

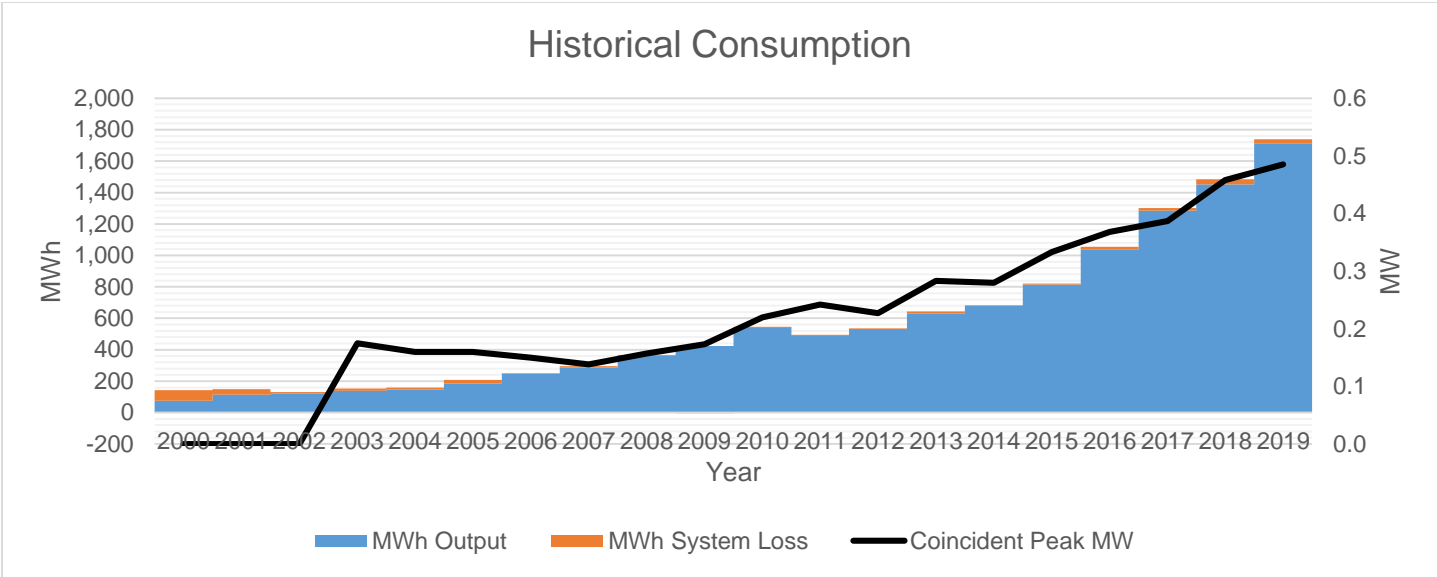
# **Power Supply Procurement Plan 2020**

**CARABAO ISLAND**

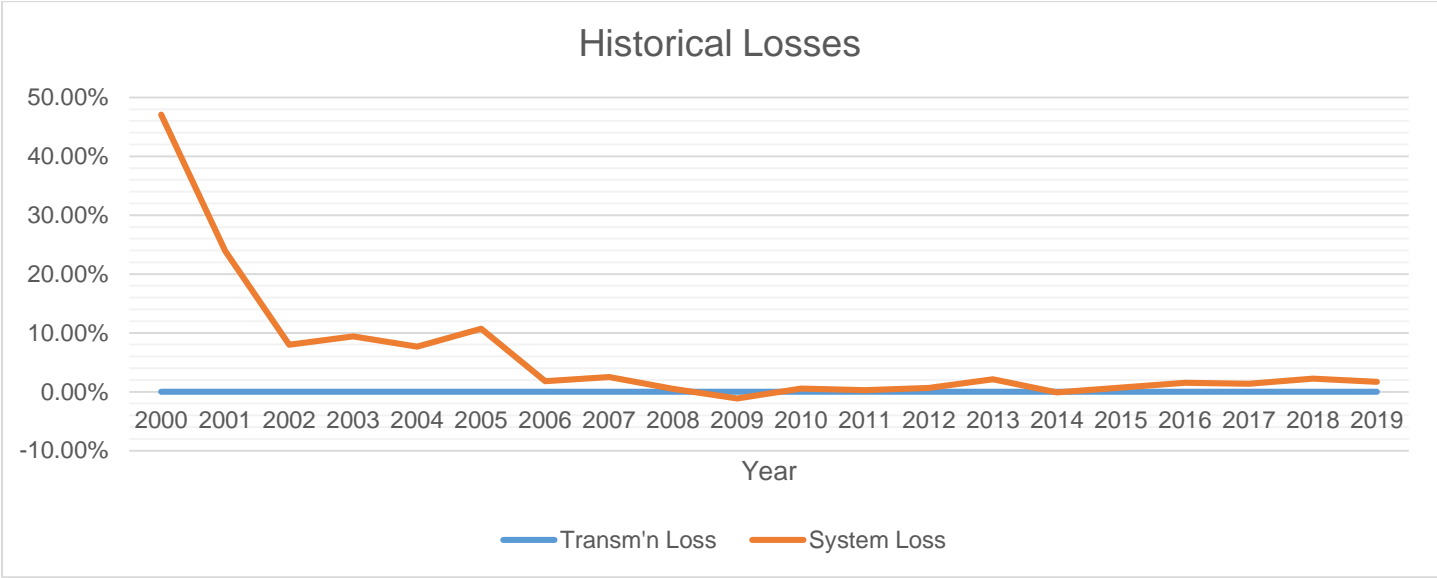
## Historical Consumption Data

	Coincident Peak MW	MWh Offtake	MWh Input	MWh Output	MWh System Loss	Load Factor	System Loss
2000	0.00	144	144	76	68	#DIV/0!	47.10%
2001	0.00	149	149	113	36	#DIV/0!	23.94%
2002	0.00	130	130	120	10	#DIV/0!	7.99%
2003	0.18	152	152	138	14	10%	9.41%
2004	0.16	159	159	147	12	11%	7.68%
2005	0.16	209	209	186	22	15%	10.73%
2006	0.15	250	250	246	4	19%	1.79%
2007	0.14	295	295	288	7	24%	2.48%
2008	0.16	366	366	364	2	27%	0.51%
2009	0.17	420	420	424	-5	28%	-1.13%
2010	0.22	546	546	544	3	28%	0.52%
2011	0.24	495	495	493	1	23%	0.30%
2012	0.23	536	536	532	3	27%	0.64%
2013	0.28	643	643	630	14	26%	2.11%
2014	0.28	682	682	683	-1	28%	-0.09%
2015	0.33	821	821	815	6	28%	0.73%
2016	0.37	1,054	1,054	1,038	16	33%	1.52%
2017	0.39	1,302	1,302	1,285	18	38%	1.36%
2018	0.46	1,485	1,485	1,452	33	37%	2.22%
2019	0.49	1,741	1,741	1,711	29	41%	1.68%

Peak Demand increased from 0.46 MW in 2018 to 0.49 MW in 2019 at a rate of 5.89% due to gradual development of commercial and industrial establishment in the Island. The minimal growth rate is attributed to the fact that operating time of power supplier in the island, the NPC-SPUG, is limited only to sixteen (16) hours daily. In addition, almost 80% of customer in the area is residential. While the island offers big business opportunity on tourism, considering its closeness with Boracay in distance, business investment are hindered by the non-availability of power supply on 24 hours. MWh Offtake increased from 1,485 MWh in 2018 to 1,741 MWh in 2019 at a rate of 17.24% due to additional number of residential customers in the area. Within the same period, Load Factor ranged from 37% to 41%.

