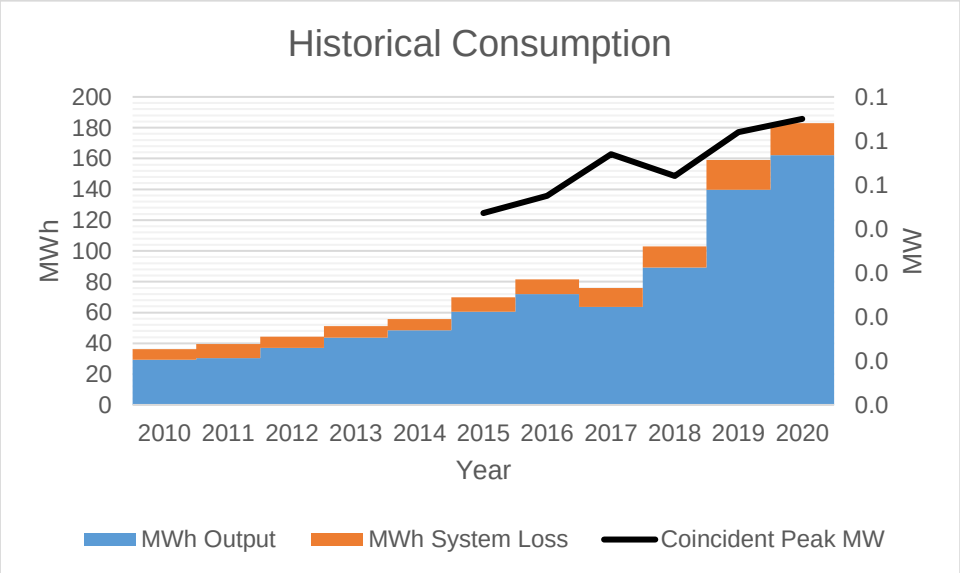
Power Supply Procurement Plan 2021

MONGPONG GRID

Historical Consumption Data

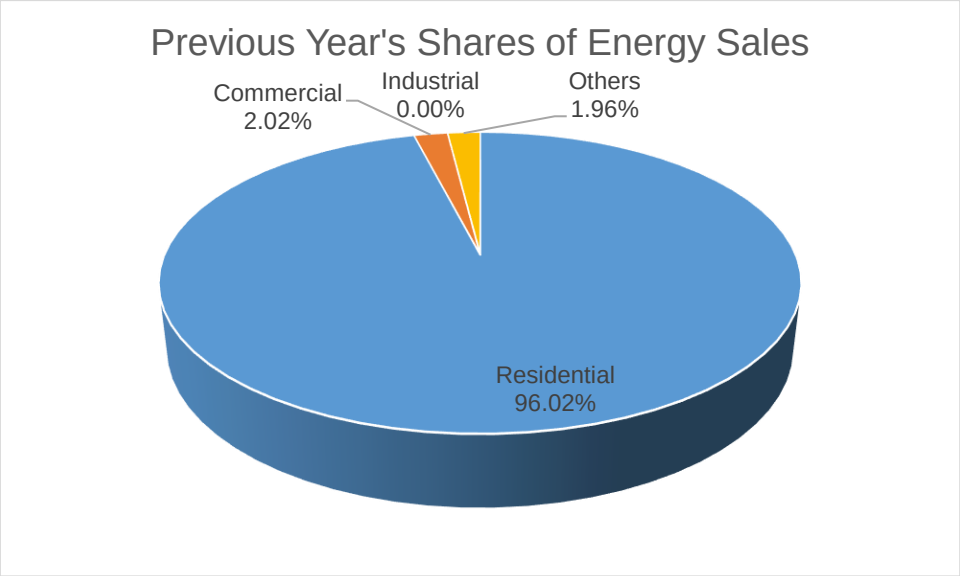
	Coincident Peak MW	MWh Offtake	MWh Input	MWh Output	MWh System Loss	Load Factor	System Loss
2010		36	36	29	7		19.13%
2011		39	39	30	9		23.04%
2012		44	44	37	7		16.66%
2013		51	51	44	8		14.90%
2014		56	56	48	7		13.00%
2015	0.04	70	70	60	9	18%	13.51%
2016	0.05	81	81	72	10	20%	11.73%
2017	0.06	76	76	64	12	15%	16.22%
2018	0.05	103	103	89	14	23%	13.20%
2019	0.06	159	159	140	19	29%	12.04%
2020	0.07	183	183	162	21	32%	11.29%

Peak Demand increased from 0.044 MW in 2015 to 0.065 MW in 2020 at a rate of 8.85% due to additional customer connections. While MWh Offtake increased from 36.198 MWh in 2010 to 182.872 MWh in 2020 at a rate of 18.59% due to increase in number of operating hours of NPC from 8 hours to 16 hours and in September 2019, it is in 24 hours operation up to present. Within the same period, Load Factor increased from 18% to 32%. There was an abrupt change in consumption on 2018 and 2019 due to change in operating hours.

