

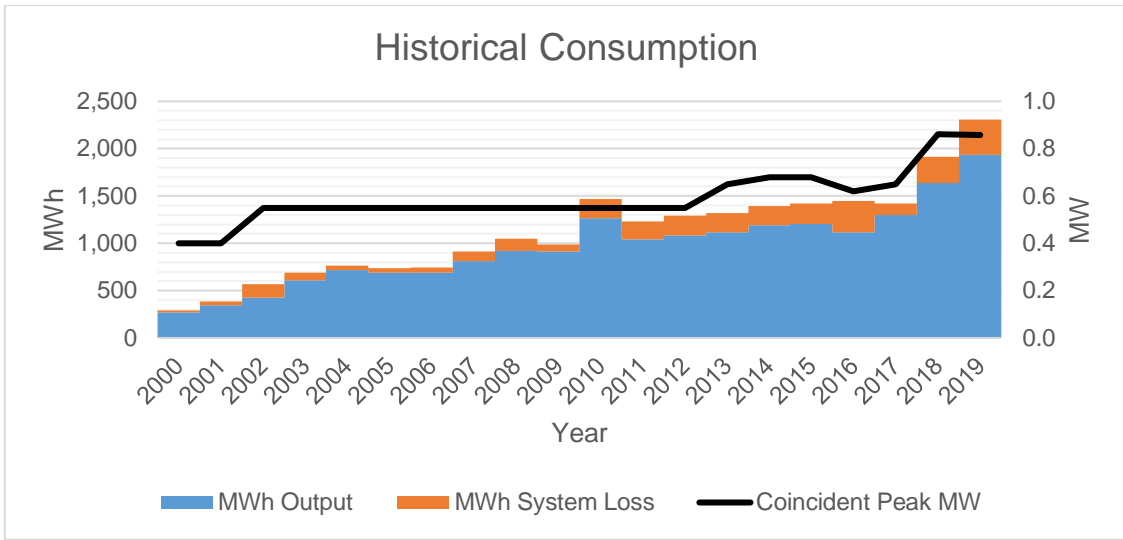
Power Supply Procurement Plan 2020

OFF-GRID

Historical Consumption Data

	Coincident Peak MW	MWh Offtake	MWh Input	MWh Output	MWh System Loss	Load Factor	System Loss
2000	0.40	294	294	271	23	8%	7.77%
2001	0.40	385	385	348	36	11%	9.49%
2002	0.55	570	570	430	141	12%	24.65%
2003	0.55	688	688	607	81	14%	11.75%
2004	0.55	764	764	717	47	16%	6.19%
2005	0.55	736	736	691	45	15%	6.11%
2006	0.55	747	747	688	60	16%	7.97%
2007	0.55	916	916	814	102	19%	11.12%
2008	0.55	1,048	1,048	920	128	22%	12.25%
2009	0.55	986	986	913	73	20%	7.42%
2010	0.55	1,466	1,466	1,268	198	30%	13.49%
2011	0.55	1,229	1,229	1,042	186	25%	15.14%
2012	0.55	1,294	1,294	1,085	208	27%	16.11%
2013	0.65	1,321	1,321	1,113	207	23%	15.71%
2014	0.68	1,392	1,392	1,192	200	23%	14.39%
2015	0.68	1,420	1,420	1,201	218	24%	15.37%
2016	0.62	1,447	1,447	1,115	332	27%	22.96%
2017	0.65	1,418	1,418	1,300	117	25%	8.29%
2018	0.86	1,915	1,915	1,636	279	25%	14.56%
2019	0.86	2,304	2,304	1,938	366	31%	15.90%

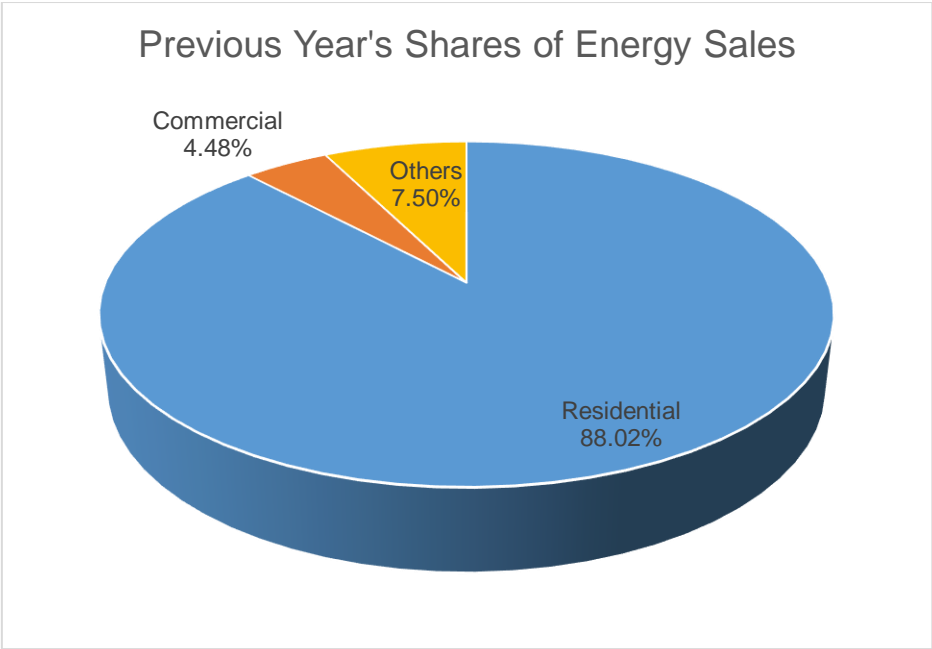
Peak Demand decreased from 0.68 MW in 2015 to 0.62 MW in 2016 at a rate of 8.82% due to load shedding of NPC from May to November 2016. MWh Offtake increased from 986 MWh in 2009 to 1466 MWh in 2010 at a rate of 46.68% due to increase on the demand on the island. Within the same period, Load Factor ranged from 20% to 30%. There was an abrupt change in consumption on 2003 due to the increase on the demand and energy consumption on Tingloy Batangas.