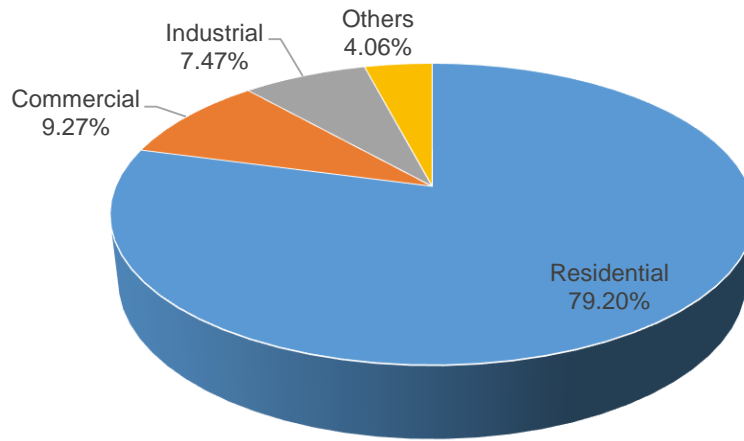


MWh Output increased from year 2018 to year 2019 at a rate of 17.84%, while MWh System Loss decreased at a rate of 1.68% within the same period.



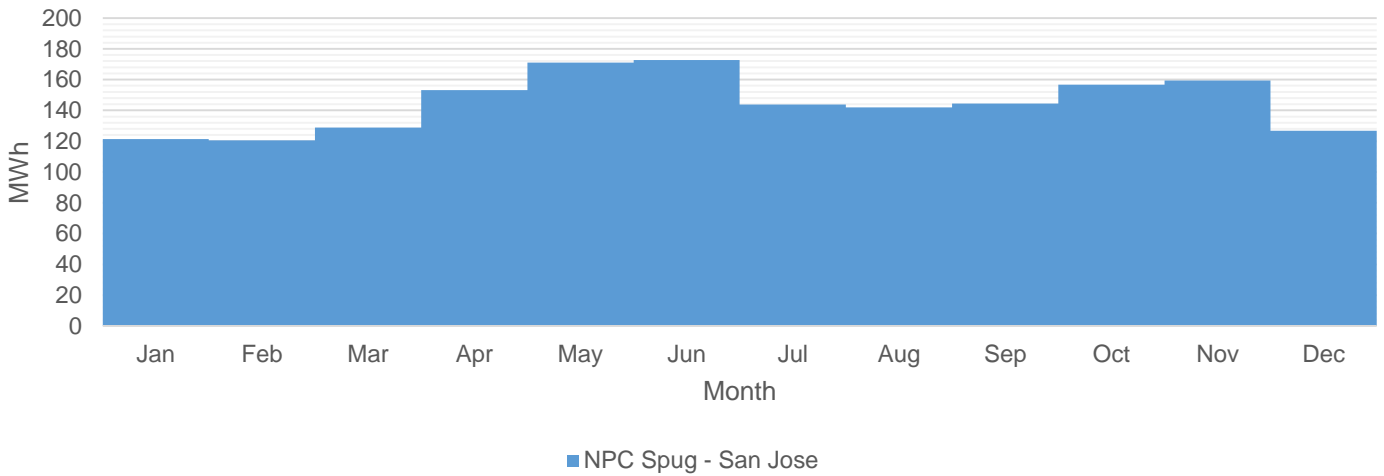
System Loss ranged from 0.73% to 10.73%. System Loss peaked at 10.73% on year 2005.

### Previous Year's Shares of Energy Sales



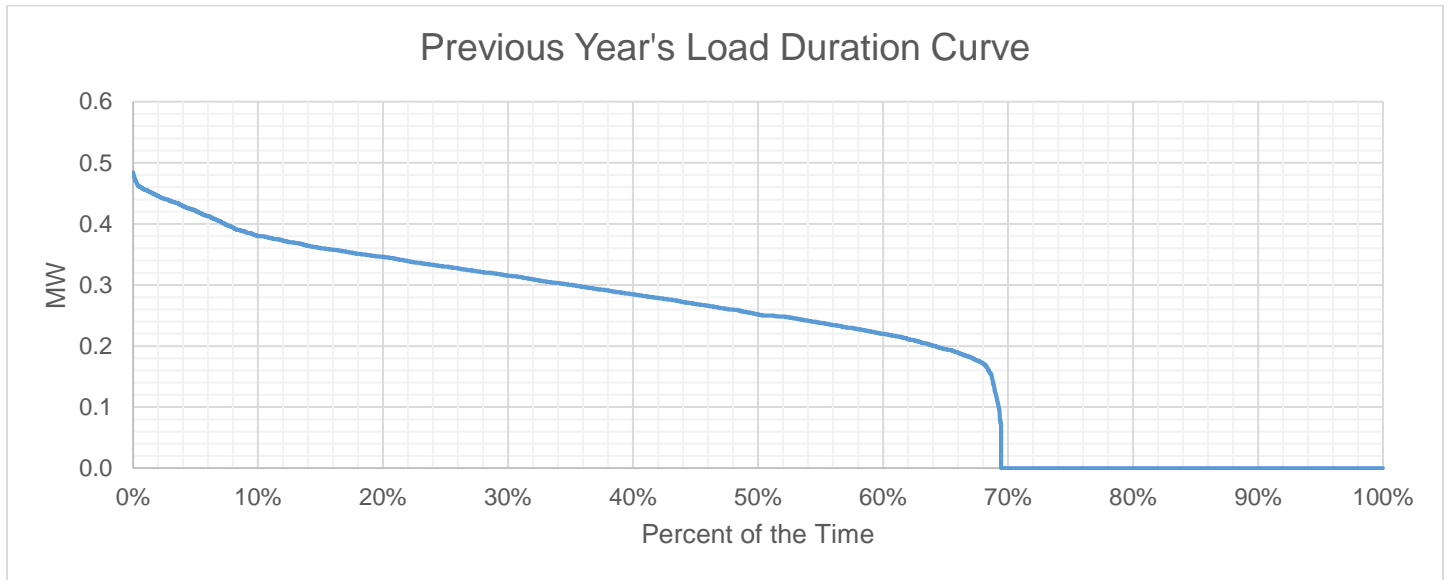
Residential customers account for the bulk of energy sales at 79.20% due to the high number of connections. In contrast, other customers accounted for only 4.06% of energy sales due to the low number of connections.