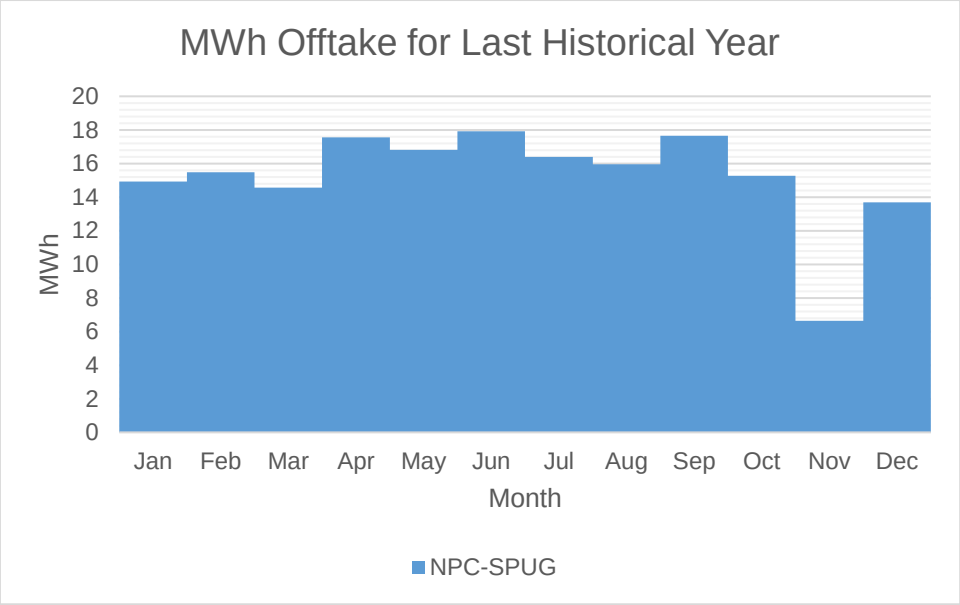


MWh Output increased from 29 MWH on year 2010 and 162 MWH on year 2020 at a rate of 19.97%, while MWh System Loss increased at a rate of 13.03% within the same period.

Based on the graph there was a decreased in System Loss from 23.04% on year 2011 and 11.29% on year 2020.

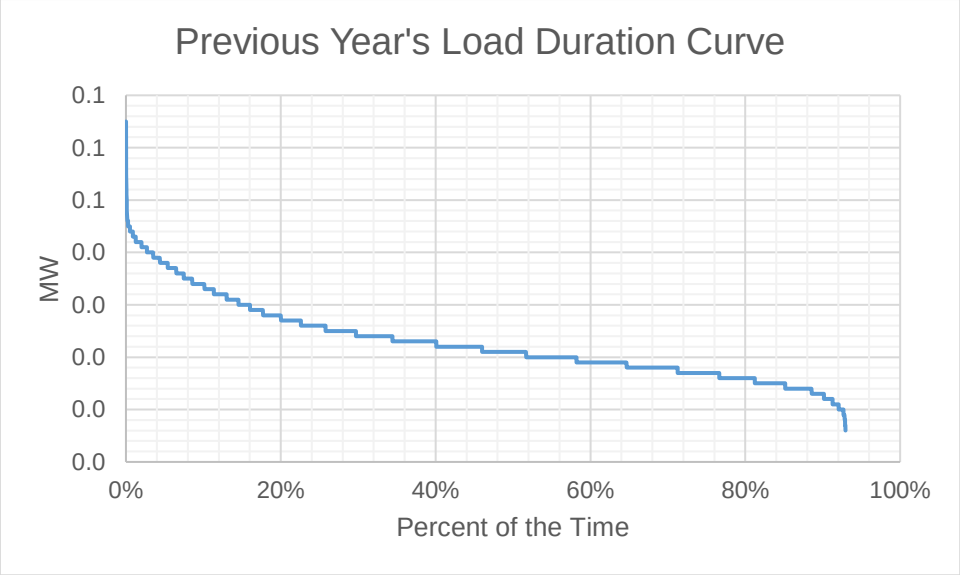


Residential customers account for the bulk of energy sales at 96.02% due to the high number of connections. In contrast, Public Building customers accounted for only 1.96% of energy sales due to the low number of connections. There is no Industrial, Water System and Street Light customer in the island.

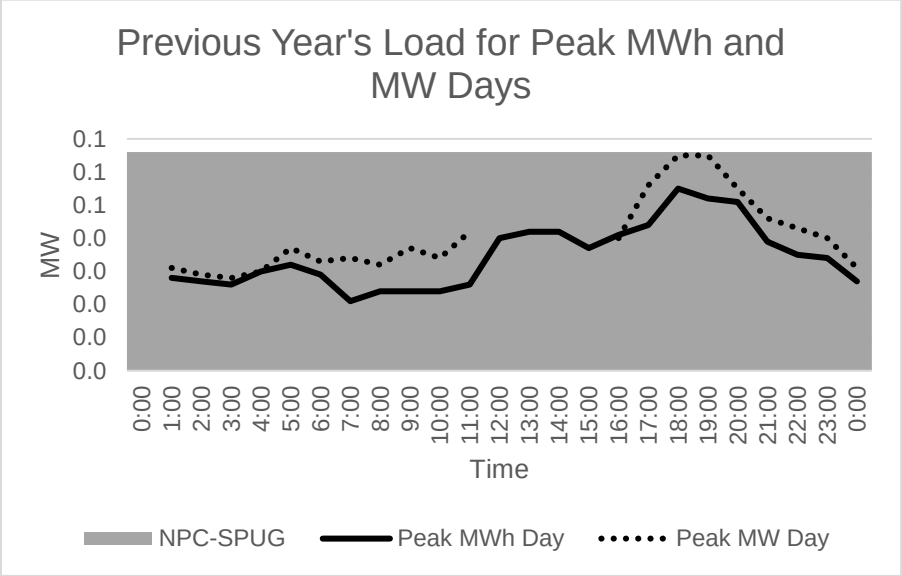


For 2020, the total Offtake for the last historical year was lower than the quantity stipulated in the PSA but still maintain or within the +/- 10% bandwidth based on the PSA with NPC-SPUG accounts for all of MWh Offtake.