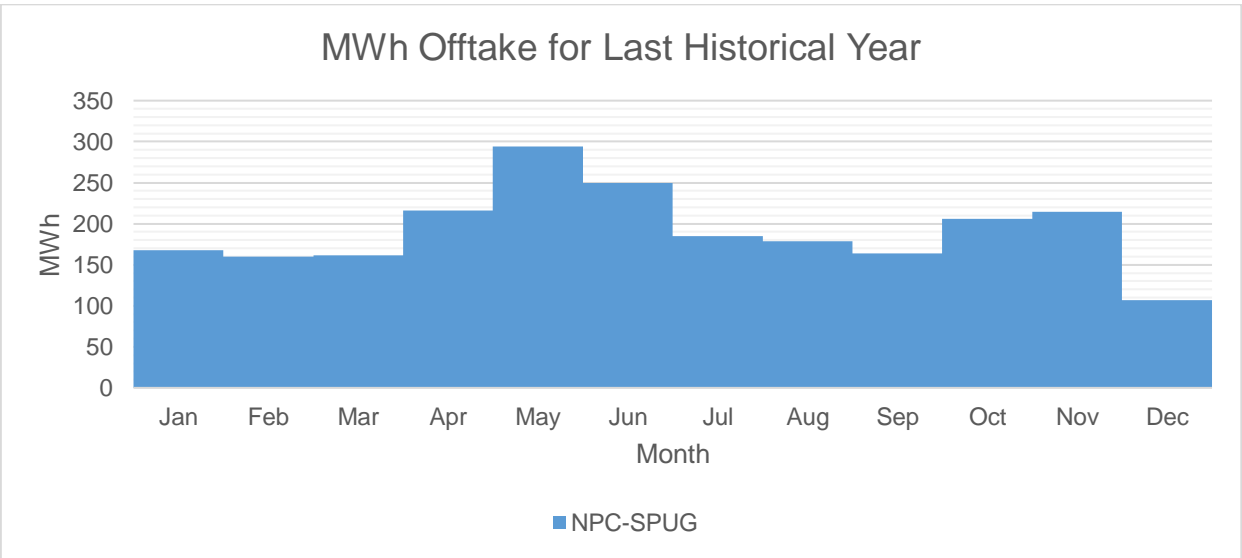
MWh Output increased from year 2017 to year 2018 at a rate of 25.85%, while MWh System Loss increased at a rate of 74.19% within the same period.



Historically, system loss peaked at 24.65% on year 2002 because of several factors including uncontrolled non-technical loss.

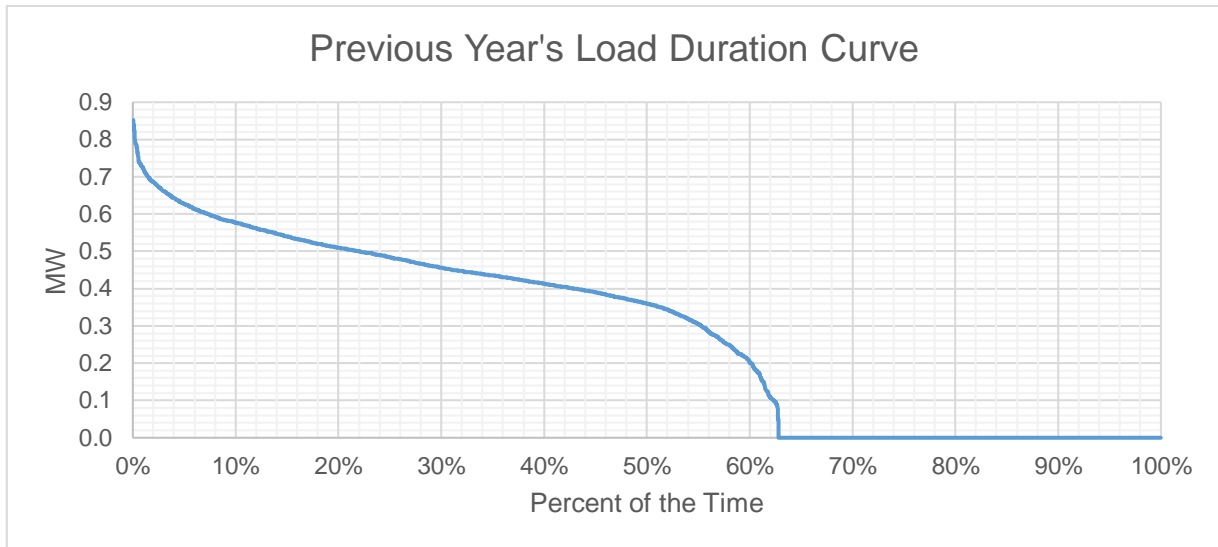


Residential customers account for the bulk of energy sales at 88.02% due to the high number of connections. In contrast, Commercial customers accounted for only 4.48% of energy sales due to the low number of connections.