### MWh Offtake for Last Historical Year

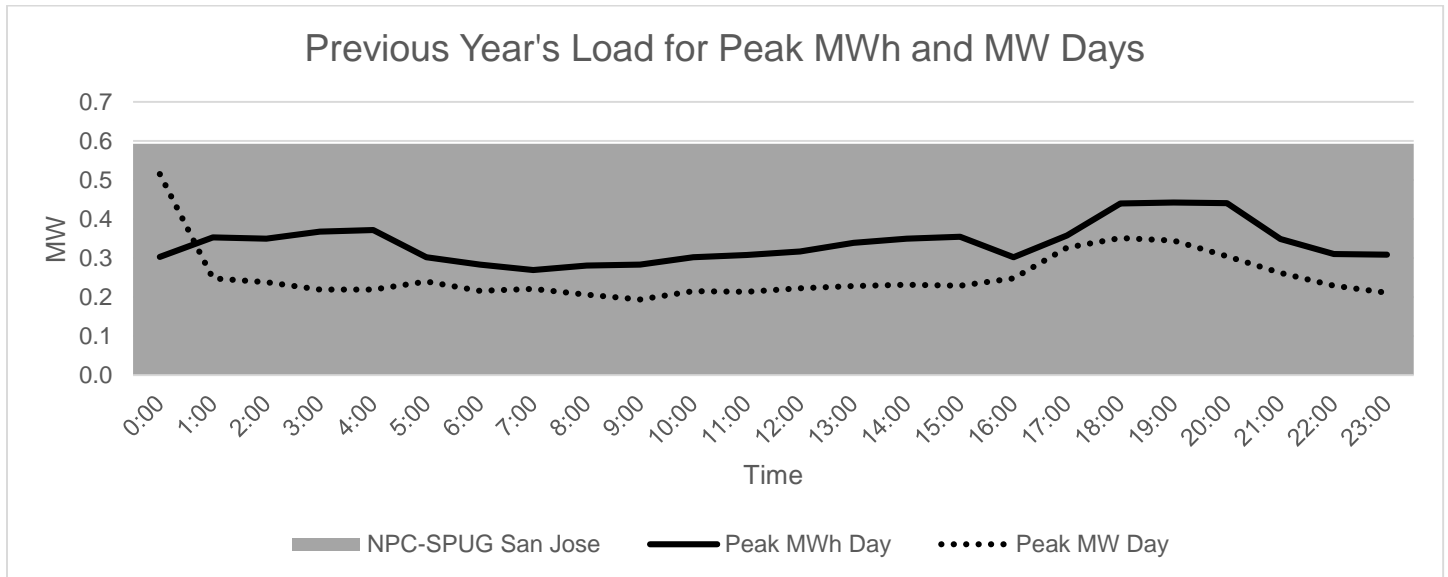


For 2019, the total Offtake for the last historical year is lower than the quantity stipulated in the Letter of Agreement.

# Previous Year's Load Profile

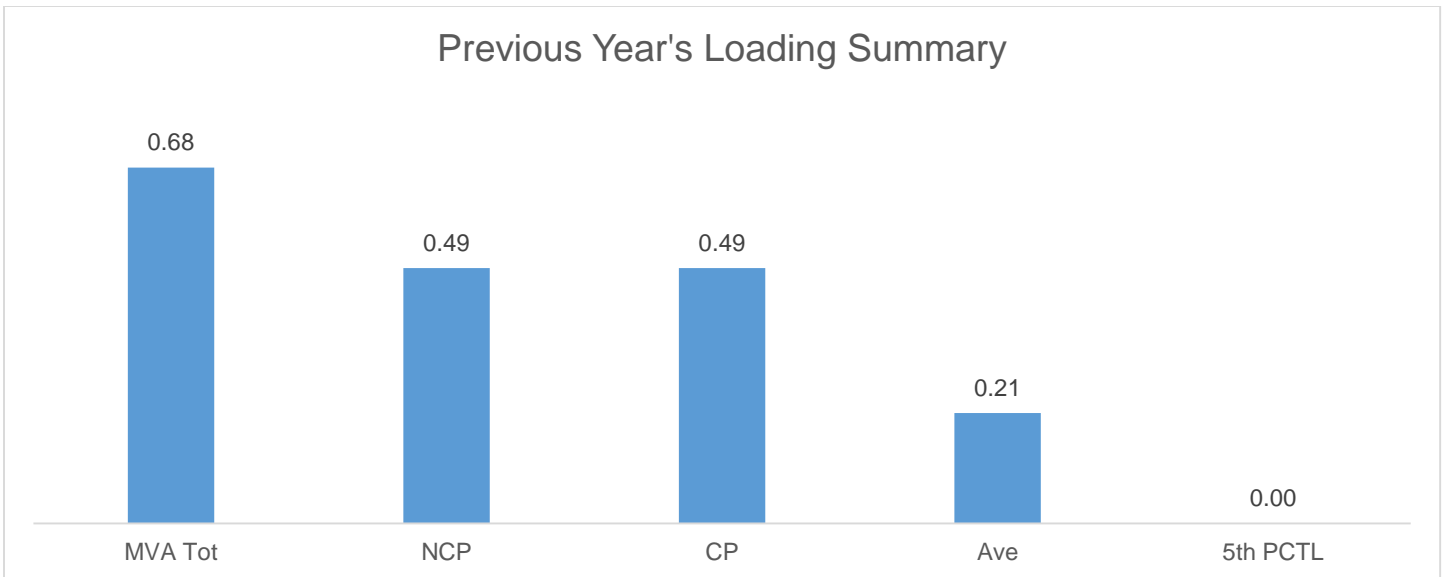


Based on the Load Duration Curve, the average load is 0.21 MW and the maximum load is 0.49 MW for the last historical year.



Peak MW occurred on 18:00 due to residential consumer. Peak daily MWh occurred on 18:00 due to residential consumer. As shown in the Load Curves, the available supply is higher than the Peak Demand.

### Previous Year's Loading Summary



The Non-coincident Peak Demand is 0.49 MW, which is around 72% of the total substation capacity of 0.68 MVA at a power factor of 98.65%. The load factor or the ratio between the Average Load of 0.21 MW and the Non-coincident Peak Demand is 43%.

Metering Point	Substation MVA	Substation Peak MW
NPC	0.676	0.485

The installed capacity of NAPACOR in the island has a very thin reserve, thus as a consequence, when generating machines encounter defect, longer period of time in terms of load shedding are scheduled in most areas of the island during peak periods.

