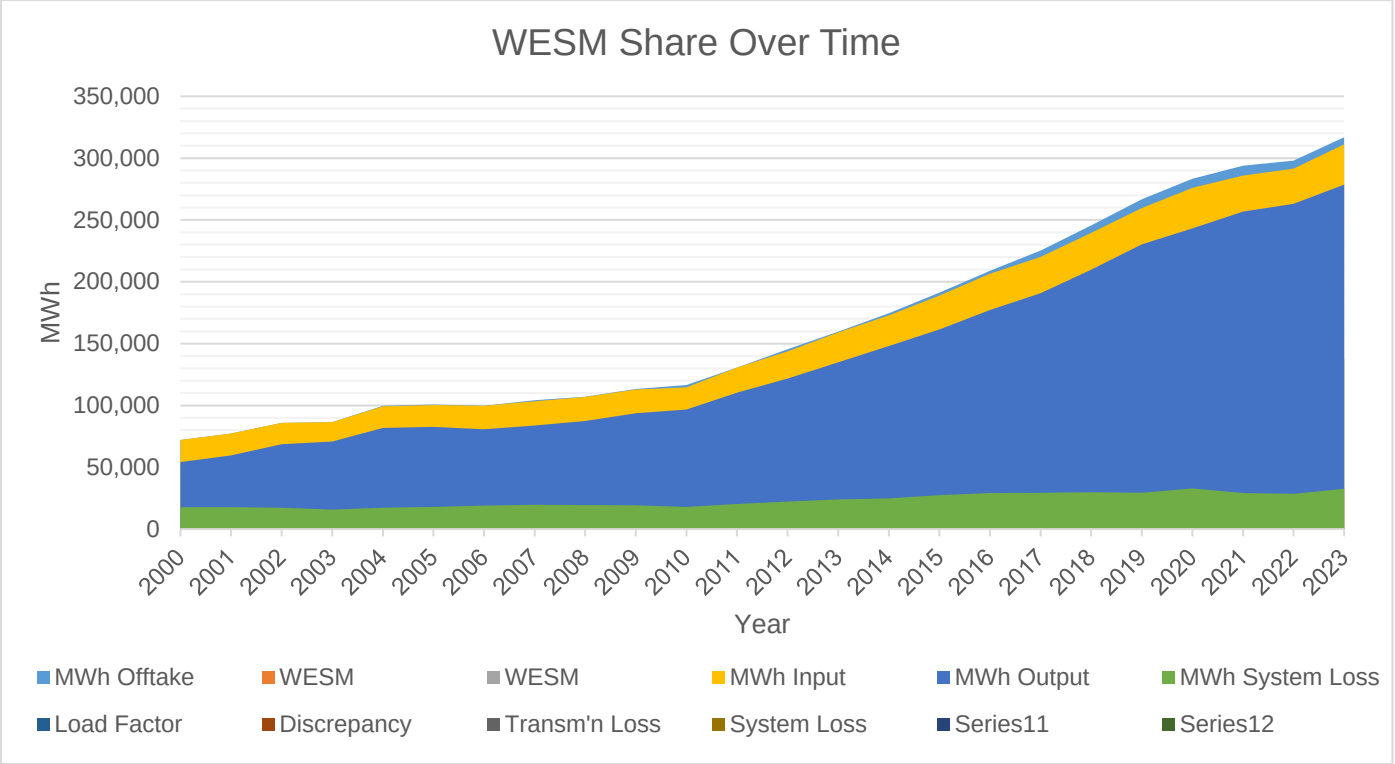
As of 2023, about fifty nine percent (59%) was sold to residential consumers consisting ninety five percent (95%) of the whole consumer mix in connection. Other energy users such as Commercial, Industrial, and others like public buildings, Street lights, and Communal water system customers share the remaining Forty one percent (41%). The above figure shows the pie graph of ISELCO II consumer groups by tariff classifications.



For San Miguel Energy Corporation (SMEC) and Anda Power Corporation (ANDA), the total Offtake for the last historical year is lower than the quantity stipulated in the PSA. Our contract with these two suppliers is firmed contracts and demand base contract in which we are managing our nomination, both are baseload contracts. Whatever the excess energy, we are selling directly to WESM.

Between June and August 2023, the Energy Regulatory Commission (ERC) issued several orders/directives for ISELCO II to immediately stop implementing contracted capacities from its suppliers that were either affected by the Alyansa Ruling or have not been granted prior ERC approval, prompting ISELCO II to source power from the Wholesale Electricity Spot Market (WESM).

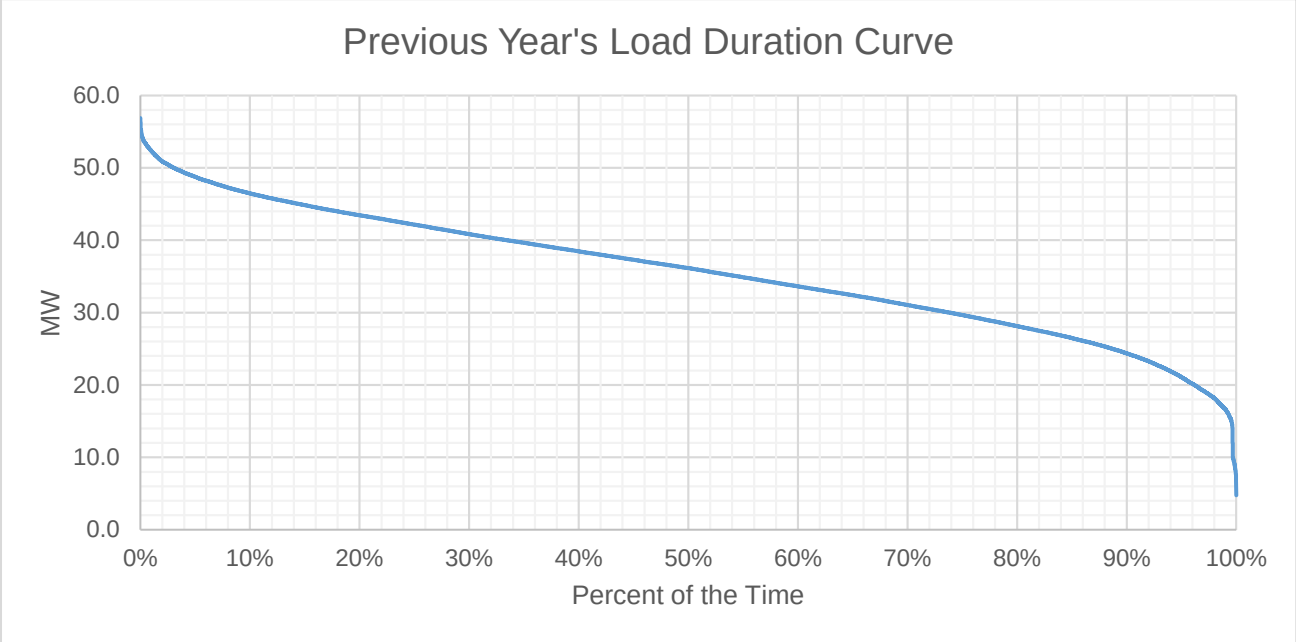
The current condition of PSA between ISELCO II and ANDA is in dispute with ERC, under ERC Case No. 2023-023 DR. At present ANDA has no supply to ISELCO II of its contracted capacity, the last supply was July of 2023.



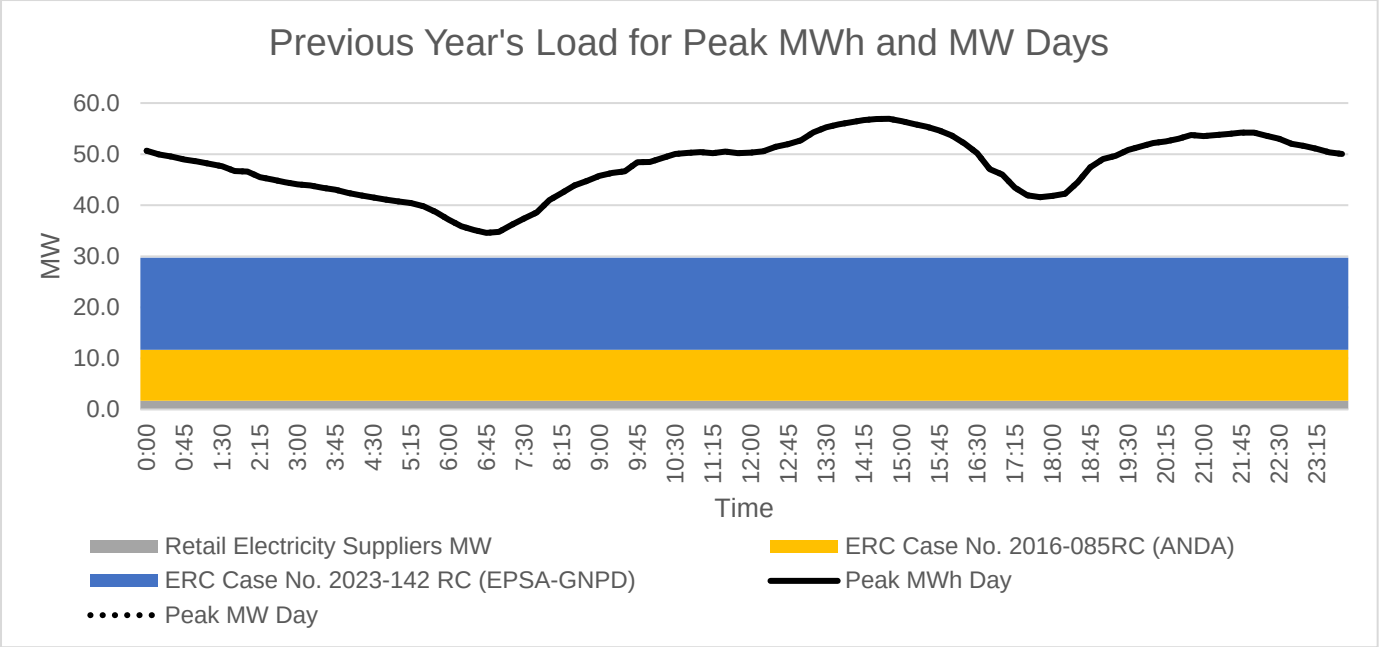
ISELCO II started trading last 2015, as in-direct member the following year, eventually registered as direct WESM member.

MWh Offtake increased from 159,775 MWh in 2013 to 316,924 MWh in 2023 at a rate of 8.19% for one (1) decade. Furthermore, our WESM offtake increased from 16,272 MWh in 2015 to 137,755 MWh in 2023. The share of WESM in the total Offtake ranged from 6.88% to 43.47% for the past nine years. With the capacities that the ERC ordered ISELCO II to cease implementing, dispute ISELCO II is souring its power to WESM and EPSA to GNPD.

Previous Year's Load Profile



Based on the Load Duration Curve, the minimum load is 4.770 MW and the maximum load is 56.921 MW for the last historical year.

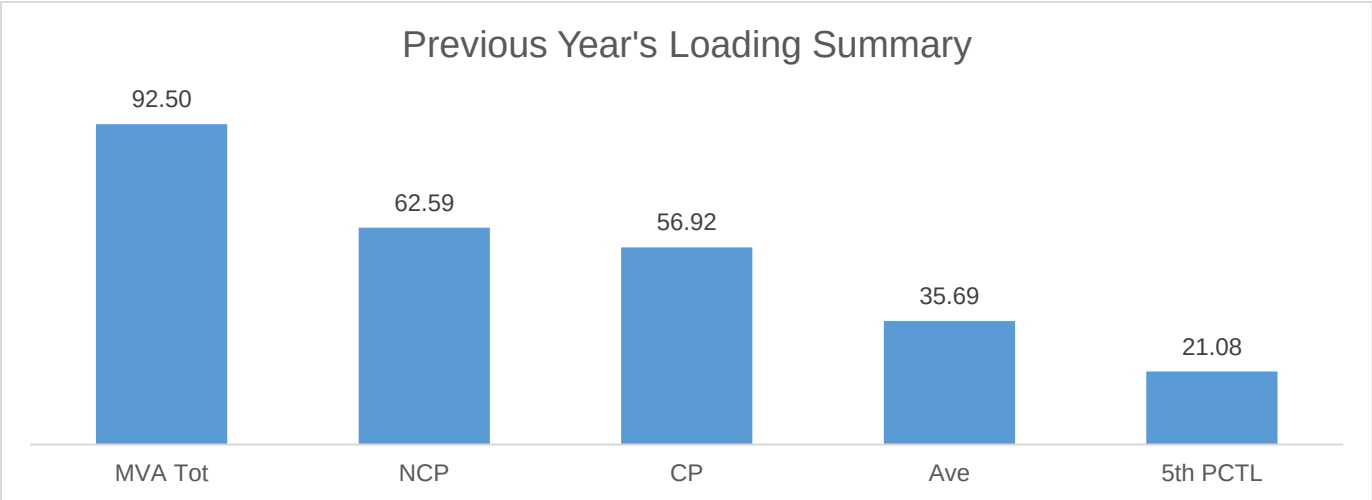


As shown in the Load Curves, the available supply is lower than the Peak Demand, peak demand occurred on 14:45, Industrial customers, specifically rice mills. also shares an increase in demand during off-peak, while Commercial type business like Malls and supermarket, moderately maintain its demand usage.