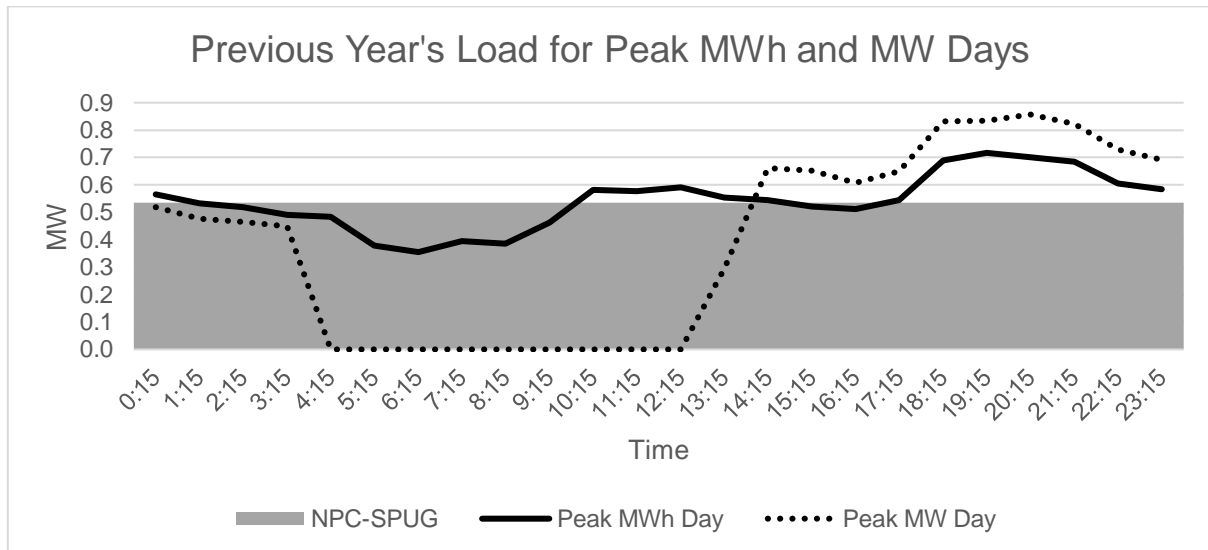


For NPC-SPUG, the total Offtake for the last historical year is lower than the quantity stipulated in the PSA. The PSA with NPC-SPUG accounts for the bulk of MWh Offtake.

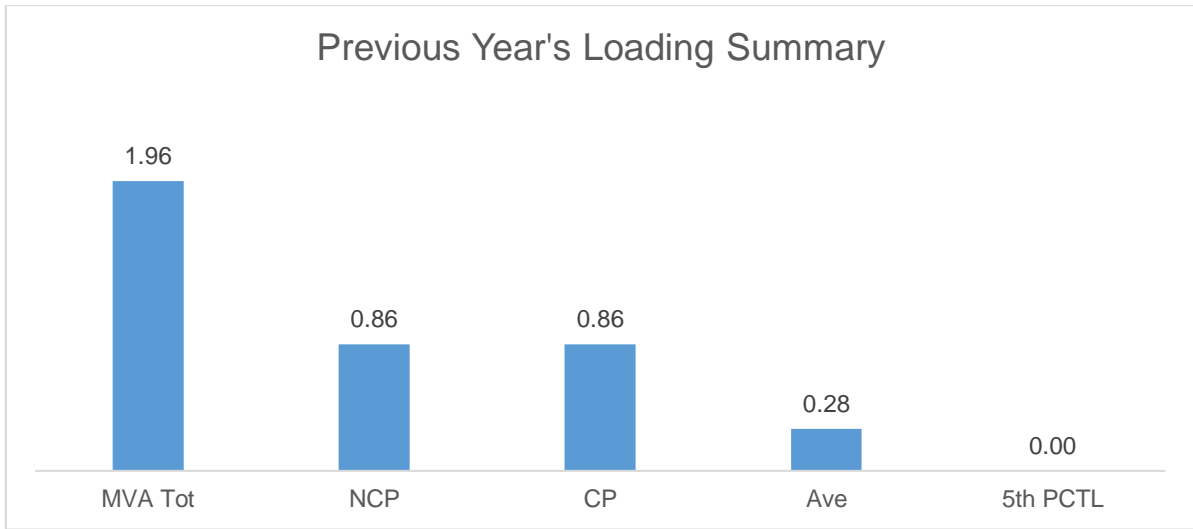
Previous Year's Load Profile



Based on the Load Duration Curve, the minimum load is 0.30 MW and the maximum load is 0.857 MW for the last historical year.



Peak MW occurred on 20:15 of June 18, 2019 due to heavy usage of electricity on summer/ dry season. Peak daily MWh occurred on 19:15 of May 5, 2019 due to usage of electricity on night time during summer season. As shown in the Load Curves, the available supply is lower than the Peak Demand.



The Non-coincident Peak Demand is 0.86 MW, which is around 45.23% of the total substation capacity of 1.96 MVA at a power factor of 0.97. The load factor or the ratio between the Average Load of 0.28 MW and the Non-coincident Peak Demand is 33% of. A safe estimate of the true minimum load is the fifth percentile load of 0 MW which is 0% of the Non-coincident Peak Demand.

Metering Point	Substation MVA	Substation Peak MW
DPP	1.96	0.857

There is no substation loaded at 70% and above.