# Forecasted Consumption Data

		Coincident Peak MW	Contracted MW	Pending MW	Planned MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
2020	Jan	0.451	0.69	0.00	0.000	154%	154%	0.24
	Feb	0.467	0.69	0.00	0.000	148%	148%	0.23
	Mar	0.514	0.69	0.00	0.000	135%	135%	0.18
	Apr	0.515	0.69	0.00	0.000	135%	135%	0.18
	May	0.570	0.69	0.00	0.000	122%	122%	0.12
	Jun	0.563	0.69	0.00	0.000	123%	123%	0.13
	Jul	0.516	0.69	0.00	0.000	134%	134%	0.18
	Aug	0.464	0.69	0.00	0.000	149%	149%	0.23
	Sep	0.474	0.69	0.00	0.000	146%	146%	0.22
	Oct	0.510	0.69	0.00	0.000	136%	136%	0.18
	Nov	0.505	0.69	0.00	0.000	137%	137%	0.19
	Dec	0.502	0.69	0.00	0.000	138%	138%	0.19
2021	Jan	0.456	0.00	0.46	0.000	0%	100%	0.00
	Feb	0.452	0.00	0.45	0.000	0%	100%	0.00
	Mar	0.527	0.00	0.53	0.000	0%	100%	0.00
	Apr	0.534	0.00	0.53	0.000	0%	100%	0.00
	May	0.546	0.00	0.55	0.000	0%	100%	0.00
	Jun	0.570	0.00	0.57	0.000	0%	100%	0.00
	Jul	0.561	0.00	0.56	0.000	0%	100%	0.00
	Aug	0.551	0.00	0.55	0.000	0%	100%	0.00
	Sep	0.535	0.00	0.54	0.000	0%	100%	0.00
	Oct	0.562	0.00	0.56	0.000	0%	100%	0.00
	Nov	0.552	0.00	0.55	0.000	0%	100%	0.00
	Dec	0.525	0.00	0.53	0.000	0%	100%	0.00
2022	Jan	0.544	0.00	3.64	0.000	0%	669%	3.10
	Feb	0.540	0.00	3.64	0.000	0%	674%	3.10
	Mar	0.628	0.00	3.64	0.000	0%	579%	3.01
	Apr	0.637	0.00	3.64	0.000	0%	572%	3.00
	May	0.652	0.00	3.64	0.000	0%	558%	2.99
	Jun	0.680	0.00	3.64	0.000	0%	535%	2.96
	Jul	0.669	0.00	3.64	0.000	0%	544%	2.97
	Aug	0.658	0.00	3.64	0.000	0%	553%	2.98
	Sep	0.638	0.00	3.64	0.000	0%	570%	3.00
	Oct	0.670	0.00	3.64	0.000	0%	543%	2.97
	Nov	0.659	0.00	3.64	0.000	0%	552%	2.98
	Dec	0.627	0.00	3.64	0.000	0%	581%	3.01
2023	Jan	0.646	0.00	3.64	0.000	0%	563%	2.99
	Feb	0.641	0.00	3.64	0.000	0%	568%	3.00
	Mar	0.746	0.00	3.64	0.000	0%	488%	2.89
	Apr	0.756	0.00	3.64	0.000	0%	482%	2.88
	May	0.774	0.00	3.64	0.000	0%	470%	2.87
	Jun	0.807	0.00	3.64	0.000	0%	451%	2.83

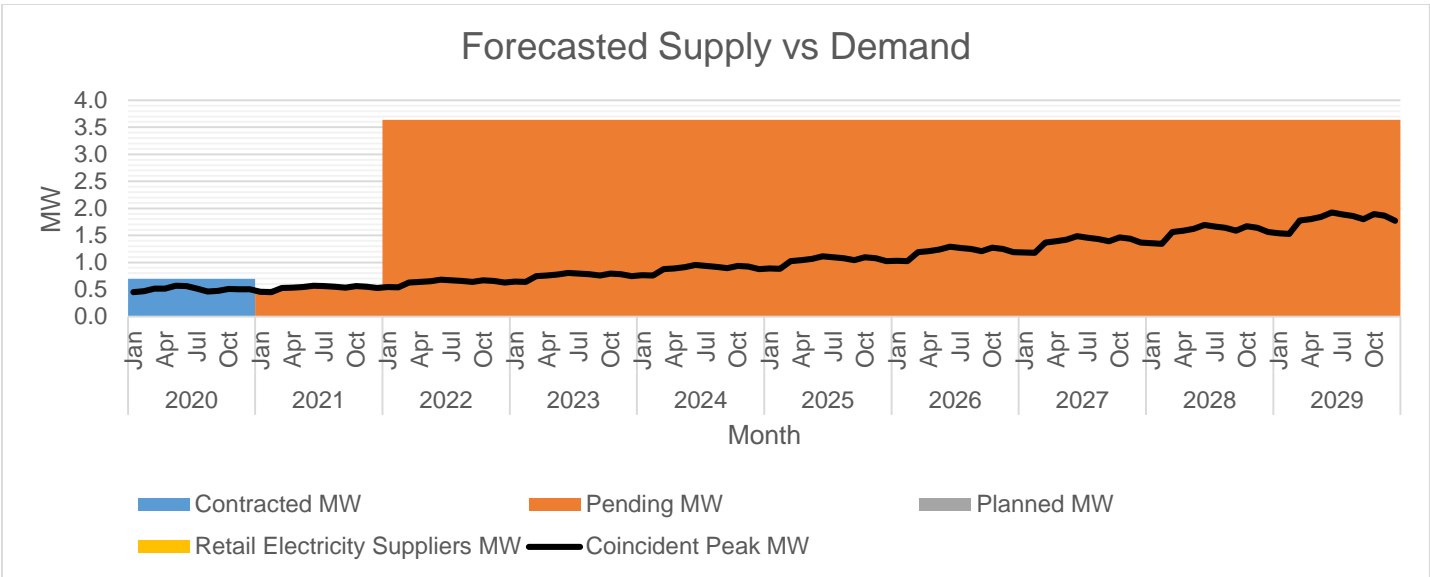
	Jul	0.794	0.00	3.64	0.000	0%	458%	2.85
	Aug	0.781	0.00	3.64	0.000	0%	466%	2.86
	Sep	0.758	0.00	3.64	0.000	0%	481%	2.88
	Oct	0.796	0.00	3.64	0.000	0%	457%	2.84
	Nov	0.783	0.00	3.64	0.000	0%	465%	2.86
	Dec	0.744	0.00	3.64	0.000	0%	489%	2.90
2024	Jan	0.761	0.00	3.64	0.000	0%	478%	2.88
	Feb	0.755	0.00	3.64	0.000	0%	482%	2.88
	Mar	0.879	0.00	3.64	0.000	0%	414%	2.76
	Apr	0.891	0.00	3.64	0.000	0%	409%	2.75
	May	0.912	0.00	3.64	0.000	0%	399%	2.73
	Jun	0.951	0.00	3.64	0.000	0%	383%	2.69
	Jul	0.936	0.00	3.64	0.000	0%	389%	2.70
	Aug	0.920	0.00	3.64	0.000	0%	396%	2.72
	Sep	0.892	0.00	3.64	0.000	0%	408%	2.75
	Oct	0.938	0.00	3.64	0.000	0%	388%	2.70
	Nov	0.922	0.00	3.64	0.000	0%	395%	2.72
	Dec	0.877	0.00	3.64	0.000	0%	415%	2.76
2025	Jan	0.889	0.00	3.64	0.000	0%	409%	2.75
	Feb	0.883	0.00	3.64	0.000	0%	412%	2.76
	Mar	1.027	0.00	3.64	0.000	0%	354%	2.61
	Apr	1.041	0.00	3.64	0.000	0%	350%	2.60
	May	1.066	0.00	3.64	0.000	0%	341%	2.57
	Jun	1.112	0.00	3.64	0.000	0%	327%	2.53
	Jul	1.094	0.00	3.64	0.000	0%	333%	2.55
	Aug	1.075	0.00	3.64	0.000	0%	339%	2.56
	Sep	1.043	0.00	3.64	0.000	0%	349%	2.60
	Oct	1.096	0.00	3.64	0.000	0%	332%	2.54
	Nov	1.077	0.00	3.64	0.000	0%	338%	2.56
	Dec	1.025	0.00	3.64	0.000	0%	355%	2.62
2026	Jan	1.031	0.00	3.64	0.000	0%	353%	2.61
	Feb	1.023	0.00	3.64	0.000	0%	356%	2.62
	Mar	1.191	0.00	3.64	0.000	0%	306%	2.45
	Apr	1.207	0.00	3.64	0.000	0%	302%	2.43
	May	1.236	0.00	3.64	0.000	0%	295%	2.40
	Jun	1.289	0.00	3.64	0.000	0%	282%	2.35
	Jul	1.268	0.00	3.64	0.000	0%	287%	2.37
	Aug	1.247	0.00	3.64	0.000	0%	292%	2.39
	Sep	1.209	0.00	3.64	0.000	0%	301%	2.43
	Oct	1.271	0.00	3.64	0.000	0%	286%	2.37
	Nov	1.249	0.00	3.64	0.000	0%	291%	2.39
	Dec	1.188	0.00	3.64	0.000	0%	306%	2.45
2027	Jan	1.186	0.00	3.64	0.000	0%	307%	2.45
	Feb	1.177	0.00	3.64	0.000	0%	309%	2.46
	Mar	1.370	0.00	3.64	0.000	0%	266%	2.27
	Apr	1.388	0.00	3.64	0.000	0%	262%	2.25
	May	1.422	0.00	3.64	0.000	0%	256%	2.22
	Jun	1.483	0.00	3.64	0.000	0%	245%	2.16