Agriculture is the biggest industry in Isabela. As the country's top corn-producing province, it contributes 21% of the annual national yellow corn production.

As second highest rice-growing province nationwide, Isabela produces 15% of the aggregate national rice production on an annual basis. Being a surplus producer of the Filipinos' staple crop, the province's rice sufficiency rate is at 224%, which means that Isabeliños produce more than they consume and are in fact responsible for supplying the rice requirements of Metro Manila and many other provinces.

Furthermore, residential type costumers also contribute to high usage of electricity at peak hours, we sourced our shortfall to the WESM Market.



The Non-coincident Peak Demand is 62.59 MW, which is around 67.66% of the total substation capacity of 92.50 MVA at a power factor of 98.49%. The load factor or the ratio between the Average Load of 35.69 MW and the Non-coincident Peak Demand is 57.02%. A safe estimate of the true minimum load is the fifth percentile load of 21.08 MW which is 37.03% of the Non-coincident Peak Demand.

Metering Point	Substation MVA	Location	Substation Peak MW	Remarks
MF3MILAISE201	30	Baligatan, City of Ilagan, Isabela	5.235	One Substation Three Feeders (Three Metering point 13.2kV Metering) ***NGCP Owned***
MF3MILAISE202			7.235	
MF3MILAISE203			7.115	
MF3MTUGISE205	22.5	Garita, Cabagan and San Mateo, Tumauini, Isabela	17.598	DU Owned
MF3MGAMISE206	5	San Manuel, Naguilian, Isabela	5.502	DU Owned
MF3MGAMISE207	10	San Rafael, Roxas, Isabela	11.197	DU Owned
MF3MGAMISE208	10	District II, San Manuel, Isabela	8.707	DU Owned

Substation transformers for Naguilian, Tumauini and Roxas are expected to exceed 70% loading in one month, and San Manuel and Ilagan are projected to be loaded in two to three months. In order to resolve the issue and concerns of the capacity problem we have filed CapEx application to ERC last 2019, with ERC Case No. 2019-102RC.

Forecasted Consumption Data

		Coincident Peak MW	Contracted MW	Pending MW	Planned MW	Retail Electricity Suppliers MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
2024	Jan	38.26	0.00	18.00	0.000	1.72	0%	49%	-18.54
	Feb	38.79	0.00	18.00	0.000	1.03	0%	48%	-19.77
	Mar	47.83	0.00	18.00	0.000	1.18	0%	39%	-28.65
	Apr	50.72	0.00	18.00	0.000	1.75	0%	37%	-30.97
	May	55.14	0.00	18.00	0.000	1.95	0%	34%	-35.18
	Jun	56.17	0.00	18.00	0.000	1.85	0%	33%	-36.33
	Jul	55.81	0.00	18.00	0.000	1.74	0%	33%	-36.07
	Aug	58.73	0.00	18.00	0.000	1.78	0%	32%	-38.95
	Sep	57.37	0.00	18.00	0.000	1.80	0%	32%	-37.56
	Oct	55.36	0.00	18.00	0.000	1.82	0%	34%	-35.54
	Nov	50.86	0.00	0.00	0.000	2.56	0%	0%	-48.30
	Dec	49.60	0.00	0.00	0.000	2.67	0%	0%	-46.93
2025	Jan	39.51	0.00	0.00	18.000	2.40	0%	49%	-19.11
	Feb	40.06	0.00	0.00	18.000	2.27	0%	48%	-19.79
	Mar	49.39	0.00	0.00	18.000	2.64	0%	38%	-28.76
	Apr	52.37	0.00	0.00	18.000	2.53	0%	36%	-31.84
	May	56.94	0.00	0.00	18.000	2.72	0%	33%	-36.22
	Jun	58.01	0.00	0.00	18.000	2.56	0%	32%	-37.45
	Jul	57.63	0.00	0.00	18.000	2.45	0%	33%	-37.18
	Aug	60.65	0.00	0.00	18.000	2.53	0%	31%	-40.12
	Sep	59.24	0.00	0.00	18.000	2.60	0%	32%	-38.64
	Oct	57.16	0.00	0.00	18.000	2.62	0%	33%	-36.54
	Nov	52.52	0.00	0.00	18.000	2.57	0%	36%	-31.95
	Dec	51.22	0.00	0.00	18.000	2.68	0%	37%	-30.54
2026	Jan	40.86	0.00	0.00	18.000	2.40	0%	47%	-20.46
	Feb	41.43	0.00	0.00	18.000	2.28	0%	46%	-21.15
	Mar	51.08	0.00	0.00	18.000	2.64	0%	37%	-30.45
	Apr	54.16	0.00	0.00	18.000	2.53	0%	35%	-33.63
	May	58.88	0.00	0.00	18.000	2.72	0%	32%	-38.16
	Jun	59.99	0.00	0.00	18.000	2.56	0%	31%	-39.43
	Jul	59.60	0.00	0.00	28.000	2.45	0%	49%	-29.15

	Aug	62.72	0.00	0.00	28.000	2.53	0%	47%	-32.19
	Sep	61.26	0.00	0.00	28.000	2.60	0%	48%	-30.67
	Oct	59.12	0.00	0.00	28.000	2.62	0%	50%	-28.49
	Nov	54.31	0.00	0.00	28.000	2.57	0%	54%	-23.75
	Dec	52.97	0.00	0.00	28.000	2.68	0%	56%	-22.29
2027	Jan	42.32	0.00	0.00	28.000	2.40	0%	70%	-11.92
	Feb	42.91	0.00	0.00	28.000	2.28	0%	69%	-12.64
	Mar	52.91	0.00	0.00	28.000	2.64	0%	56%	-22.27
	Apr	56.10	0.00	0.00	39.300	2.53	0%	73%	-14.27
	May	60.99	0.00	0.00	39.300	2.72	0%	67%	-18.97
	Jun	62.14	0.00	0.00	39.300	2.56	0%	66%	-20.28
	Jul	61.74	0.00	0.00	39.300	2.45	0%	66%	-19.99
	Aug	64.97	0.00	0.00	39.300	2.53	0%	63%	-23.14
	Sep	63.46	0.00	0.00	39.300	2.60	0%	65%	-21.56
	Oct	61.23	0.00	0.00	39.300	2.62	0%	67%	-19.31
	Nov	56.26	0.00	0.00	39.300	2.57	0%	73%	-14.39
	Dec	54.87	0.00	0.00	39.300	2.68	0%	75%	-12.89
2028	Jan	43.91	0.00	0.00	39.300	3.05	0%	96%	-1.55
	Feb	44.52	0.00	0.00	39.300	2.95	0%	95%	-2.28
	Mar	54.90	0.00	0.00	39.300	3.32	0%	76%	-12.27
	Apr	58.20	0.00	0.00	39.300	3.20	0%	71%	-15.70
	May	63.28	0.00	0.00	39.300	3.37	0%	66%	-20.61
	Jun	64.47	0.00	0.00	39.300	3.10	0%	64%	-22.07
	Jul	64.05	0.00	0.00	39.300	3.09	0%	64%	-21.66
	Aug	67.40	0.00	0.00	39.300	3.21	0%	61%	-24.90
	Sep	65.84	0.00	0.00	39.300	3.28	0%	63%	-23.25
	Oct	63.53	0.00	0.00	39.300	3.32	0%	65%	-20.91
	Nov	58.37	0.00	0.00	39.300	3.25	0%	71%	-15.82
	Dec	56.92	0.00	0.00	39.300	3.36	0%	73%	-14.26
2029	Jan	45.62	0.00	0.00	49.300	3.06	0%	116%	6.74
	Feb	46.26	0.00	0.00	49.300	2.95	0%	114%	5.99
	Mar	57.04	0.00	0.00	49.300	3.33	0%	92%	-4.41
	Apr	60.48	0.00	0.00	49.300	3.20	0%	86%	-7.97
	May	65.75	0.00	0.00	49.300	3.38	0%	79%	-13.08
	Jun	66.99	0.00	0.00	49.300	3.10	0%	77%	-14.58
	Jul	66.55	0.00	0.00	49.300	3.09	0%	78%	-14.16
	Aug	70.04	0.00	0.00	49.300	3.21	0%	74%	-17.52
	Sep	68.41	0.00	0.00	49.300	3.29	0%	76%	-15.82