Forecasted Consumption Data

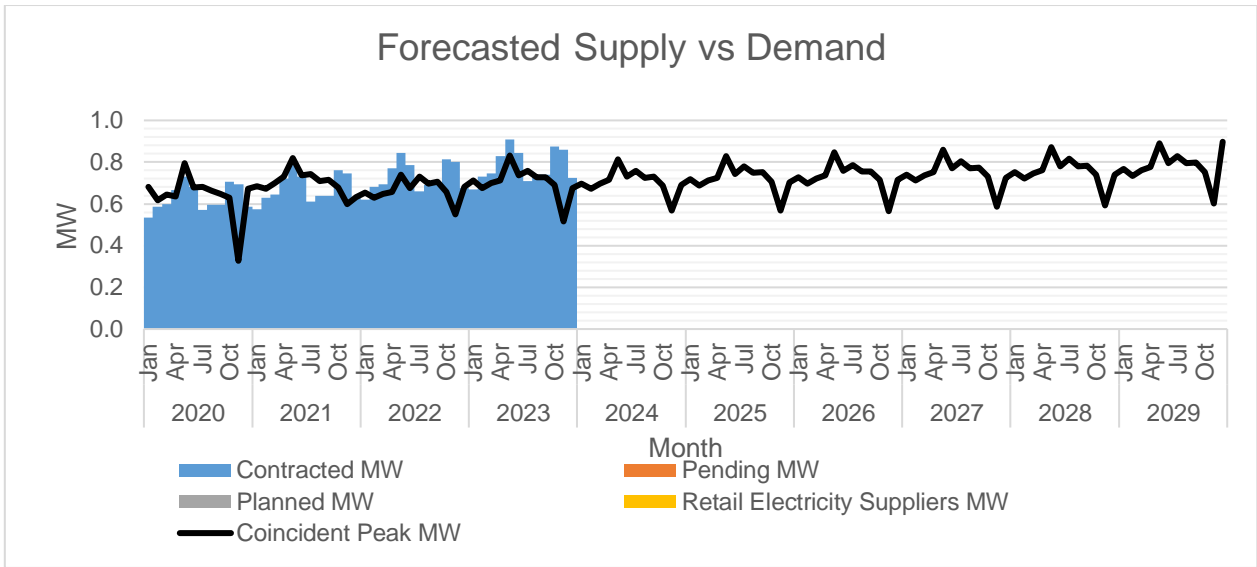
		Coincident Peak MW	Contracted MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
2020	Jan	0.68	0.54	78%	78%	-0.15
	Feb	0.62	0.59	95%	95%	-0.03
	Mar	0.64	0.60	93%	93%	-0.04
	Apr	0.64	0.67	105%	105%	0.03
	May	0.80	0.73	92%	92%	-0.07
	Jun	0.68	0.68	100%	100%	0.00
	Jul	0.68	0.57	84%	84%	-0.11
	Aug	0.66	0.60	90%	90%	-0.07
	Sep	0.65	0.60	92%	92%	-0.05
	Oct	0.63	0.71	112%	112%	0.08
	Nov	0.33	0.70	213%	213%	0.37
	Dec	0.67	0.59	87%	87%	-0.09
2021	Jan	0.68	0.58	84%	84%	-0.11
	Feb	0.67	0.63	94%	94%	-0.04
	Mar	0.70	0.65	92%	92%	-0.05
	Apr	0.73	0.72	98%	98%	-0.01
	May	0.82	0.79	96%	96%	-0.04
	Jun	0.74	0.73	99%	99%	-0.01
	Jul	0.74	0.61	82%	82%	-0.13
	Aug	0.71	0.64	90%	90%	-0.07
	Sep	0.72	0.64	89%	89%	-0.08
	Oct	0.68	0.76	112%	112%	0.08
	Nov	0.60	0.75	125%	125%	0.15
	Dec	0.63	0.63	100%	100%	0.00
2022	Jan	0.65	0.62	95%	95%	-0.03
	Feb	0.63	0.68	108%	108%	0.05
	Mar	0.65	0.70	107%	107%	0.05
	Apr	0.66	0.77	117%	117%	0.11
	May	0.74	0.85	114%	114%	0.10
	Jun	0.67	0.79	116%	116%	0.11
	Jul	0.73	0.66	90%	90%	-0.07
	Aug	0.70	0.69	99%	99%	-0.01
	Sep	0.70	0.69	98%	98%	-0.01
	Oct	0.66	0.82	124%	124%	0.16
	Nov	0.55	0.80	145%	145%	0.25
	Dec	0.68	0.68	99%	99%	-0.01
2023	Jan	0.71	0.67	94%	94%	-0.04
	Feb	0.68	0.73	108%	108%	0.05
	Mar	0.70	0.75	106%	106%	0.04
	Apr	0.71	0.83	116%	116%	0.12
	May	0.83	0.91	110%	110%	0.08
	Jun	0.74	0.85	115%	115%	0.11
	Jul	0.76	0.71	94%	94%	-0.05
	Aug	0.73	0.74	102%	102%	0.01
	Sep	0.73	0.74	102%	102%	0.01