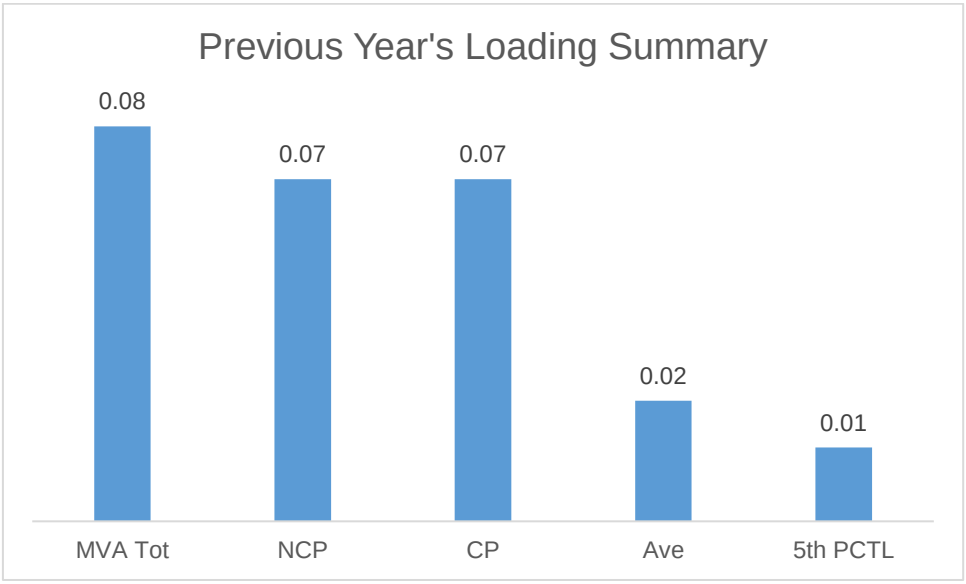
Previous Year's Load Profile



Based on the Load Duration Curve, the minimum load is 0 MW due to power interruptions and hours that there is no generation. Since it is not in normal condition, we use the safe estimated true minimum demand of 0.014 MW as stated in Previous Year's Loading Summary whereas the maximum load is 0.065 MW for the last historical year.



Peak MW occurred on February 11, 2020 due to celebration of fiesta in the Island. Peak daily MWh occurred on February 12, 2020. As shown in the Load Curves, the available supply is higher than the Peak Demand.



The Non-coincident Peak Demand is 0.065 MW, which is around 86.67% of the total substation capacity of 0.075 MVA at a power factor of 0.98. The load factor or the ratio between the Average Load of 0.0229 MW and the Non-coincident Peak Demand is 35.19% of. A safe estimate of the true minimum load is the fifth percentile load of 0.014 MW which is 18.67% of the Non-coincident Peak Demand.