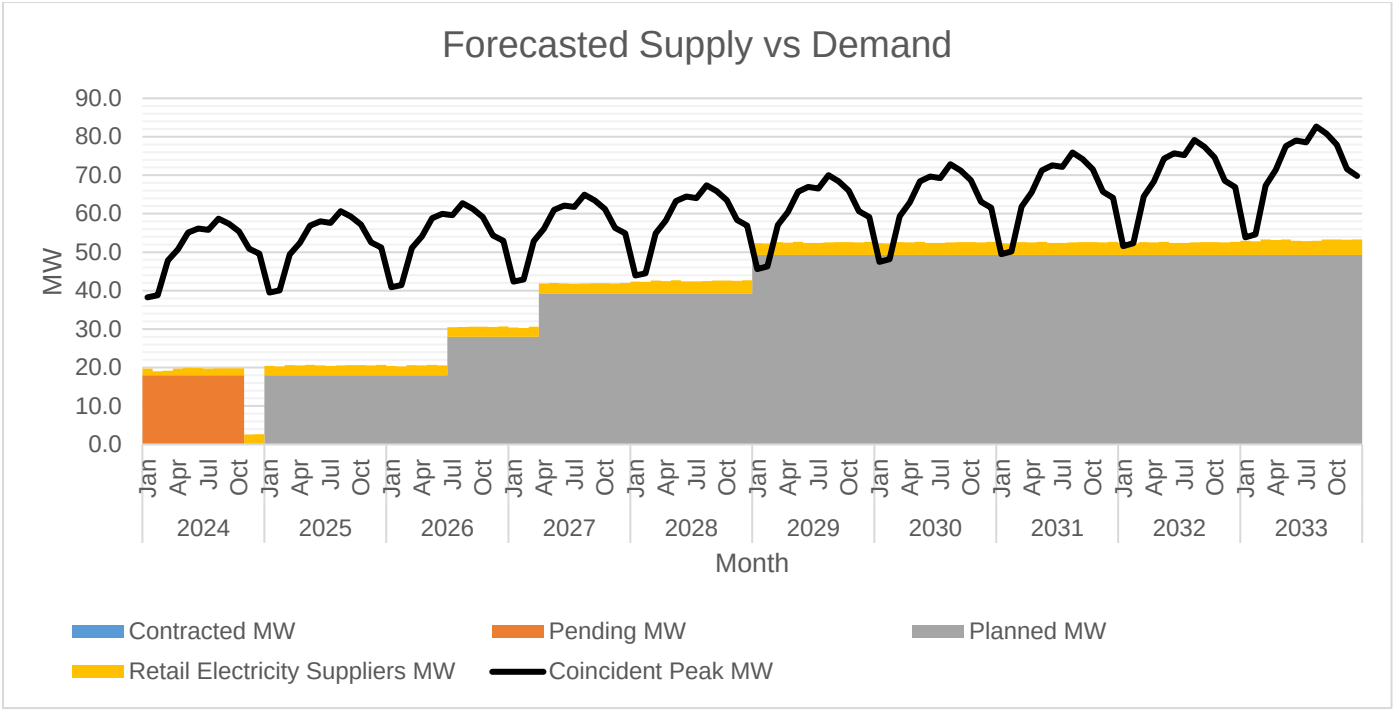
	Oct	66.01	0.00	0.00	49.300	3.32	0%	79%	-13.39
	Nov	60.65	0.00	0.00	49.300	3.26	0%	86%	-8.09
	Dec	59.15	0.00	0.00	49.300	3.37	0%	88%	-6.48
2030	Jan	47.47	0.00	0.00	49.300	3.06	0%	111%	4.89
	Feb	48.13	0.00	0.00	49.300	2.95	0%	109%	4.12
	Mar	59.35	0.00	0.00	49.300	3.33	0%	88%	-6.72
	Apr	62.93	0.00	0.00	49.300	3.21	0%	83%	-10.42
	May	68.41	0.00	0.00	49.300	3.38	0%	76%	-15.74
	Jun	69.70	0.00	0.00	49.300	3.11	0%	74%	-17.29
	Jul	69.25	0.00	0.00	49.300	3.10	0%	75%	-16.85
	Aug	72.87	0.00	0.00	49.300	3.21	0%	71%	-20.36
	Sep	71.18	0.00	0.00	49.300	3.29	0%	73%	-18.59
	Oct	68.68	0.00	0.00	49.300	3.32	0%	75%	-16.06
	Nov	63.10	0.00	0.00	49.300	3.26	0%	82%	-10.55
	Dec	61.54	0.00	0.00	49.300	3.37	0%	85%	-8.87
2031	Jan	49.45	0.00	0.00	49.300	3.06	0%	106%	2.91
	Feb	50.15	0.00	0.00	49.300	2.95	0%	104%	2.11
	Mar	61.83	0.00	0.00	49.300	3.33	0%	84%	-9.20
	Apr	65.56	0.00	0.00	49.300	3.21	0%	79%	-13.05
	May	71.27	0.00	0.00	49.300	3.38	0%	73%	-18.59
	Jun	72.61	0.00	0.00	49.300	3.11	0%	71%	-20.20
	Jul	72.14	0.00	0.00	49.300	3.10	0%	71%	-19.74
	Aug	75.92	0.00	0.00	49.300	3.22	0%	68%	-23.40
	Sep	74.16	0.00	0.00	49.300	3.29	0%	70%	-21.56
	Oct	71.56	0.00	0.00	49.300	3.32	0%	72%	-18.93
	Nov	65.74	0.00	0.00	49.300	3.26	0%	79%	-13.18
	Dec	64.12	0.00	0.00	49.300	3.37	0%	81%	-11.44
2032	Jan	51.58	0.00	0.00	49.300	3.06	0%	102%	0.79
	Feb	52.30	0.00	0.00	49.300	2.96	0%	100%	-0.05
	Mar	64.49	0.00	0.00	49.300	3.34	0%	81%	-11.85
	Apr	68.38	0.00	0.00	49.300	3.21	0%	76%	-15.87
	May	74.34	0.00	0.00	49.300	3.38	0%	69%	-21.65
	Jun	75.73	0.00	0.00	49.300	3.11	0%	68%	-23.32
	Jul	75.24	0.00	0.00	49.300	3.10	0%	68%	-22.84
	Aug	79.18	0.00	0.00	49.300	3.22	0%	65%	-26.66
	Sep	77.34	0.00	0.00	49.300	3.29	0%	67%	-24.75
	Oct	74.63	0.00	0.00	49.300	3.33	0%	69%	-22.00
	Nov	68.57	0.00	0.00	49.300	3.26	0%	75%	-16.00

	Dec	66.87	0.00	0.00	49.300	3.38	0%	78%	-14.20
2033	Jan	53.85	0.00	0.00	49.300	3.67	0%	98%	-0.88
	Feb	54.60	0.00	0.00	49.300	3.50	0%	96%	-1.80
	Mar	67.33	0.00	0.00	49.300	4.02	0%	78%	-14.01
	Apr	71.38	0.00	0.00	49.300	3.87	0%	73%	-18.21
	May	77.61	0.00	0.00	49.300	4.03	0%	67%	-24.28
	Jun	79.07	0.00	0.00	49.300	3.67	0%	65%	-26.09
	Jul	78.55	0.00	0.00	49.300	3.58	0%	66%	-25.68
	Aug	82.67	0.00	0.00	49.300	3.67	0%	62%	-29.70
	Sep	80.75	0.00	0.00	49.300	3.97	0%	64%	-27.48
	Oct	77.91	0.00	0.00	49.300	4.01	0%	67%	-24.61
	Nov	71.59	0.00	0.00	49.300	3.91	0%	73%	-18.37
	Dec	69.81	0.00	0.00	49.300	4.03	0%	75%	-16.48

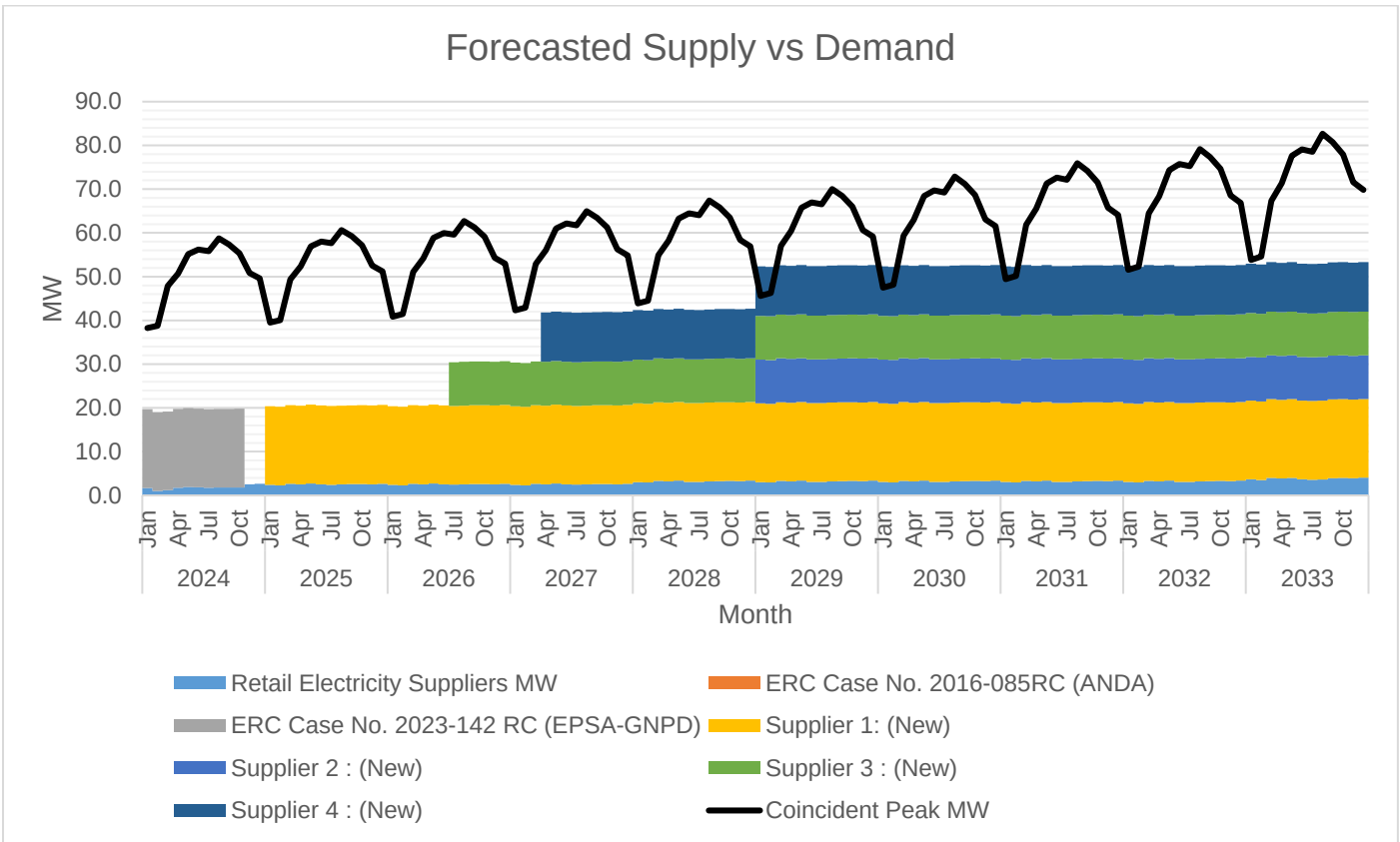
ISELCO II's peak demand occur on the month of August due to the combined/ mix demand of electricity. Residential end-user has the prime seasonal variance with significant spikes in demand every summer and rainy season. For the months of April to June residential customers are at its peak during summer. The commercial sector experiences less variance in electricity usage, although a noticeable increase in the summer and a slightly increase in growth in the rainy season. While, Industrial sector's demand for electricity is high for some season due to harvest season of rice and corn crops were most of the time rice millers operates on the months of March and August. Monthly peak demand is at its lowest on the months of December to February, due to lower climate. According to PAGASA January and February are generally the coldest months in the Philippines as this is the period when the northeast monsoon, locally known as "Amihan" reaches its peak.

Peak Demand is expected to grow at average rate of 3.80% annually.

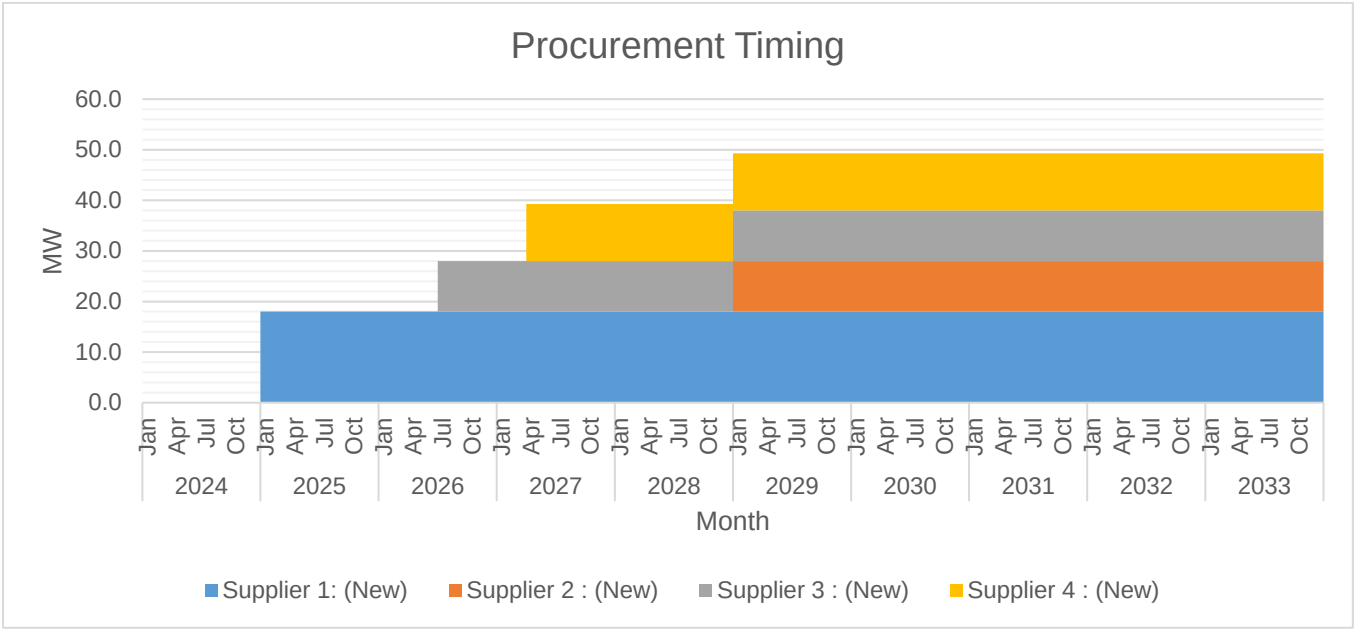
The planned supply contracts of ISELCO II are mix supply of Coaled power plant and Renewable Energy Source in preparation of our RPS compliance for RE, venturing to Green Energy Fuel. Acknowledging the benefits of Renewable Energy Sources it can combat climate change, a reliable source of power because RE sources are renewable, they will never runout once build RE Facilities cost very little to operate as result Renewable Energy prices tend to be stable over time. While RE has many advantages but it is not without downsides, it is difficult for RE sources to generate power on the same large scale of fossil fuel. With this transition of contracting and planning supply of ISELCO II will most likely have deficits in the demand requirements or/and excess in supply generation with the mix of the Coaled Power plant wherein its generation is in full operation or continuous of burning fuel, while in Renewable Energy plant its generation depends on the renewable fuel sources, for instants both Solar and Wind Energy Source are intermittent they only generate power while the sun is shining or the wind is blowing. Batteries can store excess energy for later used, however they are costly. Relative to this deficit and excess in some months ISELCO II will export our excess contracted supply to WESM since ISELCO II is direct Member of WESM. These months are the coldest seasons starting November till February were end user consumptions is minimal.