		Coincident Peak MW	Contracted MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
	Oct	0.69	0.88	127%	127%	0.18
	Nov	0.52	0.86	166%	166%	0.34
	Dec	0.68	0.73	107%	107%	0.05
2024	Jan	0.70	0.00	0%	0%	-0.70
	Feb	0.67	0.00	0%	0%	-0.67
	Mar	0.70	0.00	0%	0%	-0.70
	Apr	0.71	0.00	0%	0%	-0.71
	May	0.81	0.00	0%	0%	-0.81
	Jun	0.73	0.00	0%	0%	-0.73
	Jul	0.76	0.00	0%	0%	-0.76
	Aug	0.73	0.00	0%	0%	-0.73
	Sep	0.73	0.00	0%	0%	-0.73
	Oct	0.69	0.00	0%	0%	-0.69
	Nov	0.57	0.00	0%	0%	-0.57
	Dec	0.69	0.00	0%	0%	-0.69
2025	Jan	0.72	0.00	0%	0%	-0.72
	Feb	0.69	0.00	0%	0%	-0.69
	Mar	0.71	0.00	0%	0%	-0.71
	Apr	0.72	0.00	0%	0%	-0.72
	May	0.83	0.00	0%	0%	-0.83
	Jun	0.74	0.00	0%	0%	-0.74
	Jul	0.78	0.00	0%	0%	-0.78
	Aug	0.75	0.00	0%	0%	-0.75
	Sep	0.75	0.00	0%	0%	-0.75
	Oct	0.71	0.00	0%	0%	-0.71
	Nov	0.57	0.00	0%	0%	-0.57
	Dec	0.70	0.00	0%	0%	-0.70
2026	Jan	0.73	0.00	0%	0%	-0.73
	Feb	0.70	0.00	0%	0%	-0.70
	Mar	0.72	0.00	0%	0%	-0.72
	Apr	0.74	0.00	0%	0%	-0.74
	May	0.85	0.00	0%	0%	-0.85
	Jun	0.76	0.00	0%	0%	-0.76
	Jul	0.79	0.00	0%	0%	-0.79
	Aug	0.75	0.00	0%	0%	-0.75
	Sep	0.76	0.00	0%	0%	-0.76
	Oct	0.71	0.00	0%	0%	-0.71
	Nov	0.57	0.00	0%	0%	-0.57
	Dec	0.72	0.00	0%	0%	-0.72
2027	Jan	0.74	0.00	0%	0%	-0.74
	Feb	0.71	0.00	0%	0%	-0.71
	Mar	0.74	0.00	0%	0%	-0.74
	Apr	0.75	0.00	0%	0%	-0.75
	May	0.86	0.00	0%	0%	-0.86
	Jun	0.77	0.00	0%	0%	-0.77
	Jul	0.80	0.00	0%	0%	-0.80
	Aug	0.77	0.00	0%	0%	-0.77

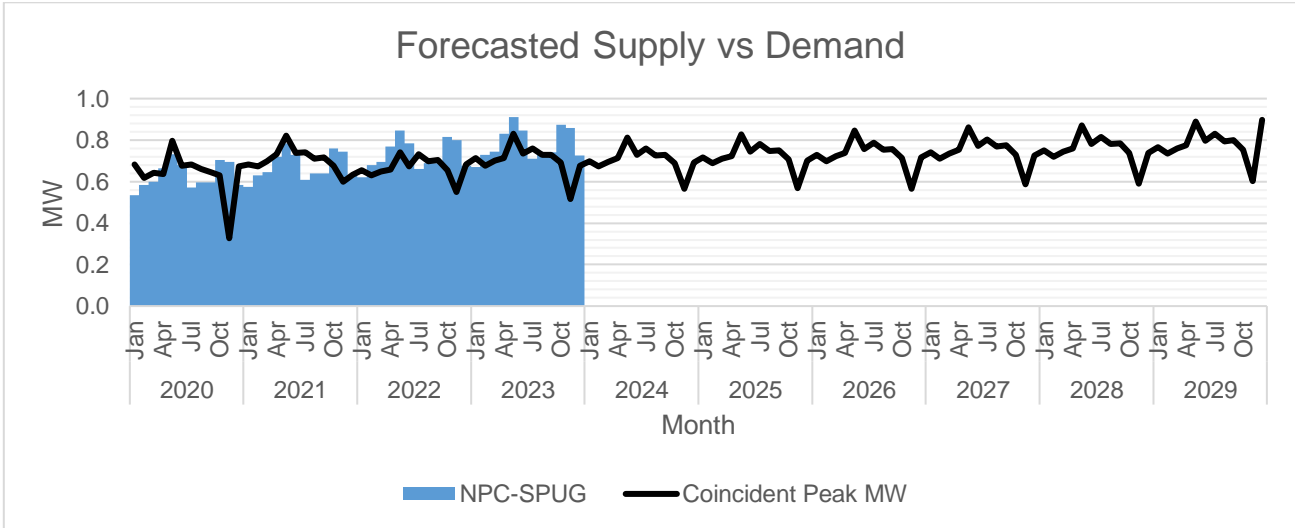
		Coincident Peak MW	Contracted MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
	Sep	0.77	0.00	0%	0%	-0.77
	Oct	0.73	0.00	0%	0%	-0.73
	Nov	0.59	0.00	0%	0%	-0.59
	Dec	0.73	0.00	0%	0%	-0.73
2028	Jan	0.75	0.00	0%	0%	-0.75
	Feb	0.72	0.00	0%	0%	-0.72
	Mar	0.75	0.00	0%	0%	-0.75
	Apr	0.76	0.00	0%	0%	-0.76
	May	0.87	0.00	0%	0%	-0.87
	Jun	0.78	0.00	0%	0%	-0.78
	Jul	0.82	0.00	0%	0%	-0.82
	Aug	0.78	0.00	0%	0%	-0.78
	Sep	0.78	0.00	0%	0%	-0.78
	Oct	0.74	0.00	0%	0%	-0.74
	Nov	0.59	0.00	0%	0%	-0.59
	Dec	0.74	0.00	0%	0%	-0.74
2029	Jan	0.77	0.00	0%	0%	-0.77
	Feb	0.73	0.00	0%	0%	-0.73
	Mar	0.76	0.00	0%	0%	-0.76
	Apr	0.78	0.00	0%	0%	-0.78
	May	0.89	0.00	0%	0%	-0.89
	Jun	0.80	0.00	0%	0%	-0.80
	Jul	0.83	0.00	0%	0%	-0.83
	Aug	0.80	0.00	0%	0%	-0.80
	Sep	0.80	0.00	0%	0%	-0.80
	Oct	0.75	0.00	0%	0%	-0.75
	Nov	0.60	0.00	0%	0%	-0.60
	Dec	0.90	0.00	0%	0%	-0.90

Note: The PSA under NPC for Off-Grid is until 2023 only.