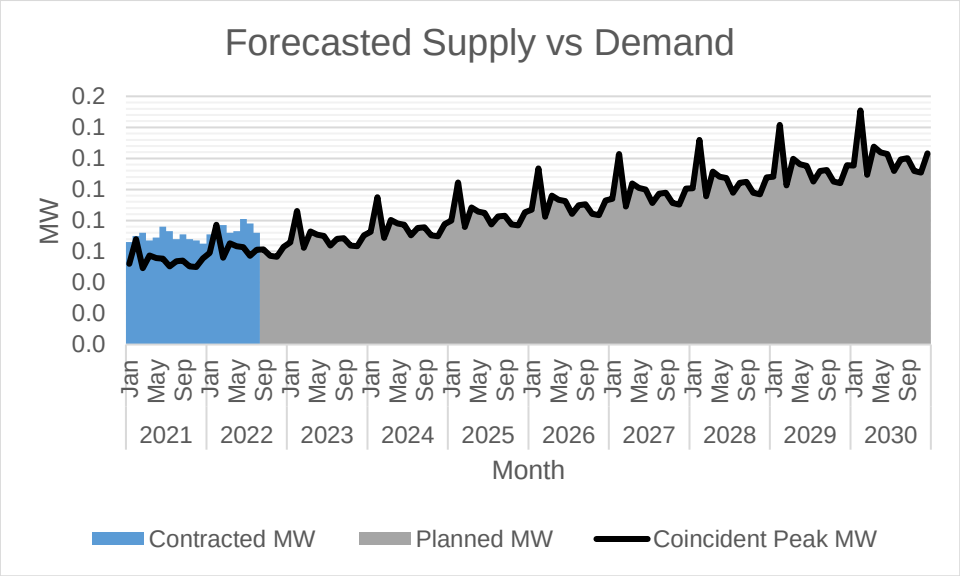
Forecasted Consumption Data

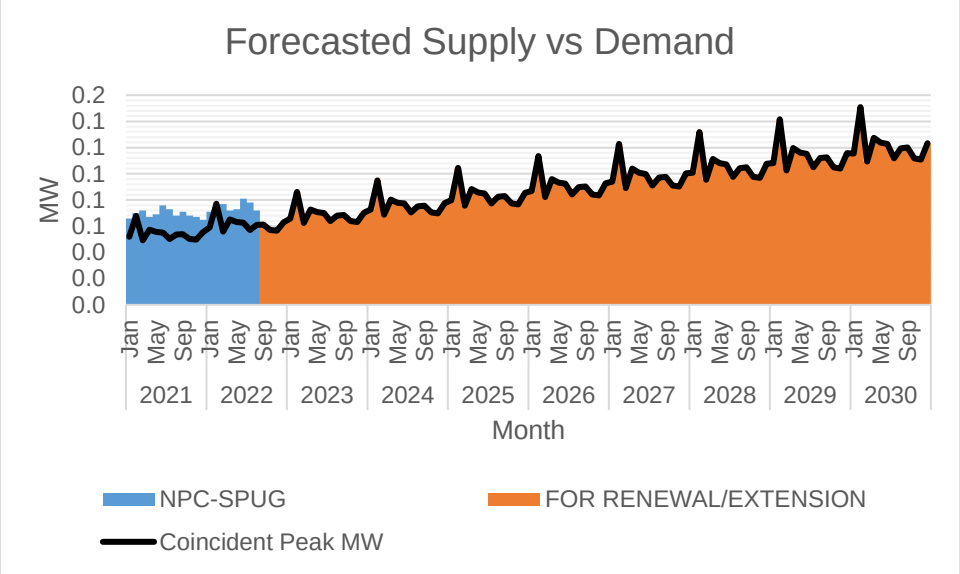
		Coincident Peak MW	Contracted MW	Planned MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
2021	Jan	0.05	0.07	0.000	127%	127%	0.01
	Feb	0.07	0.07	0.000	103%	103%	0.00
	Mar	0.05	0.07	0.000	146%	146%	0.02
	Apr	0.06	0.07	0.000	117%	117%	0.01
	May	0.06	0.07	0.000	124%	124%	0.01
	Jun	0.06	0.08	0.000	138%	138%	0.02
	Jul	0.05	0.07	0.000	145%	145%	0.02
	Aug	0.05	0.07	0.000	127%	127%	0.01
	Sep	0.05	0.07	0.000	131%	131%	0.02
	Oct	0.05	0.07	0.000	135%	135%	0.02
	Nov	0.05	0.07	0.000	134%	134%	0.02
	Dec	0.06	0.07	0.000	117%	117%	0.01
2022	Jan	0.06	0.07	0.000	120%	120%	0.01
	Feb	0.08	0.08	0.000	97%	97%	0.00
	Mar	0.06	0.08	0.000	138%	138%	0.02
	Apr	0.07	0.07	0.000	110%	110%	0.01
	May	0.06	0.07	0.000	115%	115%	0.01
	Jun	0.06	0.08	0.000	129%	129%	0.02
	Jul	0.06	0.08	0.000	136%	136%	0.02
	Aug	0.06	0.07	0.000	118%	118%	0.01
	Sep	0.06	0.00	0.061	0%	100%	0.00
	Oct	0.06	0.00	0.057	0%	100%	0.00
	Nov	0.06	0.00	0.057	0%	100%	0.00
	Dec	0.06	0.00	0.063	0%	100%	0.00
2023	Jan	0.07	0.00	0.066	0%	100%	0.00
	Feb	0.09	0.00	0.086	0%	100%	0.00
	Mar	0.06	0.00	0.062	0%	100%	0.00
	Apr	0.07	0.00	0.073	0%	100%	0.00
	May	0.07	0.00	0.071	0%	100%	0.00
	Jun	0.07	0.00	0.070	0%	100%	0.00
	Jul	0.06	0.00	0.064	0%	100%	0.00
	Aug	0.07	0.00	0.068	0%	100%	0.00
	Sep	0.07	0.00	0.07	0%	100%	0.00
	Oct	0.06	0.00	0.06	0%	100%	0.00
	Nov	0.06	0.00	0.06	0%	100%	0.00
	Dec	0.07	0.00	0.07	0%	100%	0.00
2024	Jan	0.07	0.00	0.07	0%	100%	0.00
	Feb	0.09	0.00	0.09	0%	100%	0.00
	Mar	0.07	0.00	0.07	0%	100%	0.00
	Apr	0.08	0.00	0.08	0%	100%	0.00
	May	0.08	0.00	0.08	0%	100%	0.00
	Jun	0.08	0.00	0.08	0%	100%	0.00
	Jul	0.07	0.00	0.07	0%	100%	0.00
	Aug	0.08	0.00	0.08	0%	100%	0.00