ISELCO II's available contracted supply is generally below the peak demand for the previous year. Due to the capacities that the ERC ordered ISELCO II to cease implementing, and now in dispute. Currently, ISELCO II is exposed to WESM, and manage its demand requirement at a lower price which also results to dealing our blended rates at a fair and reasonable price. However, volatile price in the market sometimes shoots up to its higher rate due to some reasons and events, supply and demand is much higher which tend to get a higher rate normally in the months of summer were supply is inadequate. The cooperative is planning to secure PSA with eligible suppliers through Competitive Selection Process with the new rules of the commission or ERC and DOE.

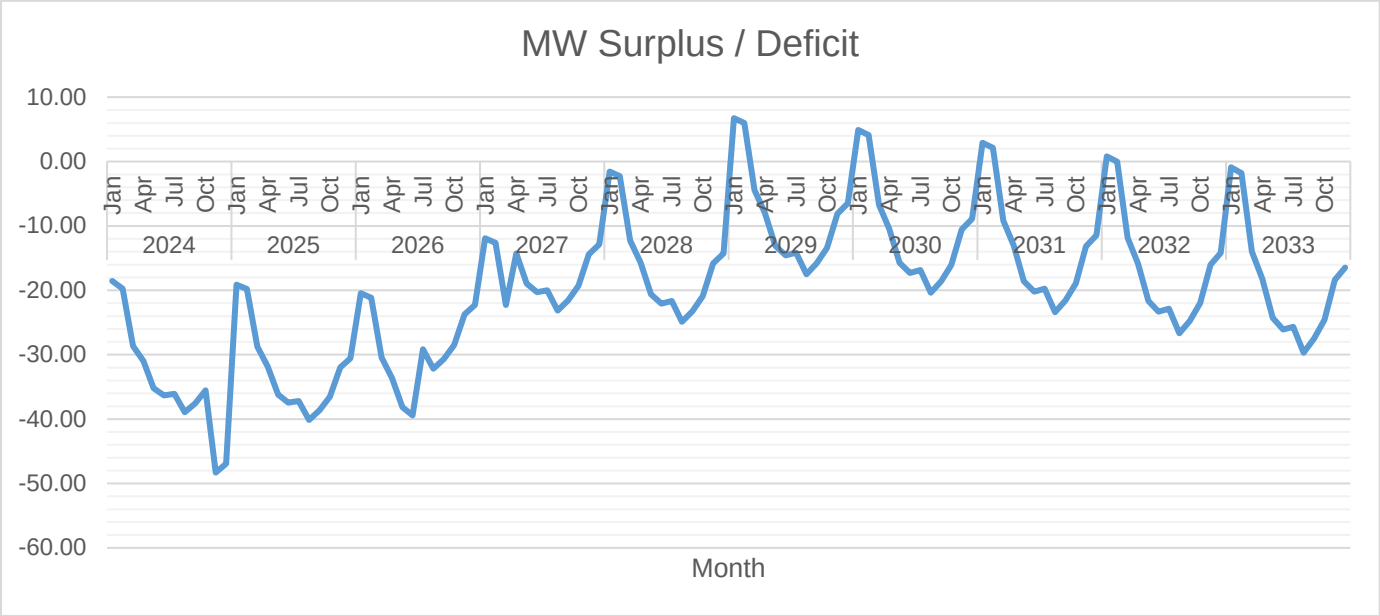


For the planned supply, the largest is 18 MW from 2025 for a period of 15 years.



The first wave of supply procurement will be for 18 MW planned to be available by the billing month of January 2025. This will be followed by 10MW, for the billing month of August 2026, expected 11.3MW for the month of April 2027 and lastly an anticipated 10MW for the month of January 2029 for Supplier 2.

As shown on the Chart, the highest target contracting level is 116% which is expected to occur on January, 2029. The lowest target contracting level 0% which is expected to occur on November 2024 which is the end of contract of EPSA-GNPD. While the Existing Contracting Level is Zero, Since ANDA does not deliver its contracted supply due to petition to ERC, ERC Case No. 2023-023 DR.



The above chart shows, the highest deficit is 48.30 MW which is expected to occur on the month of November 2024 at this month ISELCO II's Contract with GNPD EPSA will expire soon and we will be exposed to WESM to draw supply, to address this deficit we are planning to join the Joint NEA CSP Aggregation, and proposed conduct of CSP specified to our CSP schedule activities. The lowest deficit is 0.05 MW which is expected to occur on the month of February 2032.

		MWh Offtake	MWh Output	MWh System Loss	Transm'n Loss	System Loss
2024	Jan	19,683	17,399	2,080	1.04%	10.68%
	Feb	20,385	18,737	1,354	1.44%	6.74%
	Mar	21,203	18,846	2,001	1.68%	9.60%
	Apr	29,701	25,951	3,300	1.51%	11.28%
	May	30,888	27,050	3,365	1.53%	11.06%
	Jun	32,067	27,839	3,753	1.48%	11.88%
	Jul	30,637	26,944	3,228	1.52%	10.70%
	Aug	32,097	27,817	3,782	1.55%	11.97%
	Sep	31,194	27,332	3,444	1.34%	11.19%
	Oct	31,172	28,068	2,686	1.34%	8.73%
	Nov	27,884	25,585	1,974	1.17%	7.16%
	Dec	24,860	23,026	1,564	1.09%	6.36%
2025	Jan	20,459	18,361	1,880	1.06%	9.29%
	Feb	21,310	19,772	1,224	1.47%	5.83%
	Mar	22,076	19,887	1,809	1.72%	8.34%
	Apr	30,914	27,387	2,983	1.76%	9.82%
	May	32,081	28,545	3,042	1.54%	9.63%
	Jun	33,262	29,377	3,393	1.48%	10.35%
	Jul	31,839	28,434	2,919	1.53%	9.31%
	Aug	33,288	29,353	3,420	1.55%	10.43%
	Sep	32,456	28,844	3,113	1.54%	9.74%
	Oct	32,529	29,622	2,428	1.47%	7.58%
	Nov	29,153	27,000	1,785	1.26%	6.20%
	Dec	26,029	24,302	1,414	1.21%	5.50%
2026	Jan	21,573	19,521	1,733	1.48%	8.15%

	Feb	22,474	21,020	1,129	1.45%	5.10%
	Mar	23,101	21,144	1,667	1.25%	7.31%
	Apr	32,319	29,119	2,750	1.39%	8.63%
	May	33,641	30,348	2,804	1.45%	8.46%
	Jun	34,880	31,234	3,128	1.49%	9.10%
	Jul	33,432	30,234	2,690	1.52%	8.17%
	Aug	34,900	31,208	3,152	1.55%	9.17%
	Sep	33,997	30,672	2,870	1.34%	8.56%
	Oct	34,199	31,501	2,238	1.34%	6.63%
	Nov	30,714	28,711	1,645	1.17%	5.42%
	Dec	27,449	25,844	1,304	1.10%	4.80%
2027	Jan	22,977	20,921	1,523	2.32%	6.79%
	Feb	23,871	22,527	992	1.48%	4.22%
	Mar	24,546	22,660	1,465	1.72%	6.07%
	Apr	34,229	31,210	2,417	1.76%	7.19%
	May	35,535	32,523	2,464	1.54%	7.04%
	Jun	36,766	33,474	2,748	1.48%	7.59%
	Jul	35,305	32,404	2,364	1.52%	6.80%
	Aug	36,782	33,445	2,770	1.54%	7.65%
	Sep	35,881	32,877	2,522	1.34%	7.12%
	Oct	36,222	33,768	1,967	1.35%	5.50%
	Nov	32,600	30,773	1,446	1.17%	4.49%
	Dec	29,168	27,705	1,146	1.09%	3.97%
2028	Jan	24,676	22,718	1,628	1.34%	6.69%
	Feb	25,908	24,466	1,060	1.47%	4.15%
	Mar	26,629	24,607	1,566	1.71%	5.98%
	Apr	37,127	33,889	2,583	1.76%	7.08%
	May	38,553	35,324	2,634	1.54%	6.94%
	Jun	39,883	36,354	2,938	1.48%	7.48%
	Jul	38,296	35,185	2,527	1.52%	6.70%
	Aug	39,904	36,324	2,961	1.55%	7.54%
	Sep	38,910	35,692	2,696	1.34%	7.02%
	Oct	39,284	36,654	2,103	1.34%	5.42%
	Nov	35,368	33,410	1,545	1.17%	4.42%
	Dec	31,636	30,068	1,225	1.09%	3.91%
2029	Jan	26,803	24,679	1,838	1.07%	6.93%
	Feb	28,187	26,575	1,197	1.47%	4.31%
	Mar	28,997	26,730	1,768	1.72%	6.20%
	Apr	40,445	36,817	2,917	1.76%	7.34%
	May	41,990	38,370	2,974	1.54%	7.19%
	Jun	43,452	39,491	3,317	1.48%	7.75%
	Jul	41,713	38,225	2,853	1.52%	6.95%
	Aug	43,473	39,457	3,343	1.55%	7.81%
	Sep	42,392	38,780	3,044	1.34%	7.28%
	Oct	42,777	39,829	2,374	1.34%	5.62%
	Nov	38,495	36,299	1,745	1.17%	4.59%
	Dec	34,432	32,673	1,383	1.09%	4.06%
2030	Jan	29,279	26,958	1,922	1.36%	6.66%
	Feb	30,708	29,028	1,252	1.39%	4.13%
	Mar	31,494	29,199	1,849	1.41%	5.96%
	Apr	43,908	40,221	3,050	1.45%	7.05%

	May	45,710	41,913	3,110	1.50%	6.91%
	Jun	47,303	43,139	3,469	1.47%	7.44%
	Jul	45,402	41,760	2,984	1.45%	6.67%
	Aug	47,325	43,101	3,496	1.54%	7.50%
	Sep	46,251	42,371	3,183	1.51%	6.99%
	Oct	46,675	43,520	2,482	1.44%	5.40%
	Nov	42,074	39,659	1,825	1.40%	4.40%
	Dec	37,661	35,704	1,446	1.36%	3.89%
2031	Jan	31,851	29,584	1,817	1.41%	5.79%
	Feb	33,513	31,853	1,183	1.42%	3.58%
	Mar	34,284	32,042	1,748	1.44%	5.17%
	Apr	47,715	44,142	2,883	1.45%	6.13%
	May	49,655	45,992	2,940	1.46%	6.01%
	Jun	51,369	47,340	3,279	1.46%	6.48%
	Jul	49,390	45,831	2,821	1.50%	5.80%
	Aug	51,351	47,296	3,305	1.46%	6.53%
	Sep	50,235	46,506	3,009	1.43%	6.08%
	Oct	50,837	47,771	2,347	1.41%	4.68%
	Nov	45,895	43,528	1,725	1.40%	3.81%
	Dec	41,128	39,193	1,367	1.38%	3.37%
2032	Jan	34,675	32,580	1,607	1.41%	4.70%
	Feb	36,643	35,076	1,047	1.42%	2.90%
	Mar	37,366	35,287	1,546	1.43%	4.20%
	Apr	51,916	48,616	2,550	1.44%	4.98%
	May	54,043	50,647	2,600	1.47%	4.88%
	Jun	55,863	52,134	2,900	1.48%	5.27%
	Jul	53,774	50,476	2,495	1.49%	4.71%
	Aug	55,844	52,083	2,923	1.50%	5.31%
	Sep	54,660	51,225	2,661	1.42%	4.94%
	Oct	55,477	52,623	2,075	1.40%	3.79%
	Nov	50,152	47,944	1,525	1.36%	3.08%
	Dec	44,986	43,176	1,209	1.34%	2.72%
2033	Jan	38,278	36,178	1,555	1.42%	4.12%
	Feb	40,552	38,957	1,012	1.44%	2.53%
	Mar	41,280	39,186	1,495	1.45%	3.68%
	Apr	57,298	53,984	2,467	1.48%	4.37%
	May	59,665	56,254	2,515	1.50%	4.28%
	Jun	61,579	57,900	2,805	1.42%	4.62%
	Jul	59,301	56,048	2,413	1.42%	4.13%
	Aug	61,521	57,847	2,827	1.38%	4.66%
	Sep	60,259	56,869	2,574	1.35%	4.33%
	Oct	61,224	58,413	2,008	1.31%	3.32%
	Nov	55,423	53,229	1,476	1.30%	2.70%
	Dec	49,716	47,918	1,169	1.26%	2.38%

MWh Output (Old and New) is the Forecasted MWh Sales for each customer class for the month based on a different classification, it was forecasted using total MWh Sales historical data for the past 7 years.