The Peak Demand was forecasted using time series forecasting method and was assumed to occur on the month of May due to high temperature and intensity of small businesses and everyday activities during holiday season. Monthly Peak Demand is at its lowest on the month of January due to lower temperature and less economic activities of small businesses. In general, Peak Demand is expected to grow at a rate of 1.49% annually.



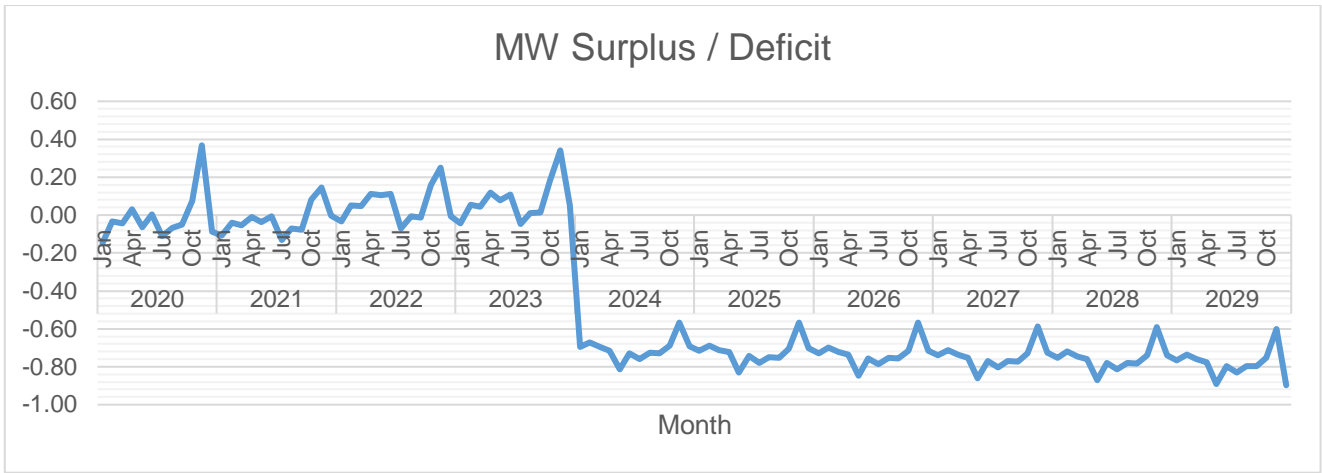
The available supply is generally below the Peak Demand. This is because there is a possibility in the future that the power will be available for 24 hours due to economic needs of the area and meanwhile, there is only a 3-year contract for the NPC-SPUG.



The available supply is 0.91 MW from NPC-SPUG.



Currently, existing contracting level is equal to target contracting level. The highest target contracting level is 166% which is expected to occur on November 2023. The lowest target contracting level is 0% which is expected to occur on year 2024 to 2030.



The highest deficit is 0.34 MW which is expected to occur on the month of November 2023. The lowest deficit is 0.01 MW which is expected to occur on the month of August and September 2023.

		MWh Offtake	MWh Output	MWh System Loss	System Loss
2020	Jan	268	142	125	46.82%
	Feb	293	144	149	50.90%
	Mar	300	157	143	47.62%
	Apr	334	177	157	47.08%
	May	366	211	154	42.22%
	Jun	340	193	147	43.29%
	Jul	286	114	172	60.20%
	Aug	299	165	133	44.72%
	Sep	298	179	119	39.97%
	Oct	353	67	286	80.94%
	Nov	347	115	231	66.71%
	Dec	293	169	124	42.29%
2021	Jan	283	152	131	46.41%
	Feb	310	159	151	48.78%
	Mar	317	177	140	44.13%
	Apr	353	218	135	38.24%
	May	386	226	160	41.43%
	Jun	359	208	151	42.10%
	Jul	302	151	151	49.94%
	Aug	315	174	141	44.70%
	Sep	315	187	128	40.63%
	Oct	373	155	218	58.36%
	Nov	366	146	220	60.05%
	Dec	309	164	145	46.83%
2022	Jan	299	149	149	50.05%
	Feb	327	154	173	52.93%
	Mar	334	170	164	49.12%
	Apr	372	214	158	42.37%
	May	407	233	174	42.79%
	Jun	378	205	173	45.78%
	Jul	318	148	170	53.47%
	Aug	332	172	160	48.19%
	Sep	331	184	147	44.46%