	Sep	0.08	0.00	0.08	0%	100%	0.00
	Oct	0.07	0.00	0.07	0%	100%	0.00
	Nov	0.07	0.00	0.07	0%	100%	0.00
	Dec	0.08	0.00	0.08	0%	100%	0.00
2025	Jan	0.08	0.00	0.08	0%	100%	0.00
	Feb	0.10	0.00	0.10	0%	100%	0.00
	Mar	0.08	0.00	0.08	0%	100%	0.00
	Apr	0.09	0.00	0.09	0%	100%	0.00
	May	0.09	0.00	0.09	0%	100%	0.00
	Jun	0.08	0.00	0.08	0%	100%	0.00
	Jul	0.08	0.00	0.08	0%	100%	0.00
	Aug	0.08	0.00	0.08	0%	100%	0.00
	Sep	0.08	0.00	0.08	0%	100%	0.00
	Oct	0.08	0.00	0.08	0%	100%	0.00
	Nov	0.08	0.00	0.08	0%	100%	0.00
	Dec	0.09	0.00	0.09	0%	100%	0.00
2026	Jan	0.09	0.00	0.09	0%	100%	0.00
	Feb	0.11	0.00	0.11	0%	100%	0.00
	Mar	0.08	0.00	0.08	0%	100%	0.00
	Apr	0.10	0.00	0.10	0%	100%	0.00
	May	0.09	0.00	0.09	0%	100%	0.00
	Jun	0.09	0.00	0.09	0%	100%	0.00
	Jul	0.08	0.00	0.08	0%	100%	0.00
	Aug	0.09	0.00	0.09	0%	100%	0.00
	Sep	0.09	0.00	0.09	0%	100%	0.00
	Oct	0.08	0.00	0.08	0%	100%	0.00
	Nov	0.08	0.00	0.08	0%	100%	0.00
	Dec	0.09	0.00	0.09	0%	100%	0.00
2027	Jan	0.09	0.00	0.09	0%	100%	0.00
	Feb	0.12	0.00	0.12	0%	100%	0.00
	Mar	0.09	0.00	0.09	0%	100%	0.00
	Apr	0.10	0.00	0.10	0%	100%	0.00
	May	0.10	0.00	0.10	0%	100%	0.00
	Jun	0.10	0.00	0.10	0%	100%	0.00
	Jul	0.09	0.00	0.09	0%	100%	0.00
	Aug	0.10	0.00	0.10	0%	100%	0.00
	Sep	0.10	0.00	0.10	0%	100%	0.00
	Oct	0.09	0.00	0.09	0%	100%	0.00
	Nov	0.09	0.00	0.09	0%	100%	0.00
	Dec	0.10	0.00	0.10	0%	100%	0.00
2028	Jan	0.10	0.00	0.10	0%	100%	0.00
	Feb	0.13	0.00	0.13	0%	100%	0.00
	Mar	0.10	0.00	0.10	0%	100%	0.00
	Apr	0.11	0.00	0.11	0%	100%	0.00
	May	0.11	0.00	0.11	0%	100%	0.00
	Jun	0.11	0.00	0.11	0%	100%	0.00
	Jul	0.10	0.00	0.10	0%	100%	0.00
	Aug	0.10	0.00	0.10	0%	100%	0.00
	Sep	0.10	0.00	0.10	0%	100%	0.00

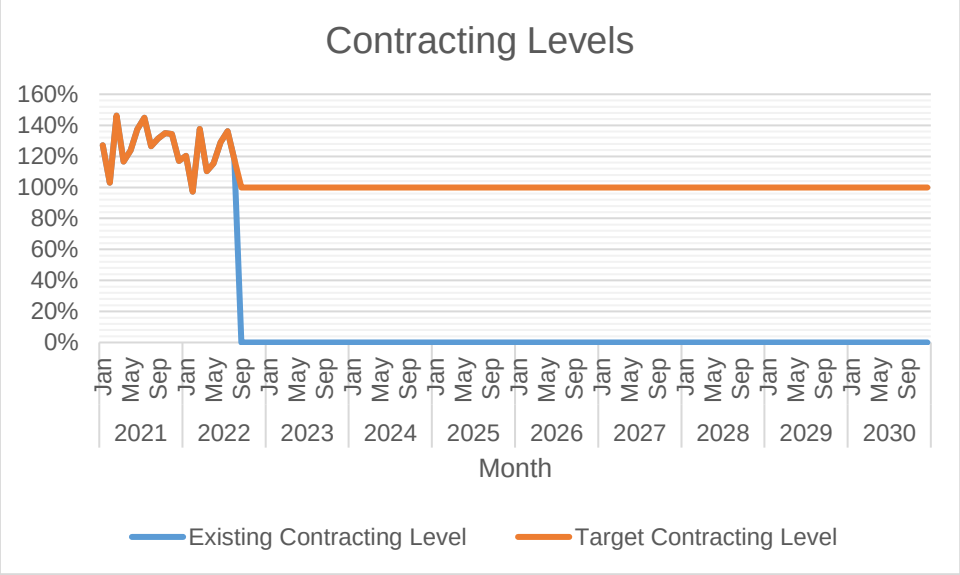
	Oct	0.10	0.00	0.10	0%	100%	0.00
	Nov	0.10	0.00	0.10	0%	100%	0.00
	Dec	0.11	0.00	0.11	0%	100%	0.00
2029	Jan	0.11	0.00	0.11	0%	100%	0.00
	Feb	0.14	0.00	0.14	0%	100%	0.00
	Mar	0.10	0.00	0.10	0%	100%	0.00
	Apr	0.12	0.00	0.12	0%	100%	0.00
	May	0.12	0.00	0.12	0%	100%	0.00
	Jun	0.12	0.00	0.12	0%	100%	0.00
	Jul	0.10	0.00	0.10	0%	100%	0.00
	Aug	0.11	0.00	0.11	0%	100%	0.00
	Sep	0.11	0.00	0.11	0%	100%	0.00
	Oct	0.10	0.00	0.10	0%	100%	0.00
	Nov	0.10	0.00	0.10	0%	100%	0.00
	Dec	0.12	0.00	0.12	0%	100%	0.00
2030	Jan	0.12	0.00	0.12	0%	100%	0.00
	Feb	0.15	0.00	0.15	0%	100%	0.00
	Mar	0.11	0.00	0.11	0%	100%	0.00
	Apr	0.13	0.00	0.13	0%	100%	0.00
	May	0.12	0.00	0.12	0%	100%	0.00
	Jun	0.12	0.00	0.12	0%	100%	0.00
	Jul	0.11	0.00	0.11	0%	100%	0.00
	Aug	0.12	0.00	0.12	0%	100%	0.00
	Sep	0.12	0.00	0.12	0%	100%	0.00
	Oct	0.11	0.00	0.11	0%	100%	0.00
	Nov	0.11	0.00	0.11	0%	100%	0.00
	Dec	0.12	0.00	0.12	0%	100%	0.00