Multiple regression analysis is used in developing the models for forecasting. Econometric forecasting using population and GRDP were tried but since the some of the data are not available

and is regionalized meaning they do not reflect the attributes of geographical locations specifically those covered by the utility, trending forecasts using time as regressor was generally adopted in the forecasts.

The equations defining the final forecasts were tested for validity and accuracy. The R^2 and the adjusted R^2 of at least 99% are satisfied to all final models. R^2 and adjusted R^2 is a measure of fit of the model to the historical data. The final models also passed the P-value and T-stat standard of at least 0.1 and values greater than ±2 respectively. P-value and T-stat are validity values for predictors or independent variables considered in the model formulation. Lastly all models passed the accuracy requirement of less than 5% forecasting error. Based on, Electric Cooperative's Distribution Utility Planning Manual.

The assumed load factor 62.70%, from the previous year.

System Loss is calculated through historical data and previous year as reference to set targets to reduce system loss, these targets will then be assessed what are the possible projects that are doable to accomplish the targets within a period of time or year. Distribution Planning Process, Methodology and Criteria were also executed for us to determine its capable impact to our coop operations such as technical and financial.

After updating of relevant data and forecasting, technical simulations were conducted on the distribution system to assess and to determine what will be the system deficiencies from the present year and years to come: the sufficiency of capacity of substation will be tested, the safety of equipment and power quality, the frequency and duration of interruption will be computed and compared to standards to assess compliance. With deficiencies known and quantified, formulation of as many alternatives as possible to solve a particular problem is generated and these alternatives will be tested if it will solve the said deficiency and will pass the technical criteria. All feasible solutions will be then subjected to economic evaluation to choose the most economical alternative that will solve the deficiency. All projects that will be needed will then be reflected to financial analysis and capital budgeting to know its rate impact implications and possible sources of financing.

Below are the results of forecast model with test of validity and accuracy for the MWh Output or Sales in MWh. Upon considerations, evaluation and trending of Historical and the results of the forecast, ***Model No. 103***, with a mathematical Forecast Model of ***Y=a + bt^2 + ct^-2 + dt^-3,*** with MAPE of 0.41%, and average of annual growth rate of 4.34% is assumed to be acceptable.

Summary of Forecasting Models for MWh Output or Sales MWh

Model No.	Forecasting Model	Validity Tests			Accuracy Test	Annual Average Growth Rate		Remarks
		Adj R^2 (>0.99)	t-statistic (|t| > 2)	p-value (<0.1)	MAPE (<5%)	Actual Data	2011-2014	
1	a + bt	0.9614109	37.4093	0.0000	1.99%	6.22%	4.33%	Failed
			12.2672	0.0001				
2	a + bt + ct^2	0.9929905	43.5272	0.0000	0.59%	6.22%	-0.82%	**PASSED**
			10.8311	0.0004				
			-4.8504	0.0083				
3	a + bt + ct^2 + dt^3	0.9921099	21.3945	0.0002	0.61%	6.22%	3.94%	Failed
			3.8212	0.0315				
			-1.3430	0.2718				
			0.7440	0.5108				
4	a + bt^2	0.829931	28.3828	0.0000	3.98%	6.22%	15.30%	Failed
			5.5027	0.0027				
5	a + bt^2+ ct^3	0.9652799	40.1346	0.0000	1.51%	6.22%	-30.26%	Failed

			6.3570	0.0031				
			-4.5267	0.0106				
6	a + bt^3	0.6916076	25.1050	0.0000	5.39%	6.22%	15.30%	Failed
			3.8021	0.0126				
7	a + bt + ct^3	0.9905247	46.4428	0.0000	0.69%	6.22%	-4.97%	**PASSED**
			12.5990	0.0002				
			-4.0451	0.0155				
8	a + blnt	0.9776625	51.2585	0.0000	1.49%	6.22%	1.54%	Failed
			16.2360	0.0000				
9	a + blnt + clnt^2	0.9927733	77.5863	0.0000	0.68%	6.22%	2.28%	PASSED
			4.8161	0.0085				
			3.3845	0.0277				
10	a + blnt + clnt^2 + dlnt^3	0.9929395	76.8052	0.0000	0.53%	6.22%	1.43%	Failed
			0.9996	0.3912				
			1.5526	0.2183				
			-1.0460	0.3724				
11	a + blnt^2	0.9606943	50.9003	0.0000	1.96%	6.22%	3.17%	Failed
			12.1511	0.0001				
12	a + blnt^2+ clnt^3	0.992941	88.5294	0.0000	0.67%	6.22%	0.74%	**PASSED**
			9.4063	0.0007				
			-4.8827	0.0081				
13	a + blnt^3	0.8694384	32.9068	0.0000	3.43%	6.22%	4.96%	Failed
			6.3996	0.0014				
14	a + blnt + clnt^3	0.9904496	68.7494	0.0000	0.79%	6.22%	2.62%	**PASSED**
			8.0221	0.0013				
			2.7739	0.0501				
15	a + blogt	0.9776625	51.2585	0.0000	1.49%	6.22%	1.54%	Failed
			16.2360	0.0000				
16	a + blogt + clogt^2	0.9927733	77.5863	0.0000	0.68%	6.22%	2.28%	**PASSE**D
			4.8161	0.0085				
			3.3845	0.0277				
17	a + blogt + clogt^2 + dlogt^3	0.9929395	76.8052	0.0000	0.53%	6.22%	1.43%	Failed
			0.9996	0.3912				
			1.5526	0.2183				
			-1.0460	0.3724				
18	a + blogt^2	0.9606943	50.9003	0.0000	1.96%	6.22%	3.17%	Failed
			12.1511	0.0001				
19	a + blogt^2+ clogt^3	0.992941	88.5294	0.0000	0.67%	6.22%	0.74%	**PASSED**
			9.4063	0.0007				
			-4.8827	0.0081				
20	a + blogt^3	0.8694384	32.9068	0.0000	3.43%	6.22%	4.96%	Failed
			6.3996	0.0014				
21	a + blogt + clogt^3	0.9904496	68.7494	0.0000	0.79%	6.22%	2.62%	**PASSED**
			8.0221	0.0013				
			2.7739	0.0501				
22	a + bt + clogt	0.9905807	75.7476	0.0000	0.78%	6.22%	2.80%	**PASSED**
			2.8031	0.0487				
			4.0601	0.0153				
23	a + bt + ct^2 + dlogt	0.9909251	14.4119	0.0007	0.63%	6.22%	-0.05%	Failed
			1.4779	0.2360				
			-1.0732	0.3618				
			0.2993	0.7842				

24	a + bt^2 + clogt	0.9882385	64.6722	0.0000	0.85%	6.22%	3.66%	Failed
			2.3444	0.0790				
			8.2643	0.0012				
25	a + bt^2+ ct^3 + dlogt	0.98856	65.4503	0.0000	0.76%	6.22%	-3.03%	Failed
			1.3444	0.2714				
			-1.0547	0.3690				
			3.0232	0.0566				
26	a + bt^3 + clogt	0.9862505	59.6939	0.0000	0.89%	6.22%	5.06%	Failed
			2.0305	0.1121				
			10.3994	0.0005				
27	a + bt + ct^3 + dlogt	0.99014	25.2766	0.0001	0.68%	6.22%	-1.08%	Failed
			1.6056	0.2067				
			-0.9062	0.4316				
			0.9187	0.4260				
28	a + bt + ct^-1	0.9859807	24.8817	0.0000	0.99%	6.22%	3.44%	Failed
			7.7715	0.0015				
			-3.1246	0.0354				
29	a + bt + ct^2 + dt^-1	0.9907608	7.9039	0.0042	0.62%	6.22%	-0.44%	Failed
			3.1052	0.0531				
			-1.7520	0.1781				
			-0.1862	0.8641				
30	a + bt^2 + ct^-1	0.9707994	33.9478	0.0000	1.35%	6.22%	5.88%	Failed
			5.1882	0.0066				
			-5.0121	0.0074				
31	a + bt^2+ ct^3 + dt^-1	0.9849563	19.8539	0.0003	0.87%	6.22%	-8.27%	Failed
			3.0585	0.0551				
			-2.1827	0.1171				
			-2.4963	0.0880				
32	a + bt^3 + ct^-1	0.9535355	35.5238	0.0000	1.65%	6.22%	9.65%	Failed
			3.9281	0.0171				
			-5.4024	0.0057				
33	a + bt + ct^3 + dt^-1	0.9894171	10.9123	0.0016	0.69%	6.22%	-2.30%	Failed
			3.8160	0.0317				
			-1.5162	0.2267				
			-0.7625	0.5012				
34	a + bt + clogt^2	0.9521009	6.1311	0.0036	1.94%	6.22%	3.94%	Failed
			0.3209	0.7644				
			0.1678	0.8749				
35	a + bt + clogt^3	0.9910081	29.0936	0.0000	0.74%	6.22%	3.43%	**PASSED**
			8.2825	0.0012				
			-4.1782	0.0139				
36	a + bt + ct^-2	0.9815699	32.6357	0.0000	1.14%	6.22%	3.74%	Failed
			9.8043	0.0006				
			-2.5434	0.0637				
37	a + bt + ct^-3	0.9784436	34.6370	0.0000	1.23%	6.22%	3.87%	Failed
			10.4671	0.0005				
			-2.2250	0.0901				
38	a + bt^2 + clogt^2	0.9842432	70.8225	0.0000	1.03%	6.22%	-2.53%	Failed
			-2.9108	0.0436				
			7.0687	0.0021				
39	a + bt^2 + clogt^3	0.887501	34.5442	0.0000	2.72%	6.22%	-9.68%	Failed
			-1.3427	0.2505				