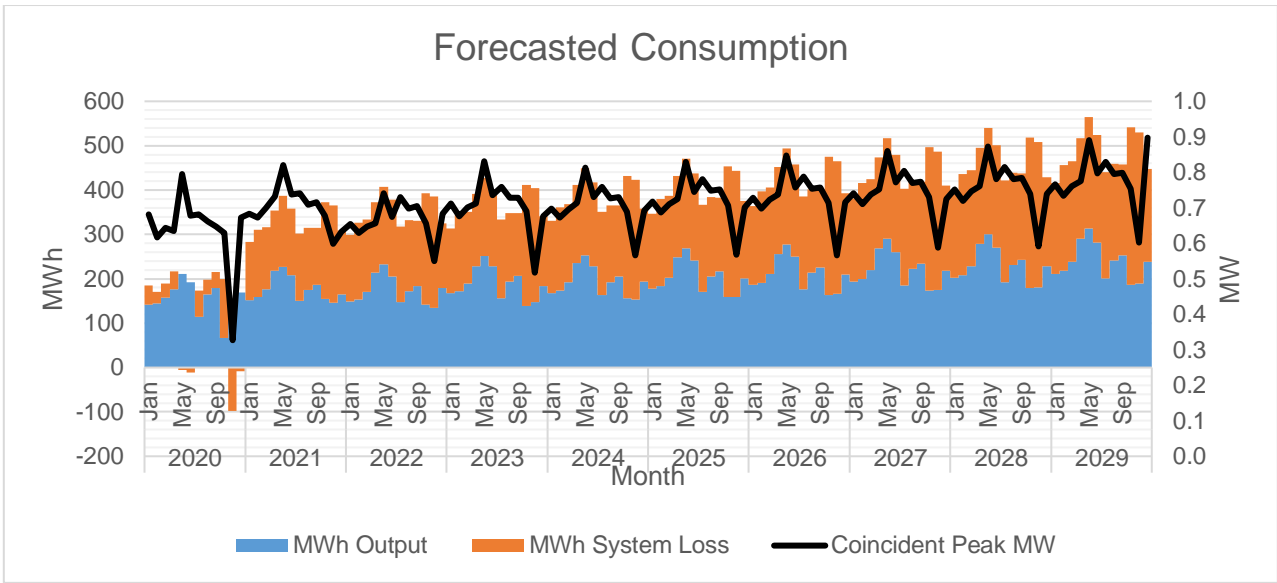
		MWh Offtake	MWh Output	MWh System Loss	System Loss
	Oct	393	142	251	63.88%
	Nov	385	135	250	65.03%
	Dec	325	179	146	45.00%
2023	Jan	314	168	146	46.45%
	Feb	344	172	172	49.93%
	Mar	351	190	161	45.98%
	Apr	391	228	163	41.75%
	May	428	252	176	41.06%
	Jun	397	228	169	42.52%
	Jul	334	157	177	53.05%
	Aug	348	194	154	44.25%
	Sep	348	207	141	40.62%
	Oct	412	138	274	66.40%
	Nov	404	147	257	63.50%
	Dec	341	183	158	46.32%
2024	Jan	0	168	162	49.15%
	Feb	0	174	188	51.98%
	Mar	0	192	177	48.07%
	Apr	0	235	176	42.76%
	May	0	253	197	43.75%
	Jun	0	228	189	45.34%
	Jul	0	163	188	53.55%
	Aug	0	193	173	47.27%
	Sep	0	205	160	43.83%
	Oct	0	156	277	63.96%
	Nov	0	153	270	63.81%
	Dec	0	193	165	46.03%
2025	Jan	0	178	168	48.56%
	Feb	0	184	196	51.61%
	Mar	0	202	185	47.79%
	Apr	0	248	183	42.51%
	May	0	269	202	42.85%
	Jun	0	241	196	44.82%
	Jul	0	171	196	53.43%
	Aug	0	205	179	46.61%
	Sep	0	217	166	43.32%
	Oct	0	159	294	64.80%
	Nov	0	160	284	64.06%
	Dec	0	200	175	46.55%
2026	Jan	0	186	178	48.87%
	Feb	0	191	206	51.91%
	Mar	0	210	195	48.17%
	Apr	0	256	196	43.42%
	May	0	278	216	43.75%
	Jun	0	250	208	45.36%
	Jul	0	177	208	54.10%
	Aug	0	213	188	46.90%
	Sep	0	225	176	43.81%

		MWh Offtake	MWh Output	MWh System Loss	System Loss
	Oct	0	163	311	65.60%
	Nov	0	166	299	64.26%
	Dec	0	210	182	46.46%
2027	Jan	0	194	187	49.05%
	Feb	0	200	217	52.00%
	Mar	0	220	205	48.28%
	Apr	0	268	205	43.30%
	May	0	290	227	43.95%
	Jun	0	261	219	45.64%
	Jul	0	186	217	53.92%
	Aug	0	222	198	47.17%
	Sep	0	234	185	44.18%
	Oct	0	174	322	64.96%
	Nov	0	174	312	64.13%
	Dec	0	218	192	46.78%
2028	Jan	0	202	196	49.28%
	Feb	0	208	228	52.27%
	Mar	0	228	216	48.61%
	Apr	0	278	217	43.77%
	May	0	301	240	44.31%
	Jun	0	271	231	46.01%
	Jul	0	192	229	54.29%
	Aug	0	231	208	47.40%
	Sep	0	243	195	44.60%
	Oct	0	179	339	65.45%
	Nov	0	181	327	64.41%
	Dec	0	228	200	46.75%
2029	Jan	0	211	205	49.25%
	Feb	0	218	238	52.22%
	Mar	0	239	226	48.61%
	Apr	0	290	227	43.88%
	May	0	314	251	44.48%
	Jun	0	282	241	46.11%
	Jul	0	201	239	54.33%
	Aug	0	241	217	47.39%
	Sep	0	253	205	44.72%
	Oct	0	187	354	65.50%
	Nov	0	189	341	64.35%
	Dec	0	238	210	46.88%