The Peak Demand was forecasted using the historical data and forecasting models developed and was assumed to occur on the month of February due to fiesta celebration. Monthly Peak Demand is at its lowest on the month of Mach. In general, Peak Demand is expected to grow at a rate of 8.82% annually.

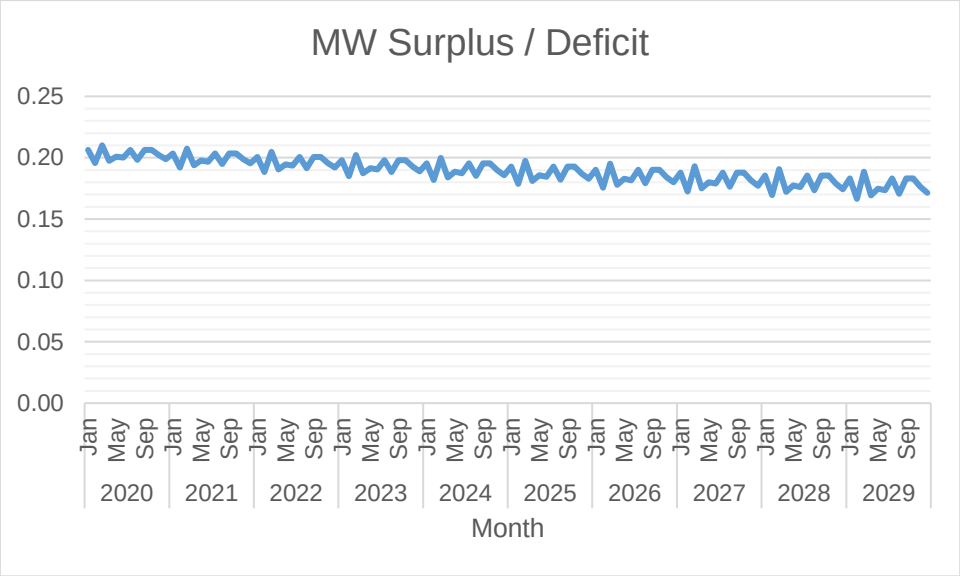




The available supply is generally above the Peak Demand. This is because generating units from Polo and Maniwaya which is now connected to Marinduque Grid was transferred to Mongpong Island in prepation for the potential increase of load due to extended hours of operation of NPC.



Currently, the actual demand is within the bandwidth of +/- 10% of the contracted demand. The highest target contracting level is 146% which is expected to occur on March 2021. The lowest target contracting level is 295% which is expected to occur on February 2022.



Currently, the actual demand is within the bandwidth of +/- 10% of the contracted demand. The highest surplus is 0.02277 MW which is expected to occur on the month of March 2021. The lowest surplus is 0.00678 MW which is expected to occur on the month of April 2022.