			1.8864	0.1323				
40	a + bt^2 + ct^-2	0.9514789	37.8579	0.0000	1.71%	6.22%	6.88%	Failed
			5.8336	0.0043				
			-3.6777	0.0212				
41	a + bt^2 + ct^-3	0.9372389	37.1227	0.0000	1.92%	6.22%	7.32%	Failed
			5.9164	0.0041				
			-3.0901	0.0366				
42	a + bt^3 + clogt^2	0.9816752	62.2390	0.0000	1.08%	6.22%	-5.79%	Failed
			-2.5932	0.0605				
			8.9524	0.0009				
43	a + bt^3 + clogt^3	0.9320091	38.0615	0.0000	2.22%	6.22%	-23.42%	Failed
			-2.3667	0.0771				
			4.3219	0.0124				
44	a + bt^3 + ct^-2	0.9155075	36.8873	0.0000	2.17%	6.22%	11.65%	Failed
			4.2237	0.0134				
			-3.7749	0.0195				
45	a + bt^3 + ct^-3	0.887679	35.0976	0.0000	2.42%	6.22%	12.50%	Failed
			4.2183	0.0135				
			-3.1190	0.0356				
46	a + blogt + at^-1	0.9942775	14.3796	0.0001	0.57%	6.22%	2.01%	**PASSED**
			12.4002	0.0002				
			3.9392	0.0170				
47	a + blogt + at^-2	0.9950214	36.8007	0.0000	0.50%	6.22%	1.87%	**PASSED**
			19.1481	0.0000				
			4.2934	0.0127				
48	a + blogt + at^-3	0.9952977	49.7542	0.0000	0.47%	6.22%	1.81%	**PASSED**
			22.7285	0.0000				
			4.4443	0.0113				
49	a + blogt^2 + at^-1	0.9912202	40.9269	0.0000	0.74%	6.22%	2.50%	**PASSED**
			9.9411	0.0006				
			-4.2877	0.0128				
50	a + blogt^2 + at^-2	0.988582	56.5921	0.0000	0.88%	6.22%	2.69%	Failed
			12.5544	0.0002				
			-3.6349	0.0221				
51	a + blogt^2 + at^-3	0.9863221	60.0162	0.0000	0.97%	6.22%	2.79%	Failed
			13.2277	0.0002				
			-3.2200	0.0323				
52	a + blogt^3 + at^-1	0.9821318	41.7533	0.0000	1.11%	6.22%	3.39%	Failed
			6.8210	0.0024				
			-5.7039	0.0047				
53	a + blogt^3 + at^-2	0.9713635	48.7127	0.0000	1.41%	6.22%	3.86%	Failed
			7.7743	0.0015				
			-4.3355	0.0123				
54	a + blogt^3 + at^-3	0.9626266	48.0141	0.0000	1.59%	6.22%	4.09%	Failed
			7.8422	0.0014				
			-3.6698	0.0214				
55	a + bt^-1	0.8194405	34.4389	0.0000	4.13%	6.22%	0.36%	Failed
			-5.3132	0.0032				
56	a + bt^-1 + ct^-2	0.9878674	66.7780	0.0000	0.80%	6.22%	0.92%	Failed
			-12.1694	0.0003				
			8.3911	0.0011				
57	a + bt^-1 + ct^-3	0.9811696	63.5749	0.0000	1.01%	6.22%	0.77%	Failed

			-11.2250	0.0004				
			6.6290	0.0027				
58	a + bt^-2	0.6309378	31.0721	0.0000	5.65%	6.22%	0.06%	Failed
			-3.3552	0.0202				
59	a + bt^-2 + ct^-3	0.9481372	58.2729	0.0000	1.63%	6.22%	0.33%	Failed
			-6.5727	0.0028				
			5.6197	0.0049				
60	a + bt^-3	0.5104097	28.3715	0.0000	6.21%	6.22%	0.01%	Failed
			-2.6935	0.0431				
61	a + bt + ct^2 + dlogt^2	0.9906647	11.4950	0.0014	0.60%	6.22%	-0.75%	Failed
			1.9369	0.1482				
			-4.1862	0.0248				
			-0.0588	0.9568				
62	a + bt + ct^2 + dlogt^3	0.9911843	25.8265	0.0001	0.63%	6.22%	0.41%	Failed
			6.9315	0.0062				
			-1.0392	0.3751				
			-0.4248	0.6996				
63	a + bt + ct^2 + dt^-2	0.9906869	13.0650	0.0010	0.60%	6.22%	-0.65%	Failed
			4.2237	0.0243				
			-2.2172	0.1133				
			-0.1030	0.9245				
64	a + bt + ct^2 + dt^-3	0.990661	16.0153	0.0005	0.60%	6.22%	-0.75%	Failed
			4.8868	0.0164				
			-2.4966	0.0880				
			-0.0474	0.9652				
65	a + bt + ct^3 + dlogt^2	0.9882251	9.9164	0.0022	0.68%	6.22%	-4.47%	Failed
			1.7958	0.1704				
			-3.6430	0.0357				
			-0.4678	0.6718				
66	a + bt + ct^3 + dlogt^3	0.9906776	23.8973	0.0002	0.66%	6.22%	-0.51%	Failed
			5.1160	0.0145				
			-0.9264	0.4226				
			-1.0323	0.3779				
67	a + bt + ct^3 + dt^-2	0.988931	17.2102	0.0004	0.69%	6.22%	-3.00%	Failed
			5.2472	0.0135				
			-1.9131	0.1517				
			-0.6512	0.5613				
68	a + bt + ct^3 + dt^-3	0.9886356	20.5326	0.0003	0.69%	6.22%	-3.37%	Failed
			6.0444	0.0091				
			-2.1418	0.1216				
			-0.5789	0.6033				
69	a + bt + clogt + dlogt^2	0.9924896	16.1347	0.0005	0.55%	6.22%	1.17%	Failed
			-0.9213	0.4248				
			4.7446	0.0178				
			1.4201	0.2507				
70	a + bt + clogt + dlogt^3	0.9888934	0.5726	0.6070	0.68%	6.22%	5.59%	Failed
			0.6630	0.5547				
			-0.4883	0.6588				
			-0.6264	0.5755				
71	a + bt + clogt + dt^-1	0.993077	3.4808	0.0400	0.52%	6.22%	1.49%	Failed
			-0.5535	0.6185				
			2.2583	0.1091				

			1.5628	0.2160				
72	a + bt + clogt + dt^-2	0.9934807	14.4114	0.0007	0.49%	6.22%	1.69%	Failed
			-0.2338	0.8302				
			2.8824	0.0634				
			1.6671	0.1941				
73	a + bt + clogt + dt^-3	0.9937303	24.2360	0.0002	0.47%	6.22%	1.81%	Failed
			-0.0066	0.9952				
			3.2792	0.0465				
			1.7348	0.1812				
74	a + bt + clogt^2 + dlogt^3	0.9933401	15.3735	0.0006	0.52%	6.22%	1.85%	Failed
			1.1134	0.3467				
			1.5494	0.2191				
			-5.0763	0.0148				
75	a + bt + clogt^2 + dt^-1	0.9921533	14.4368	0.0007	0.56%	6.22%	0.97%	Failed
			-1.2148	0.3113				
			2.0363	0.1345				
			-4.6279	0.0190				
76	a + bt + clogt^2 + dt^-2	0.9913508	14.0086	0.0008	0.59%	6.22%	0.61%	Failed
			-1.5101	0.2282				
			2.3502	0.1003				
			-4.3763	0.0221				
77	a + bt + clogt^2 + dt^-3	0.9904321	13.1899	0.0009	0.61%	6.22%	0.31%	Failed
			-1.6487	0.1978				
			2.4519	0.0915				
			-4.1261	0.0258				
78	a + bt + clogt^3 + dt^-1	0.9948825	0.8803	0.4435	0.40%	6.22%	3.60%	Failed
			3.3116	0.0453				
			-2.8210	0.0667				
			2.0071	0.1384				
79	a + bt + clogt^3 + dt^-2	0.9947082	4.6212	0.0191	0.41%	6.22%	3.18%	Failed
			4.3181	0.0229				
			-3.3062	0.0455				
			1.9486	0.1465				
80	a + bt + clogt^3 + dt^-3	0.9947219	7.2377	0.0054	0.41%	6.22%	3.12%	Failed
			5.0322	0.0151				
			-3.6519	0.0354				
			1.9531	0.1458				
81	a + bt + ct^-1 + dt^-2	0.9942337	12.7917	0.0010	0.44%	6.22%	2.23%	Failed
			2.3273	0.1024				
			-3.1280	0.0521				
			2.5933	0.0808				
82	a + bt + ct^-1 + dt^-3	0.9944534	15.9230	0.0005	0.42%	6.22%	2.39%	**PASSED**
			3.2526	0.0474				
			-3.5420	0.0383				
			2.6665	0.0759				
83	a + bt + ct^-2 + dt^-3	0.9947013	26.1891	0.0001	0.37%	6.22%	2.73%	**PASSED**
			6.0126	0.0092				
			-3.6432	0.0357				
			3.3035	0.0456				
84	a + bt^2 + ct^3 + dlogt^2	0.9919078	54.8928	0.0000	0.67%	6.22%	16.91%	Failed
			-2.4613	0.0908				
			2.1883	0.1164				

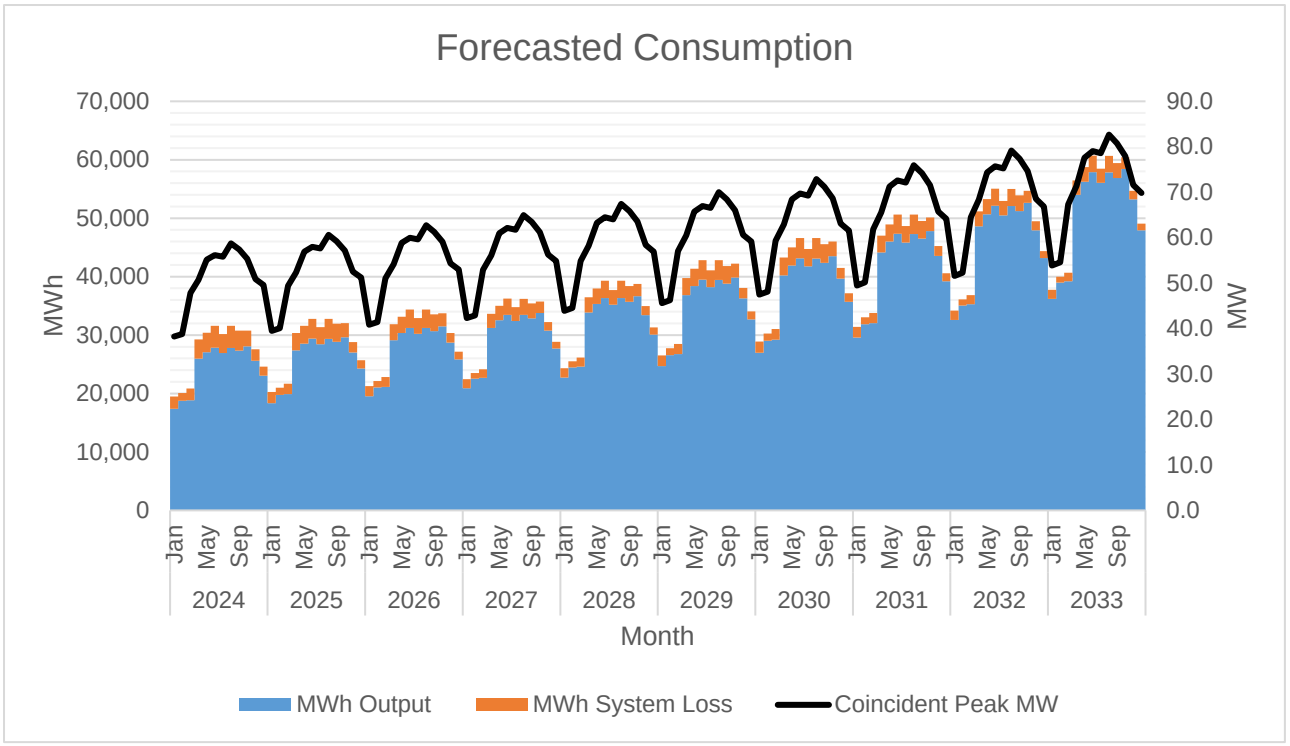
			3.7633	0.0328				
85	a + bt^2 + ct^3 + dlogt^3	0.9801435	24.0467	0.0002	0.96%	6.22%	-31.10%	Failed
			3.2705	0.0468				
			-4.4342	0.0213				
			-1.9985	0.1395				
86	a + bt^2 + ct^3 + dt^-1	0.9849563	19.8539	0.0003	0.87%	6.22%	-8.27%	Failed
			3.0585	0.0551				
			-2.1827	0.1171				
			-2.4963	0.0880				
87	a + bt^2 + ct^3 + dt^-2	0.9820107	28.0391	0.0001	0.94%	6.22%	-11.74%	Failed
			3.9733	0.0285				
			-2.7909	0.0684				
			-2.1726	0.1182				
88	a + bt^2 + ct^3 + dt^-3	0.979965	31.3002	0.0001	0.97%	6.22%	-13.82%	Failed
			4.4074	0.0217				
			-3.0871	0.0538				
			-1.9829	0.1417				
89	a + bt^2 + clogt + dlogt^2	0.9920121	69.1658	0.0000	0.57%	6.22%	0.80%	Failed
			-0.7867	0.4889				
			2.2114	0.1140				
			1.6999	0.1877				
90	a + bt^2 + clogt + dlogt^3	0.9899934	57.7057	0.0000	0.69%	6.22%	-0.22%	Failed
			-0.9042	0.4325				
			6.4784	0.0075				
			1.3044	0.2831				
91	a + bt^2 + clogt + dt^-1	0.9928496	4.6757	0.0185	0.53%	6.22%	1.35%	Failed
			-0.4486	0.6842				
			3.6517	0.0354				
			1.8920	0.1549				
92	a + bt^2 + clogt + dt^-2	0.9934081	14.7111	0.0007	0.50%	6.22%	1.70%	Failed
			-0.1450	0.8939				
			5.1423	0.0143				
			2.0339	0.1348				
93	a + bt^2 + clogt + dt^-3	0.9937419	22.1322	0.0002	0.47%	6.22%	1.90%	Failed
			0.0746	0.9452				
			6.0922	0.0089				
			2.1255	0.1235				
94	a + bt^2 + clogt^2 + dlogt^3	0.9948498	74.9498	0.0000	0.45%	6.22%	4.46%	Failed
			1.5756	0.2132				
			9.1855	0.0027				
			-3.0394	0.0559				
95	a + bt^2 + clogt^2 + dt^-1	0.9916413	24.7967	0.0001	0.58%	6.22%	0.47%	Failed
			-1.0961	0.3531				
			3.3127	0.0453				
			-2.1308	0.1229				
96	a + bt^2 + clogt^2 + dt^-2	0.9910499	40.8109	0.0000	0.60%	6.22%	0.05%	Failed
			-1.4502	0.2429				
			4.3226	0.0228				
			-2.0105	0.1379				
97	a + bt^2 + clogt^2 + dt^-3	0.9905538	48.7307	0.0000	0.60%	6.22%	-0.23%	Failed
			-1.6709	0.1933				
			4.8555	0.0167				