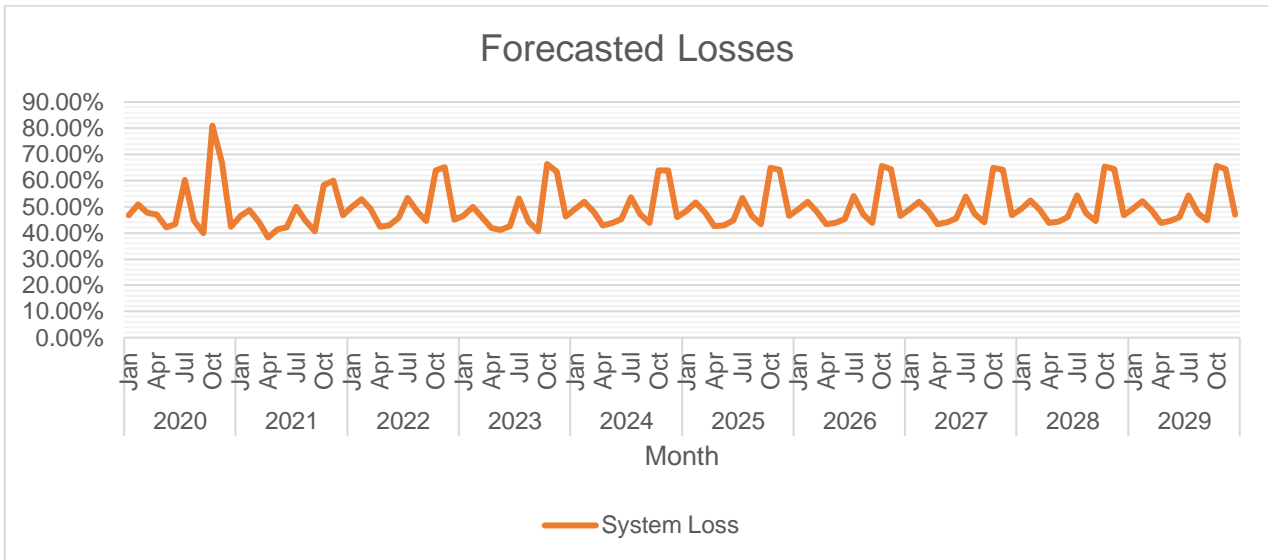
Note: The PSA under NPC for Off-Grid is until 2023 only.

MWh Offtake was forecasted using time series forecasting.

System Loss was calculated with a mathematical representation on excel file. Based on the same study, the Distribution System can adequately convey electricity to customers.



MWh Output was expected to grow at a rate of 3.87% annually.



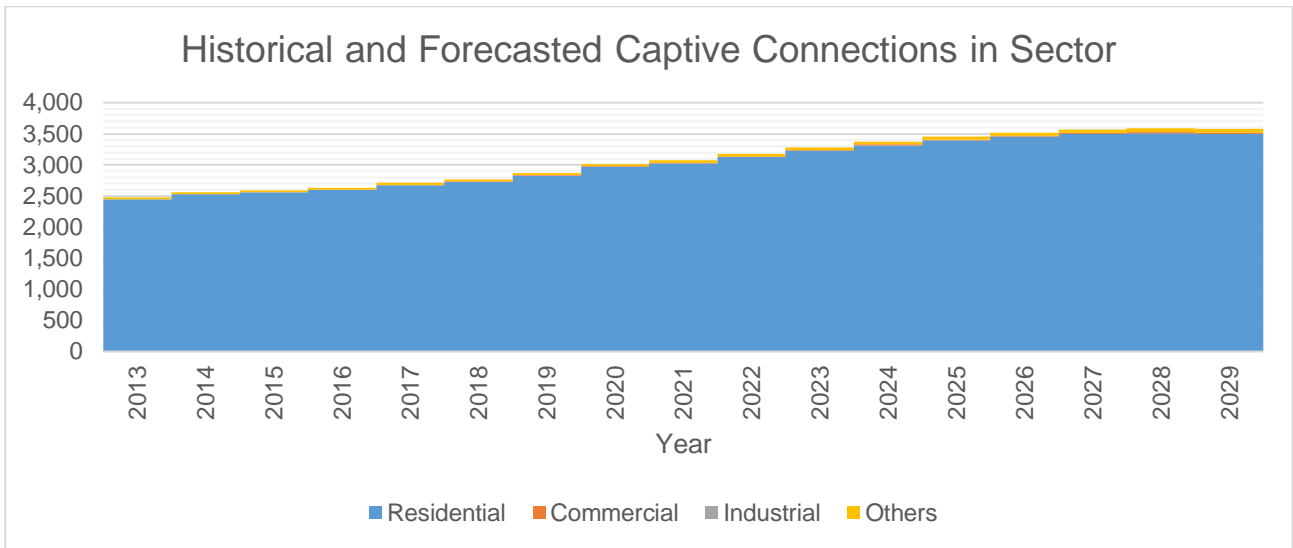
System Loss is expected to range from 30.84% to 80.94%.

Power Supply

Case No.	Type	GenCo	Minimum MW	Minimum MWh/yr	PSA Start	PSA End
NPC-SPUG	Base	National Power Corporation	0.69	3,564	12/26/2018	12/25/2023

Meanwhile, the PSA with NPC-SPUG for Tingloy, Batangas has a load shedding. Historically, it operates for 12 hours only and now improve in 16 hours. The actual billed overall monthly charge under the PSA ranged from 5.4774 Php/ kWh to 5.5804 Php/kWh in the same period.

Captive Customer Connections



The number of **residential** connections is expected to grow at a rate of **2.33%** annually. Said customer class is expected to account for **87%** of the total consumption.

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