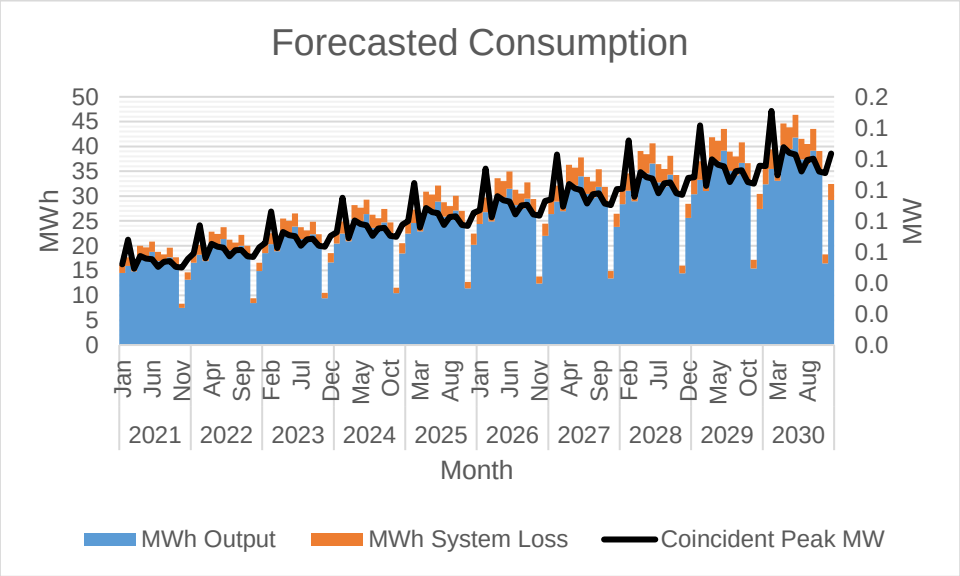
		MWh Offtake	MWh Output	MWh System Loss	System Loss
2021	Jan	16	15	2	10.00%
	Feb	18	16	2	10.00%
	Mar	16	15	2	10.00%
	Apr	20	18	2	10.00%
	May	20	18	2	10.00%
	Jun	21	19	2	10.00%
	Jul	19	17	2	10.00%
	Aug	18	16	2	10.00%
	Sep	20	18	2	10.00%
	Oct	18	16	2	10.00%
	Nov	8	8	1	10.00%
	Dec	15	13	1	10.00%
2022	Jan	18	17	2	10.00%
	Feb	20	18	2	10.00%
	Mar	19	17	2	10.00%
	Apr	23	21	2	10.00%
	May	22	20	2	10.00%
	Jun	24	21	2	10.00%
	Jul	21	19	2	10.00%
	Aug	21	19	2	10.00%
	Sep	22	20	2	10.00%
	Oct	20	18	2	10.00%
	Nov	9	8	1	10.00%

	Dec	17	15	2	10.00%
2023	Jan	21	19	2	10.00%
	Feb	23	20	2	10.00%
	Mar	21	19	2	10.00%
	Apr	25	23	3	10.00%
	May	25	23	3	10.00%
	Jun	26	24	3	10.00%
	Jul	24	21	2	10.00%
	Aug	23	21	2	10.00%
	Sep	25	22	2	10.00%
	Oct	22	20	2	10.00%
	Nov	10	9	1	10.00%
	Dec	19	17	2	10.00%
2024	Jan	23	20	2	10.00%
	Feb	25	22	2	10.00%
	Mar	23	21	2	10.00%
	Apr	28	25	3	10.00%
	May	28	25	3	10.00%
	Jun	29	26	3	10.00%
	Jul	26	24	3	10.00%
	Aug	26	23	3	10.00%
	Sep	27	25	3	10.00%
	Oct	25	22	2	10.00%
	Nov	12	10	1	10.00%
	Dec	20	18	2	10.00%
2025	Jan	25	22	2	10.00%
	Feb	27	25	3	10.00%
	Mar	25	23	3	10.00%
	Apr	31	28	3	10.00%
	May	30	27	3	10.00%
	Jun	32	29	3	10.00%
	Jul	29	26	3	10.00%
	Aug	28	25	3	10.00%
	Sep	30	27	3	10.00%
	Oct	27	24	3	10.00%
	Nov	13	11	1	10.00%
	Dec	22	20	2	10.00%
2026	Jan	27	24	3	10.00%
	Feb	30	27	3	10.00%
	Mar	28	25	3	10.00%
	Apr	34	30	3	10.00%
	May	33	30	3	10.00%
	Jun	35	31	3	10.00%
	Jul	31	28	3	10.00%
	Aug	30	27	3	10.00%
	Sep	33	29	3	10.00%
	Oct	29	26	3	10.00%
	Nov	14	12	1	10.00%
	Dec	24	22	2	10.00%