			-1.9163	0.1512				
98	a + bt^2 + clogt^3 + dt^-1	0.9868455	46.8930 -1.5599 2.4247 -5.5865	0.0000 0.2167 0.0938 0.0113	0.80%	6.22%	-2.19%	Failed
99	a + bt^2 + clogt^3 + dt^-2	0.9829663	63.0246 -1.9299 2.8973 -4.8392	0.0000 0.1492 0.0626 0.0168	0.90%	6.22%	-4.02%	Failed
100	a + bt^2 + clogt^3 + dt^-3	0.979558	64.9421 -2.0768 3.0464 -4.3604	0.0000 0.1294 0.0556 0.0223	0.98%	6.22%	-5.26%	Failed
101	a + bt^2 + ct^-1 + dt^-2	0.9947103	27.5342 2.4848 -5.8044 4.3682	0.0001 0.0889 0.0102 0.0222	0.40%	6.22%	3.08%	**PASSED**
102	a + bt^2 + ct^-1 + dt^-3	0.9948921	34.2899 3.4272 -6.7932 4.4572	0.0001 0.0416 0.0065 0.0210	0.37%	6.22%	3.44%	**PASSED**
103	**a + bt^2 + ct^-2 + dt^-3**	**0.9946025**	**53.7109 5.9527 -6.5963 5.7409**	**0.0000 0.0095 0.0071 0.0105**	**0.41%**	**6.22%**	**4.34%**	**PASSED**
104	a + bt^3 + clogt + dlogt^2	0.9915675	70.3635 -0.6542 2.3859 1.8767	0.0000 0.5597 0.0971 0.1572	0.59%	6.22%	0.29%	Failed
105	a + bt^3 + clogt + dlogt^3	0.9895432	63.4689 -0.8083 4.7967 1.5032	0.0000 0.4781 0.0172 0.2298	0.71%	6.22%	-1.07%	Failed
106	a + bt^3 + clogt + dt^-1	0.9926564	5.9792 -0.3420 4.7232 2.1188	0.0094 0.7549 0.0180 0.1243	0.54%	6.22%	1.20%	Failed
107	a + bt^3 + clogt + dt^-2	0.9933681	17.5418 -0.0531 6.9254 2.3006	0.0004 0.9610 0.0062 0.1049	0.50%	6.22%	1.77%	Failed
108	a + bt^3 + clogt + dt^-3	0.9937828	25.7446 0.1593 8.3226 2.4179	0.0001 0.8835 0.0036 0.0943	0.47%	6.22%	2.10%	Failed
109	a + bt^3 + clogt^2 + dlogt^3	0.9953663	98.5714 1.7589 7.4628 -3.5803	0.0000 0.1768 0.0050 0.0373	0.40%	6.22%	6.80%	Failed
110	a + bt^3 + clogt^2 + dt^-1	0.9909946	24.2618 -0.9486 4.1998	0.0002 0.4128 0.0246	0.62%	6.22%	-0.36%	Failed

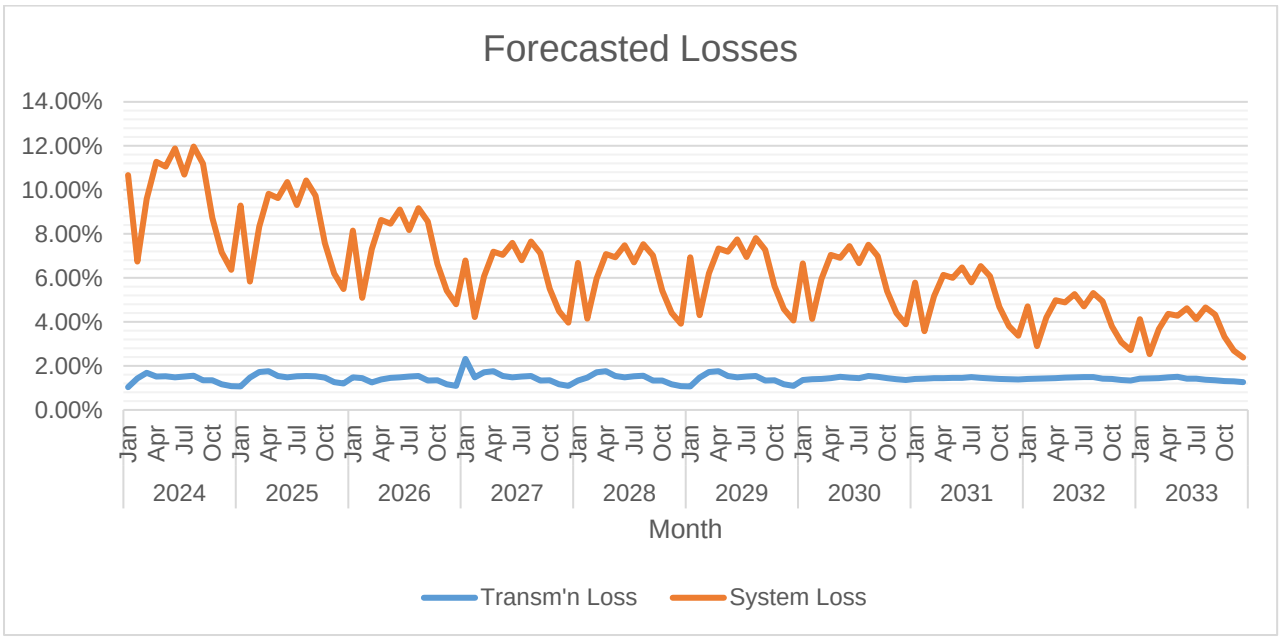
			-2.2670	0.1082				
111	a + bt^3 + clogt^2 + dt^-2	0.9901361	38.3839	0.0000	0.64%	6.22%	-1.15%	Failed
			-1.2768	0.2915				
			5.5914	0.0113				
			-2.1050	0.1260				
112	a + bt^3 + clogt^2 + dt^-3	0.9894409	44.9311	0.0000	0.66%	6.22%	-1.67%	Failed
			-1.4770	0.2362				
			6.2889	0.0081				
			-1.9854	0.1413				
113	a + bt^3 + clogt^3 + dt^-1	0.9862178	31.5591	0.0001	0.82%	6.22%	-4.10%	Failed
			-1.4785	0.2358				
			3.2381	0.0479				
			-4.0906	0.0264				
114	a + bt^3 + clogt^3 + dt^-2	0.9826216	43.4653	0.0000	0.92%	6.22%	-6.72%	Failed
			-1.8951	0.1544				
			4.0556	0.0270				
			-3.5566	0.0379				
115	a + bt^3 + clogt^3 + dt^-3	0.9797484	46.9720	0.0000	0.98%	6.22%	-8.44%	Failed
			-2.0933	0.1274				
			4.3801	0.0220				
			-3.2294	0.0482				
116	a + bt^3 + ct^-1 + dt^-2	0.9950731	40.4020	0.0000	0.37%	6.22%	4.49%	PASSED
			2.6173	0.0792				
			-8.0992	0.0039				
			5.8926	0.0098				
117	a + bt^3 + ct^-1 + dt^-3	0.9950911	49.3735	0.0000	0.38%	6.22%	5.17%	PASSED
			3.5134	0.0391				
			-9.4087	0.0025				
			5.9044	0.0097				
118	a + bt^3 + ct^-2 + dt^-3	0.9936603	69.5651	0.0000	0.47%	6.22%	6.92%	PASSED
			5.4518	0.0121				
			-8.2382	0.0037				
			7.0930	0.0058				
119	a + blogt + clogt^2 + dt^-1	0.9933079	1.0394	0.3750	0.50%	6.22%	1.61%	Failed
			1.4993	0.2308				
			-0.6484	0.5629				
			1.1487	0.3340				
120	a + blogt + clogt^2 + dt^-2	0.9935724	6.4498	0.0076	0.48%	6.22%	1.71%	Failed
			2.0262	0.1358				
			-0.3135	0.7745				
			1.2236	0.3084				
121	a + blogt + clogt^2 + dt^-3	0.9937434	11.2394	0.0015	0.47%	6.22%	1.78%	Failed
			2.3968	0.0962				
			-0.0793	0.9418				
			1.2729	0.2928				
122	a + blogt + clogt^3 + dt^-1	0.9932019	2.8978	0.0626	0.51%	6.22%	1.57%	Failed
			2.7411	0.0713				
			-0.6059	0.5874				
			1.6185	0.2040				
123	a + blogt + clogt^3 + dt^-2	0.993516	10.6260	0.0018	0.49%	6.22%	1.70%	Failed
			3.8296	0.0314				
			-0.2671	0.8067				

			1.7005	0.1876				
124	a + blogt + clogt^3 + dt^-3	0.9937325	16.6592	0.0005	0.47%	6.22%	1.79%	Failed
			4.5664	0.0197				
			-0.0327	0.9759				
			1.7593	0.1768				
125	a + blogt + ct^-1 + dt^-2	0.9936649	3.4515	0.0409	0.47%	6.22%	1.74%	Failed
			2.1588	0.1197				
			-0.3788	0.7301				
			0.7830	0.4907				
126	a + blogt + ct^-1 + dt^-3	0.9937707	4.4738	0.0208	0.46%	6.22%	1.77%	Failed
			3.0152	0.0570				
			-0.1396	0.8978				
			0.8213	0.4717				
127	a + blogt + ct^-2 + dt^-3	0.9938013	9.8966	0.0022	0.46%	6.22%	1.77%	Failed
			5.5197	0.0117				
			-0.1855	0.8647				
			0.4612	0.6761				
128	a + blogt^2 + clogt^3 + dt^-1	0.9928853	16.1346	0.0005	0.53%	6.22%	1.40%	Failed
			2.6544	0.0767				
			-1.3915	0.2583				
			-0.9842	0.3976				
129	a + blogt^2 + clogt^3 + dt^-2	0.9927543	28.1782	0.0001	0.53%	6.22%	1.32%	Failed
			3.5789	0.0373				
			-1.8175	0.1667				
			-0.9471	0.4135				
130	a + blogt^2 + clogt^3 + dt^-3	0.9926336	35.2901	0.0001	0.53%	6.22%	1.25%	Failed
			4.1586	0.0253				
			-2.1041	0.1261				
			-0.9127	0.4287				
131	a + blogt^2 + ct^-1 + dt^-2	0.9938839	11.5224	0.0014	0.46%	6.22%	1.88%	Failed
			2.2214	0.1129				
			-2.1136	0.1249				
			1.6559	0.1963				
132	a + blogt^2 + ct^-1 + dt^-3	0.994064	15.1975	0.0006	0.44%	6.22%	1.96%	Failed
			3.1127	0.0528				
			-2.4934	0.0882				
			1.7077	0.1862				
133	a + blogt^2 + ct^-2 + dt^-3	0.9943538	28.2696	0.0001	0.41%	6.22%	2.13%	Failed
			5.8088	0.0102				
			-2.5865	0.0813				
			2.2559	0.1093				
134	a + blogt^3 + ct^-1 + dt^-2	0.9941714	20.7240	0.0002	0.44%	6.22%	2.11%	Failed
			2.3079	0.1042				
			-4.0807	0.0266				
			3.0434	0.0557				
135	a + blogt^3 + ct^-1 + dt^-3	0.9944083	26.6881	0.0001	0.42%	6.22%	2.27%	PASSED
			3.2358	0.0480				
			-4.8718	0.0165				
			3.1276	0.0522				
136	a + blogt^3 + ct^-2 + dt^-3	0.994671	46.5689	0.0000	0.37%	6.22%	2.64%	PASSED
			5.9941	0.0093				
			-5.0053	0.0153				

			4.3006	0.0231				



MWh Output was expected to grow at a rate of 8.49 % annually.