	Jul	1.535	0.00	3.64	0.000	0%	250%	2.18
	Aug	1.380	0.00	3.64	0.000	0%	254%	2.21
	Sep	1.409	0.00	3.64	0.000	0%	262%	2.25
	Oct	1.516	0.00	3.64	0.000	0%	249%	2.18
	Nov	1.502	0.00	3.64	0.000	0%	253%	2.20
	Dec	1.490	0.00	3.64	0.000	0%	266%	2.27
2028	Jan	1.519	0.00	3.64	0.000	0%	269%	2.28
	Feb	1.573	0.00	3.64	0.000	0%	271%	2.30
	Mar	1.733	0.00	3.64	0.000	0%	233%	2.08
	Apr	1.737	0.00	3.64	0.000	0%	230%	2.05
	May	1.921	0.00	3.64	0.000	0%	224%	2.02
	Jun	1.896	0.00	3.64	0.000	0%	215%	1.95
	Jul	1.741	0.00	3.64	0.000	0%	218%	1.97
	Aug	1.565	0.00	3.64	0.000	0%	222%	2.00
	Sep	1.598	0.00	3.64	0.000	0%	229%	2.05
	Oct	1.720	0.00	3.64	0.000	0%	218%	1.97
	Nov	1.703	0.00	3.64	0.000	0%	222%	2.00
	Dec	1.691	0.00	3.64	0.000	0%	233%	2.08
2029	Jan	1.71	0.00	3.64	0.000	0%	237%	2.10
	Feb	1.77	0.00	3.64	0.000	0%	239%	2.11
	Mar	1.95	0.00	3.64	0.000	0%	205%	1.87
	Apr	1.96	0.00	3.64	0.000	0%	202%	1.84
	May	2.17	0.00	3.64	0.000	0%	198%	1.80
	Jun	2.14	0.00	3.64	0.000	0%	189%	1.72
	Jul	1.96	0.00	3.64	0.000	0%	193%	1.75
	Aug	1.76	0.00	3.64	0.000	0%	196%	1.78
	Sep	1.80	0.00	3.64	0.000	0%	202%	1.84
	Oct	1.94	0.00	3.64	0.000	0%	192%	1.75
	Nov	1.92	0.00	3.64	0.000	0%	195%	1.78
	Dec	1.91	0.00	3.64	0.000	0%	206%	1.87

The Peak Demand was forecasted using regression analysis and was assumed to occur on the month of May to June due to Hot Weather. Monthly Peak Demand is at its lowest on the month of January to March due to Cold Weather. In general, Peak Demand is expected to grow at a rate of 16% annually.

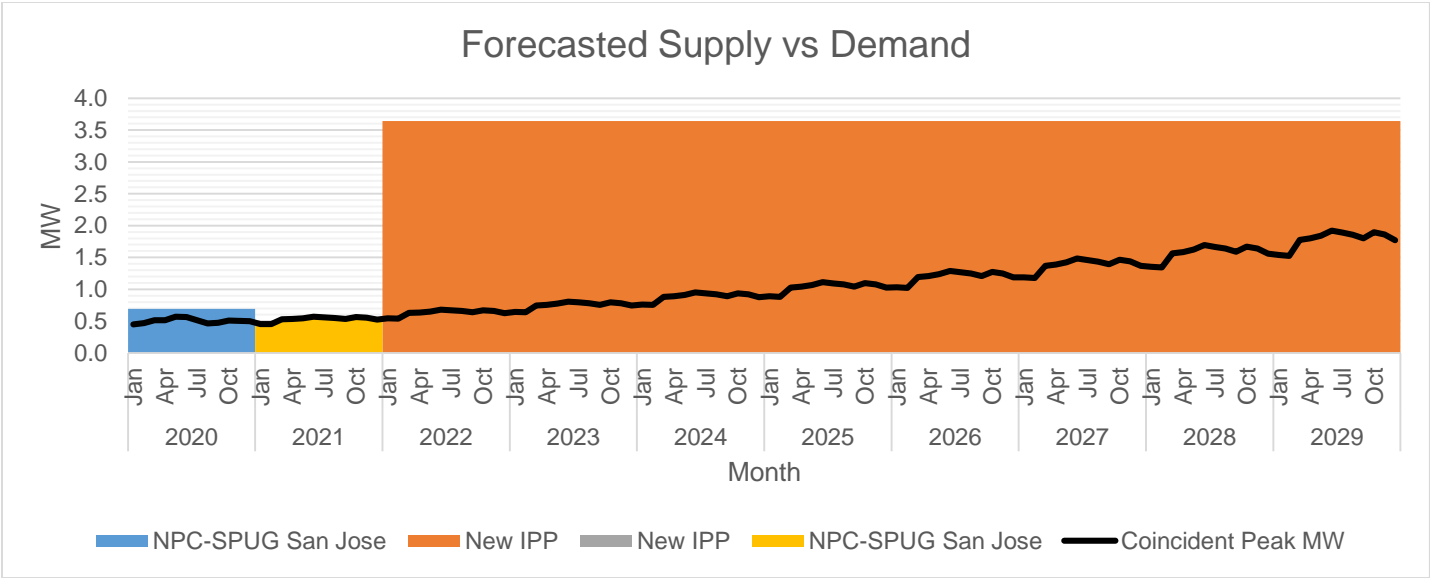
The forecasted demand was considered on a 24 hours operation and said operating time is stipulated to be the operating time immediately after the occurrence of the Commercial Operating Period of the New Power Provider.