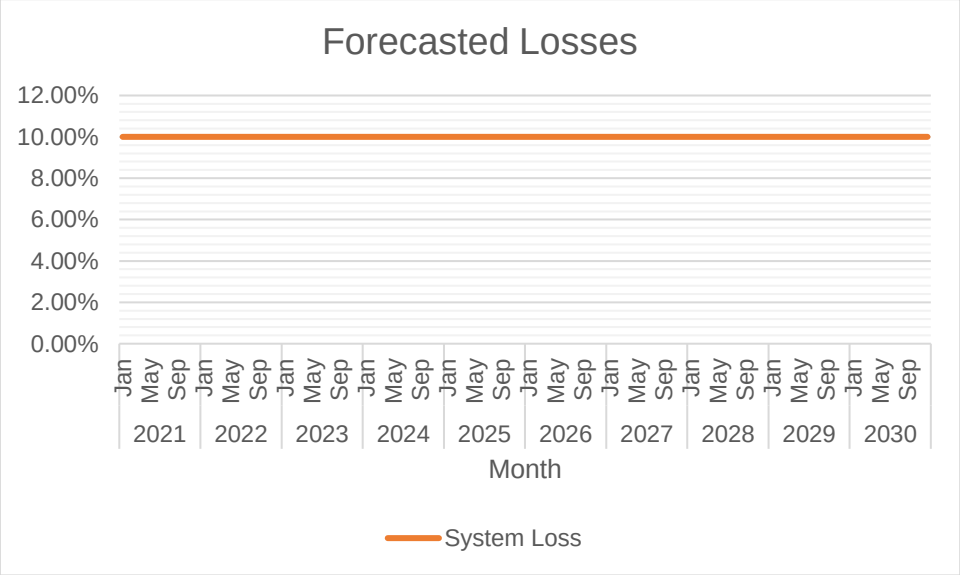
2027	Jan	29	26	3	10.00%
	Feb	32	29	3	10.00%
	Mar	30	27	3	10.00%
	Apr	36	33	4	10.00%
	May	36	32	4	10.00%
	Jun	38	34	4	10.00%
	Jul	34	30	3	10.00%
	Aug	33	30	3	10.00%
	Sep	35	32	4	10.00%
	Oct	32	29	3	10.00%
	Nov	15	13	1	10.00%
	Dec	26	24	3	10.00%
2028	Jan	32	28	3	10.00%
	Feb	35	31	3	10.00%
	Mar	32	29	3	10.00%
	Apr	39	35	4	10.00%
	May	38	35	4	10.00%
	Jun	41	37	4	10.00%
	Jul	36	33	4	10.00%
	Aug	35	32	4	10.00%
	Sep	38	34	4	10.00%
	Oct	34	31	3	10.00%
	Nov	16	14	2	10.00%
	Dec	28	26	3	10.00%
2029	Jan	34	30	3	10.00%
	Feb	37	33	4	10.00%
	Mar	34	31	3	10.00%
	Apr	42	38	4	10.00%
	May	41	37	4	10.00%
	Jun	44	39	4	10.00%
	Jul	39	35	4	10.00%
	Aug	38	34	4	10.00%
	Sep	41	37	4	10.00%
	Oct	37	33	4	10.00%
	Nov	17	15	2	10.00%
	Dec	30	27	3	10.00%
2030	Jan	36	32	4	10.00%
	Feb	39	35	4	10.00%
	Mar	37	33	4	10.00%
	Apr	45	40	4	10.00%
	May	44	39	4	10.00%
	Jun	46	42	5	10.00%
	Jul	42	37	4	10.00%
	Aug	40	36	4	10.00%
	Sep	44	39	4	10.00%
	Oct	39	35	4	10.00%
	Nov	18	16	2	10.00%
	Dec	32	29	3	10.00%

MWh Offtake was forecasted using the forecasting models and the historical data. The assumed load factor is 34.99%.

System Loss was calculated through a Load Flow Study conducted on 2017 using Synergee software. Based on the same study, the Distribution System can adequately convey electricity to customers.



MWh Output was expected to grow at a rate of 9.75% annually.



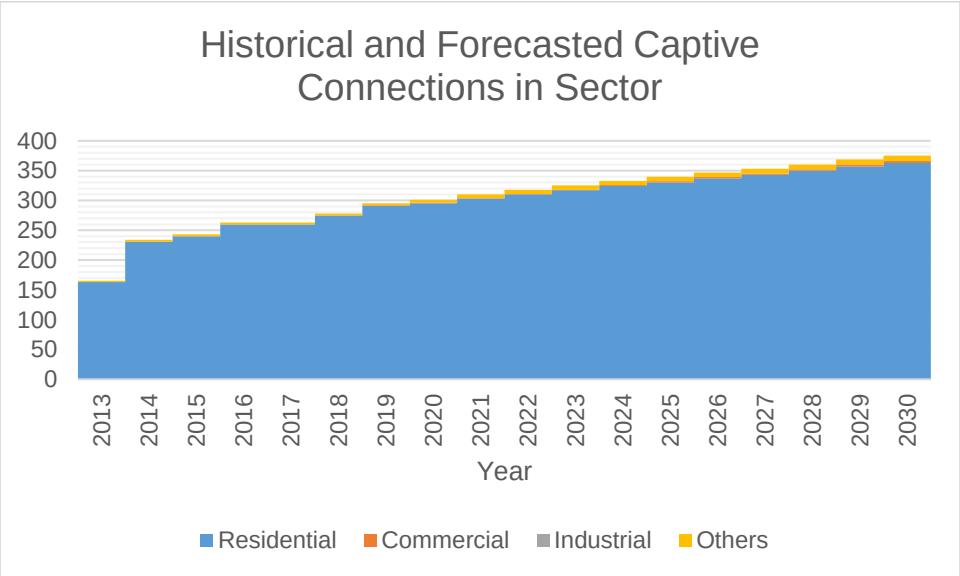
System Loss is expected to maintain or decrease to 10% that was used on the forecasting of MWh offtake.

Power Supply

Case No.	Type	GenCo	Minimum MW	Minimum MWh/yr	PSA Start	PSA End
NPC-SPUG	Base	National Power Corporation	0.06	197	8/26/2019	8/25/2022

The 2019-2022 PSA with NPC through Missionary Electrification Program was an extension of the previous PSA which was included in the PSA of the main grid. Marelco also, submitted its proposal to NEA thru their Barangay Line Enhancement Program for the interconnection of Mongpong Islet to the main grid via Brgy. Maniwaya which was already connected to grid, but as of now Marelco is waiting NEA to consider it in their program. Since the PSA will expire on 2022 Marelco is now preparing the renewal of the PSA to be incorporated in the PSA of the main grid.

Captive Customer Connections



The number of Residential connections which has greater contribution on the kWh consumption is expected to grow at a rate of 2.1% annually. Said customer class is expected to account for 96.04% of the total consumption.