Transmission Loss is expected to range from 1.76% to 1.04% while System Loss is expected to range from 11.97% to 2.38%.

Power Supply

Case No.	Type	GenCo	Minimum MW	Minimum MWh/yr	PSA Start	PSA End
ERC Case No. 2016-085RC (ANDA)	Base	Anda Power Corporation	10.00	6,720	4/28/2016	4/26/2029

The PSA with Anda Power Corporation filed with ERC under Case No. 2016-085RC was procured through competitive selection process under the DC 2015-06-0008 rules. It was selected to provide for base requirements to reduce or avoid exposure to volatile prices from the Wholesale Electric Spot Market (WESM).

The current condition of PSA between ISELCO II and ANDA is in dispute with ERC, under ERC Case No. 2023-023 DR. At present ANDA has no supply to ISELCO II of its contracted capacity, the last supply was July of 2023.

Case No.	Type	GenCo	Minimum MW	Minimum MWh/yr	PSA Start	PSA End
ERC Case No. 2023-142 RC (EPSA-GNPD)	Base	GN Power Dinginin	6.30	4,385	10/25/2023	10/26/2024

The PSA with GNPOWER DINGININ LTD. CO. (GNPD) filed with ERC under Case No. 2023-142RC was procured through Emergency Power Supply Agreement.

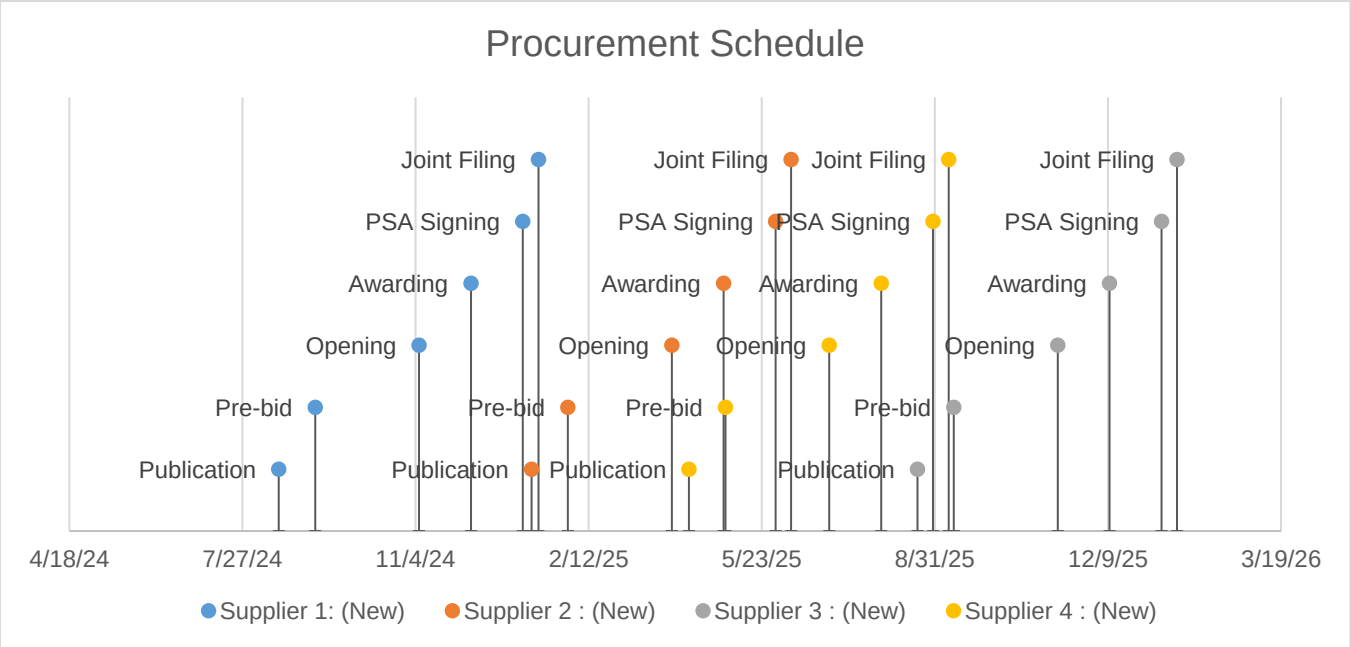
Between June and August 2023, the Energy Regulatory Commission (ERC) issued several orders/directives for ISELCO II to immediately stop implementing contracted capacities from its suppliers that were either affected by the Alyansa Ruling or have not been granted prior ERC approval, prompting ISELCO II to source power from the Wholesale Electricity Spot Market (WESM).To prevent prolonged exposure of its member-consumers to volatile WESM prices, ISELCO II solicited offers from various generation companies for the emergency supply of at least 18 MW capacity and GNPD was one of the said GenCo's. ISELCO II carefully evaluated and found GNPD's offer the most beneficial, thus, it negotiated and eventually signed an Emergency Power Supply Agreement (EPSA) dated 25 October 2023 with GNPD. ISELCO II conducted a rate impact simulation and found that with GNPD's supply, its blended generation rate will go down by PhP2.58/kWh.

While ISELCO II and GNPD were still negotiating the EPSA and right before the parties signed the same, the ERC issued Resolution No. 16, Series of 2023 providing Implementing Guidelines for the Procurement, Execution, and Evaluation of PSAs, which took effect on 23 October 2023.

With the new rules of the regulatory commission, ISELCO II followed the modified requirements for the procurement and approval process of EPSAs, including among others, giving written notices of force majeure or fortuitous event to the DOE, NEA, and ERC, and submission of reportorial requirements as to the implementation of the EPSA.

The utilization of the PSA ranges to 35% monthly minimum Energy Offtake (MEOT) to 100%.

	Supplier 1: (New)	Supplier 2 : (New)	Supplier 3 : (New)	Supplier 4 : (New)
Type	6.00	2.00	5.00	0.00
Minimum MW	4,000	1,500	1,250	150
Minimum MWh/yr	18.00	10.00	10.00	11.30
Maximum MW	13,392	7,200	1,742	7,552
Maximum MWh/yr	6.00	2.00	5.00	0.00
PSA Start	12/26/2024	12/26/2028	6/26/2026	3/26/2027
PSA End	12/25/2039	12/25/2048	6/25/2040	6/25/2046
Publication	8/17/2024	1/10/2025	8/21/2025	4/11/2025
Pre-bid	9/7/2024	1/31/2025	9/11/2025	5/2/2025
Opening	11/6/2024	4/1/2025	11/10/2025	7/1/2025
Awarding	12/6/2024	5/1/2025	12/10/2025	7/31/2025
PSA Signing	1/5/2025	5/31/2025	1/9/2026	8/30/2025
Joint Filing	1/14/2025	6/9/2025	1/18/2026	9/8/2025



For Supplier 1, the procurement of 18 MW of supply which is planned to be available on December 26, 2024, the first expected publication will be on August 17, 2024 for this capacity ISELCO II will participate in the Joint NEA CSP Aggregation that will be conducted by the NEA.

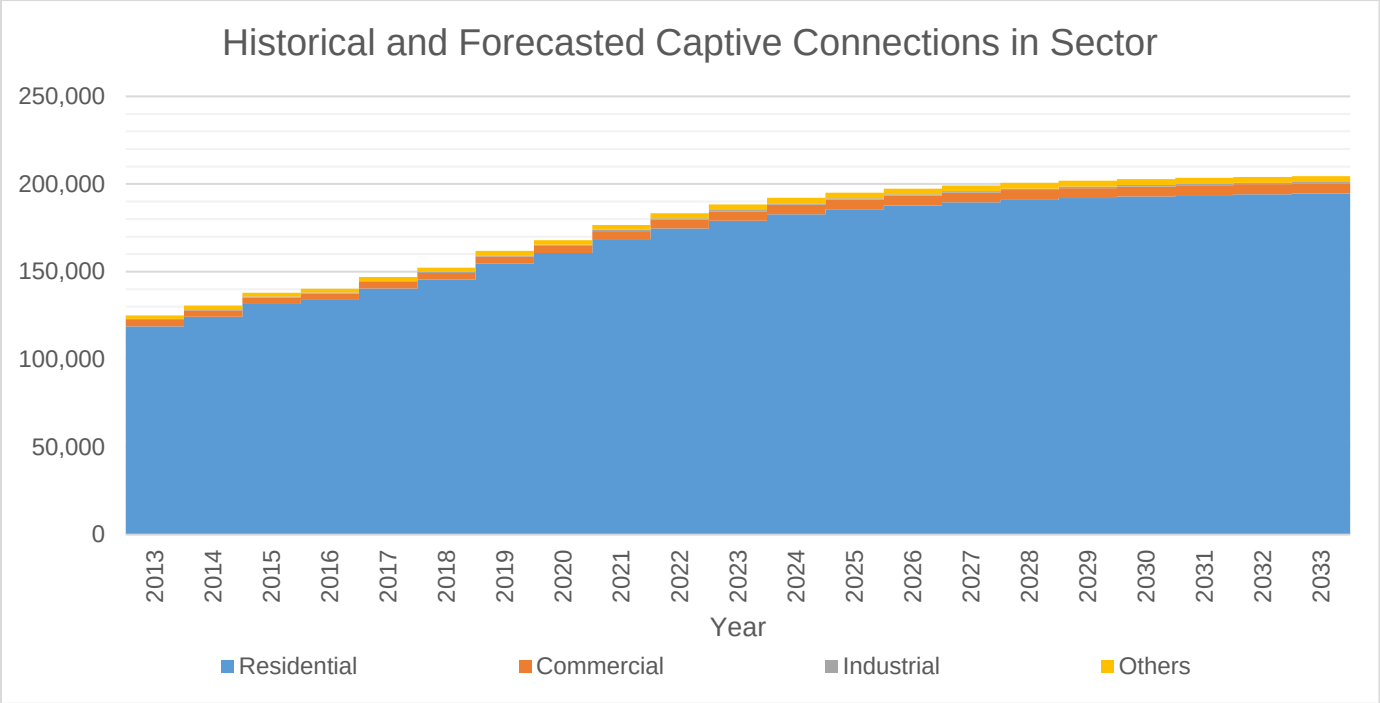
For the procurement of 10 MW for Supplier 2 of supply which is planned to be available on December 26, 2028, the second publication of CSP will be on January 10, 2025. Joint filing is planned on June 9, 2025 or 150 days later.

Furthermore, Supplier 3 procurement of 10 MW of supply which is planned to be available on June 26, 2026, the last publication of CSP will be on August 21, 2025. Joint filing is planned on January 18, 2026 or 150 days later.

Finally, Supplier 4 the procurement of 11.3 MW of supply which is planned to be available on March 26, 2027, for the third publication of CSP will be on April 11, 2025 expected to file Joint filing to ERC is planned on September 8, 2025.

In accordance with DOE's 2023 CSP Policy, and new rules and procedures of the commission or ERC and DOE.

Captive Customer Connections



The number of Residential connections is expected to grow at a rate of 1.282% annually for the next five (5) years, and 0.382% for the succeeding five years. Said customer class is expected to account for ninety five percent (95%) of the total consumption.