The available supply is generally [above/below] the Peak Demand.

This graph would illustrate the following:

1. Blue – the currently contracted supply with NPC that will end in year 2020.
2. Black – the expected coincident peak annually.
3. Orange (2021) – contracted supply with NPC that will start in 2021.
4. Orange (2022 onwards) – the forecasted supply that will be contracted through a CSP process under a straight contract.

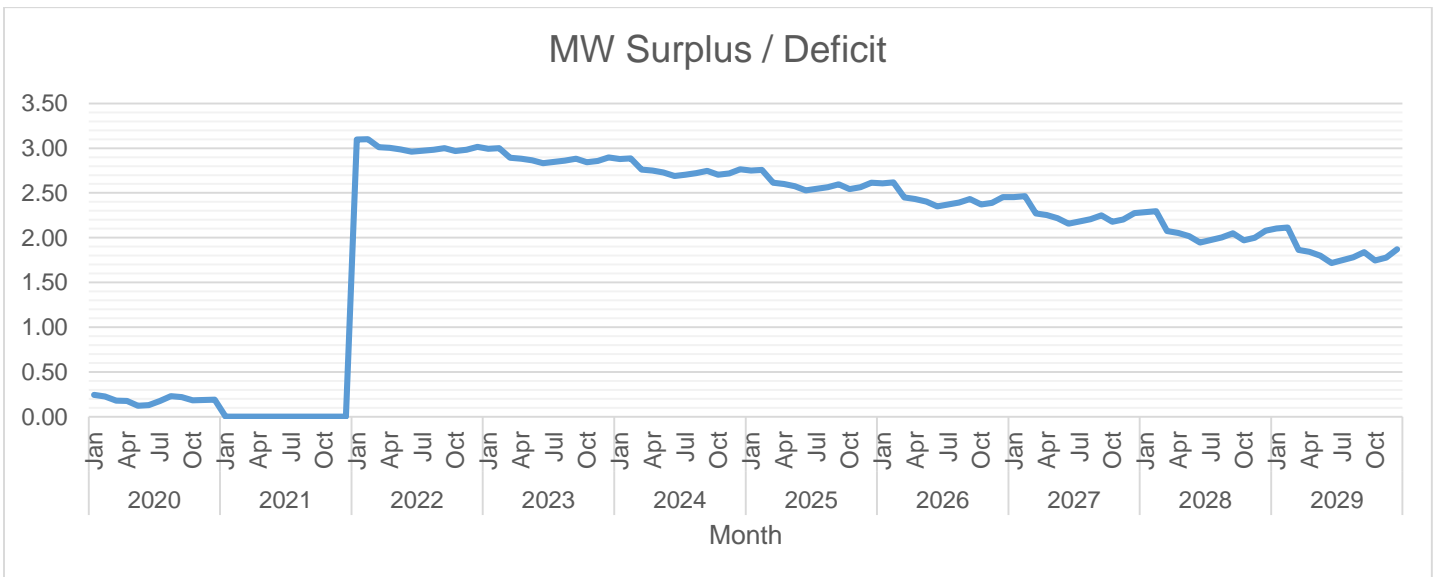


The contracted demand on our current supplier is 0.693MW that will expire on December 2020. TIELCO has requested the National Power Corporation to extend the operation for 1 year contract with a capacity of 0.570MW. TIELCO has already conducted the competitive selection process for a fifteen (15) year 3.640MW load requirement of the Island. The expected Commercial Operation Date of the New IPP is on December 2021.



Currently, there is over-contracting by 21.6%. The highest target contracting level is 674% which is expected to occur on February 2022. The lowest target contracting level is 100% which is expected to occur on Year 2021.

The graph shows that the contracting level in year 2022 has a sufficient reserve and it will gradually decrease based on the yearly increase in demand for the next 15 years.



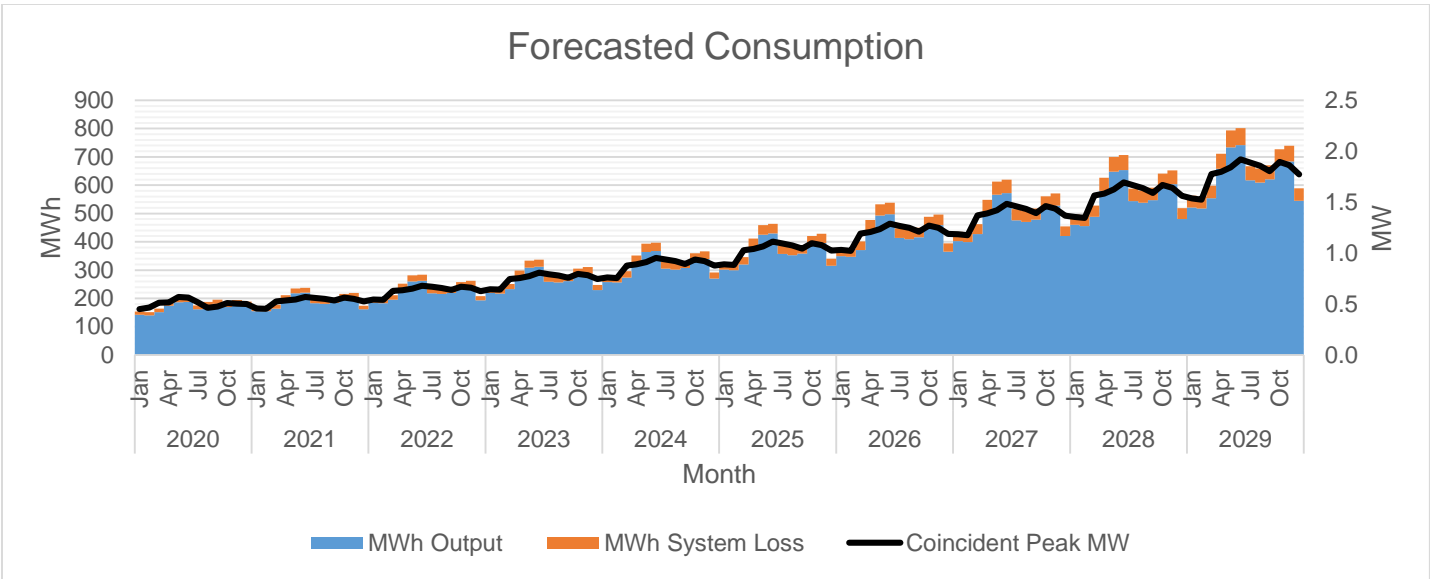
Currently, there is [under-contracting/over-contracting] by 0.12 MW. The highest surplus is 3.10 MW which is expected to occur on the month of January 2022. The lowest surplus/deficit is 0 MW which is expected to occur on Year 2021.

		MWh Offtake	MWh Output	MWh System Loss	System Loss	Coincident Peak MW
2020	Jan	154	142	12	7.50%	0.451
	Feb	152	140	11	7.50%	0.467
	Mar	164	152	12	7.50%	0.514
	Apr	188	174	14	7.50%	0.515
	May	201	186	15	7.50%	0.570
	Jun	202	187	15	7.50%	0.563
	Jul	175	162	13	7.50%	0.516
	Aug	188	174	14	7.50%	0.464
	Sep	195	180	15	7.50%	0.474
	Oct	183	169	14	7.50%	0.510
	Nov	194	180	15	7.50%	0.505
	Dec	189	174	14	7.50%	0.502
2021	Jan	167	155	13	7.50%	0.456
	Feb	167	155	13	7.50%	0.452
	Mar	177	164	13	7.50%	0.527
	Apr	211	195	16	7.50%	0.534
	May	235	218	18	7.50%	0.546
	Jun	238	220	18	7.50%	0.570
	Jul	198	183	15	7.50%	0.561
	Aug	195	181	15	7.50%	0.551
	Sep	199	184	15	7.50%	0.535
	Oct	216	199	16	7.50%	0.562
	Nov	219	203	16	7.50%	0.552
	Dec	175	161	13	7.50%	0.525
2022	Jan	199	185	15	7.50%	0.544
	Feb	198	183	15	7.50%	0.540
	Mar	212	196	16	7.50%	0.628
	Apr	252	233	19	7.50%	0.637
	May	281	260	21	7.50%	0.652
	Jun	284	263	21	7.50%	0.680
	Jul	236	218	18	7.50%	0.669
	Aug	233	216	18	7.50%	0.658
	Sep	237	220	18	7.50%	0.638
	Oct	257	238	19	7.50%	0.670
	Nov	262	242	20	7.50%	0.659
	Dec	208	193	16	7.50%	0.627
2023	Jan	237	219	18	7.50%	0.646
	Feb	235	217	18	7.50%	0.641
	Mar	251	233	19	7.50%	0.746
	Apr	299	276	22	7.50%	0.756
	May	334	308	25	7.50%	0.774
	Jun	337	312	25	7.50%	0.807

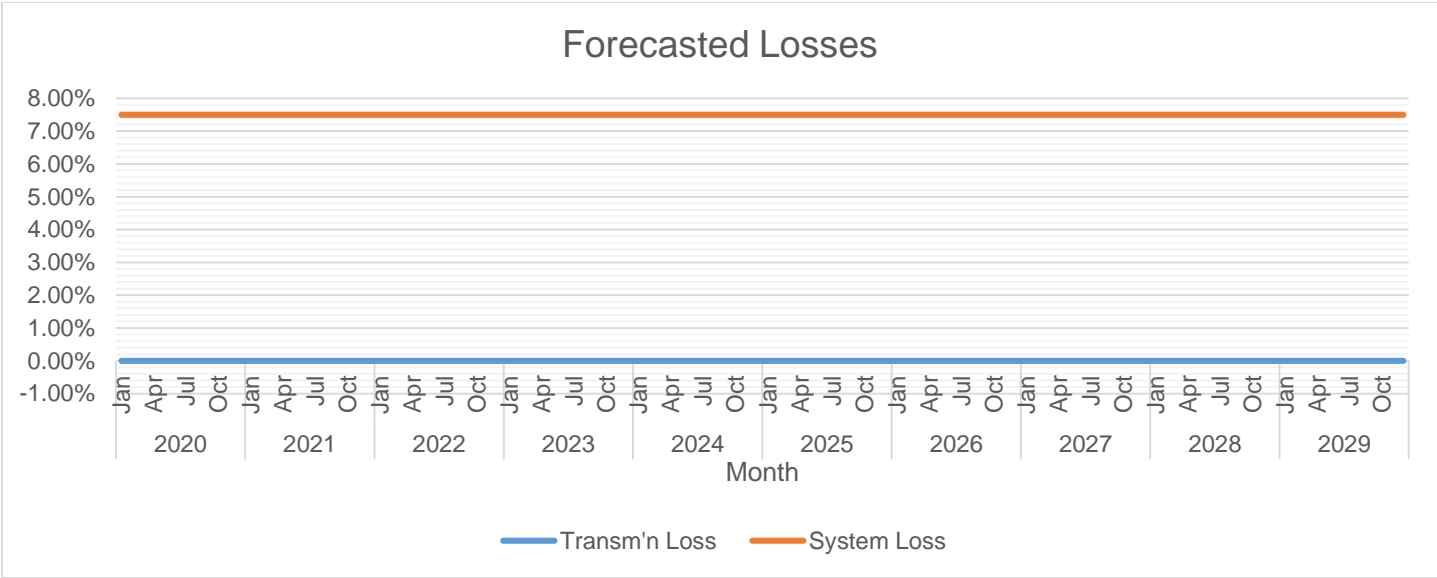
	Jul	280	259	21	7.50%	0.794
	Aug	277	256	21	7.50%	0.781
	Sep	282	261	21	7.50%	0.758
	Oct	306	283	23	7.50%	0.796
	Nov	311	288	23	7.50%	0.783
	Dec	247	229	19	7.50%	0.744
2024	Jan	279	258	21	7.50%	0.761
	Feb	277	256	21	7.50%	0.755
	Mar	296	274	22	7.50%	0.879
	Apr	352	326	26	7.50%	0.891
	May	393	363	29	7.50%	0.912
	Jun	397	367	30	7.50%	0.951
	Jul	330	306	25	7.50%	0.936
	Aug	326	302	24	7.50%	0.920
	Sep	332	307	25	7.50%	0.892
	Oct	360	333	27	7.50%	0.938
	Nov	366	339	27	7.50%	0.922
	Dec	292	270	22	7.50%	0.877
2025	Jan	326	302	24	7.50%	0.889
	Feb	324	299	24	7.50%	0.883
	Mar	346	320	26	7.50%	1.027
	Apr	411	381	31	7.50%	1.041
	May	459	425	34	7.50%	1.066
	Jun	464	429	35	7.50%	1.112
	Jul	386	357	29	7.50%	1.094
	Aug	381	353	29	7.50%	1.075
	Sep	388	359	29	7.50%	1.043
	Oct	421	389	32	7.50%	1.096
	Nov	428	396	32	7.50%	1.077
	Dec	341	315	26	7.50%	1.025
2026	Jan	378	350	28	7.50%	1.031
	Feb	375	347	28	7.50%	1.023
	Mar	401	371	30	7.50%	1.191
	Apr	477	441	36	7.50%	1.207
	May	532	492	40	7.50%	1.236
	Jun	538	498	40	7.50%	1.289
	Jul	448	414	34	7.50%	1.268
	Aug	442	409	33	7.50%	1.247
	Sep	450	416	34	7.50%	1.209
	Oct	488	451	37	7.50%	1.271
	Nov	496	459	37	7.50%	1.249
	Dec	395	365	30	7.50%	1.188
2027	Jan	435	402	33	7.50%	1.186
	Feb	432	399	32	7.50%	1.177
	Mar	462	427	35	7.50%	1.370
	Apr	549	508	41	7.50%	1.388
	May	613	567	46	7.50%	1.422
	Jun	619	572	46	7.50%	1.483

	Jul	515	476	39	7.50%	1.459
	Aug	509	471	38	7.50%	1.434
	Sep	517	479	39	7.50%	1.391
	Oct	561	519	42	7.50%	1.462
	Nov	571	528	43	7.50%	1.437
	Dec	454	420	34	7.50%	1.367
2028	Jan	497	459	37	7.50%	1.355
	Feb	493	456	37	7.50%	1.345
	Mar	527	488	40	7.50%	1.565
	Apr	627	580	47	7.50%	1.586
	May	700	647	52	7.50%	1.624
	Jun	707	654	53	7.50%	1.694
	Jul	588	544	44	7.50%	1.666
	Aug	581	538	44	7.50%	1.638
	Sep	591	547	44	7.50%	1.589
	Oct	641	593	48	7.50%	1.669
	Nov	652	603	49	7.50%	1.642
	Dec	519	480	39	7.50%	1.561
2029	Jan	563	521	42	7.50%	1.54
	Feb	559	517	42	7.50%	1.53
	Mar	598	553	45	7.50%	1.77
	Apr	711	658	53	7.50%	1.80
	May	794	734	60	7.50%	1.84
	Jun	802	742	60	7.50%	1.92
	Jul	667	617	50	7.50%	1.89
	Aug	659	610	49	7.50%	1.86
	Sep	670	620	50	7.50%	1.80
	Oct	727	672	55	7.50%	1.89
	Nov	740	684	55	7.50%	1.86
	Dec	589	545	44	7.50%	1.77

MWh Offtake was forecasted using regression analysis.



MWh Output was expected to grow at a rate of 16% annually. In our forecasting, we consider the significant entry of many commercial and government establishment that needs safe, efficient and more reliable supply.



System Loss is expected to range from 7% to 8%.

## Power Supply

Case No.	Type	GenCo	Minimum MW	Minimum MWh/yr	PSA Start	PSA End
NPC-SPUG San Jose	Base	National Power Corporation	0.43	1,631	12/26/2017	12/25/2020

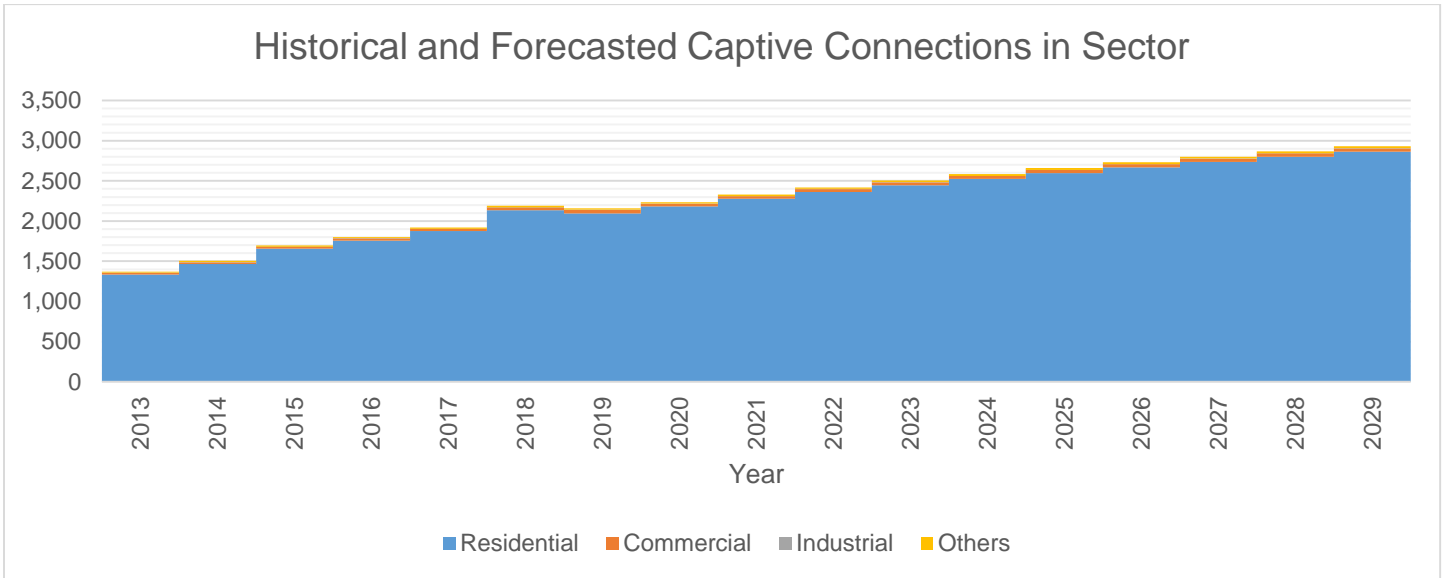
The current power supplier in Carabao Island is only NPC – Spug that will end our PSA in December 25, 2020.

Case No.	Type	GenCo	Minimum MW	Minimum MWh/yr	PSA Start	PSA End
New IPP	Base	Sunwest Water & Electric Company	3.640			
NPC-SPUG San Jose	Base	National Power Corporation	0.570	2,397	12/26/2020	12/25/2021

We have completed a Competitive Selection Process to select a New Power Provider for Carabao Island, and a Notice of Award has been issued accordingly, we are still awaiting the joint signing of said PSA, but however constrained of an earliest date due to COVID 19 movement restriction. Eventually when signed, jointly, winning NPP and TIELCO will file its application for approval of the PSA with ERC. Also we requested National Power Corporation to extend the operation until December 2021 with a 0.570MW capacity and it is on the PSA signing stage already.



# Captive Customer Connections



The number of residential connections is expected to grow at a rate of 3.34% annually. Said customer class is expected to account for 79% of the total consumption.