



# **Power Supply Procurement Plan 2020**

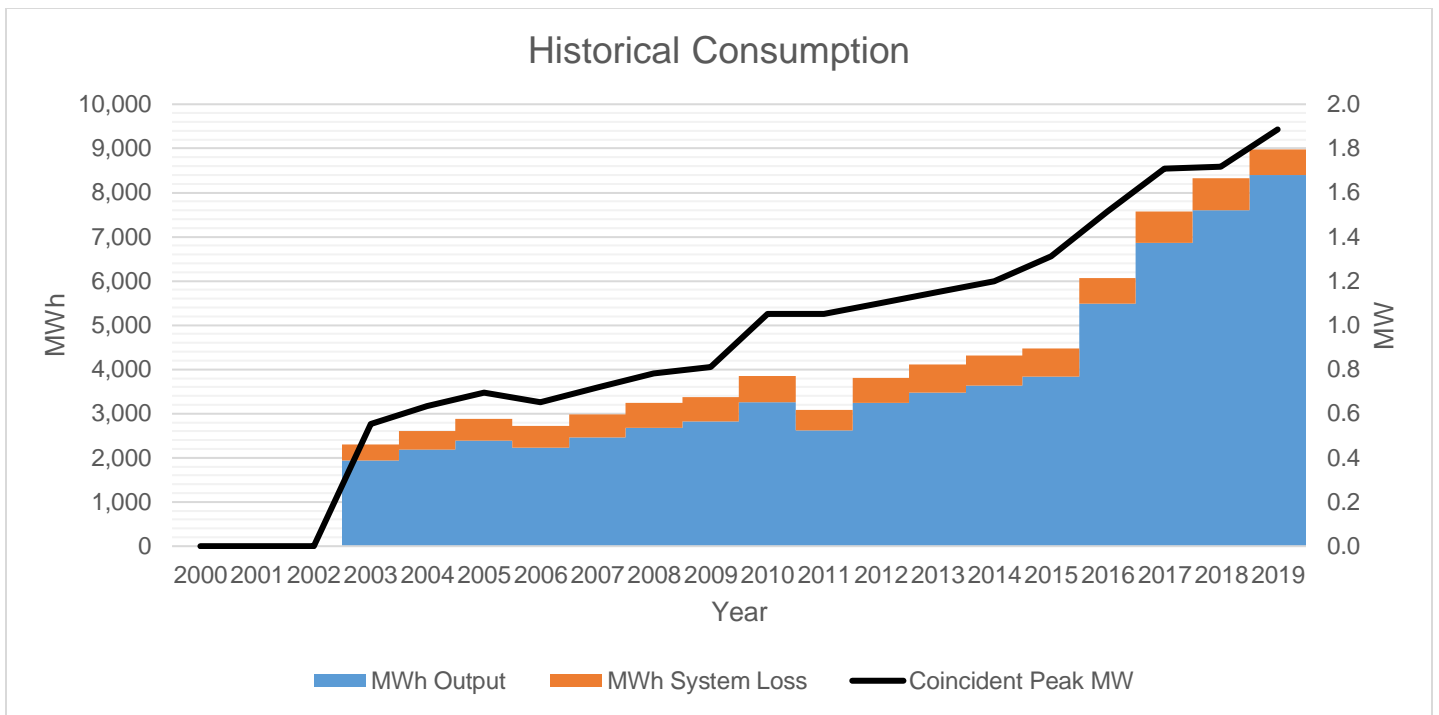
**POLILLO, BURDEOS and PANUKULAN,  
QUEZON**

## Historical Consumption Data

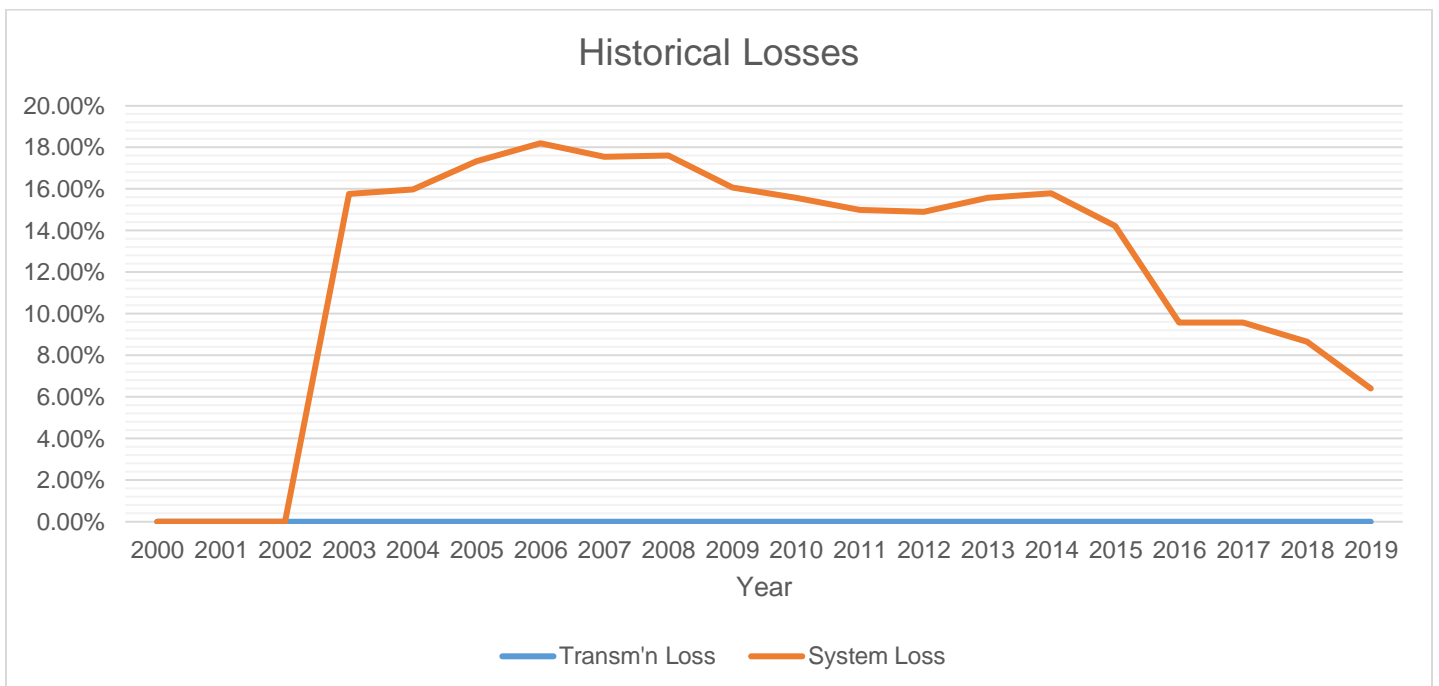
	Coincident Peak MW	MWh Offtake	WESM	MWh Input	MWh Output	MWh System Loss	Load Factor	Discrepancy	Transm'n Loss	System Loss
2000	0.00	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2001	0.00	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2002	0.00	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2003	0.55	2,302	0	2,302	1,941	363	47%	0.08%	0.00%	15.75%
2004	0.63	2,631	0	2,631	2,192	420	47%	-0.72%	0.00%	15.97%
2005	0.70	2,888	0	2,888	2,387	501	47%	0.00%	0.00%	17.35%
2006	0.65	2,709	0	2,709	2,223	493	47%	0.25%	0.00%	18.20%
2007	0.72	2,979	0	2,979	2,456	523	47%	0.00%	0.00%	17.55%
2008	0.78	3,245	0	3,245	2,674	571	47%	0.00%	0.00%	17.60%
2009	0.81	3,370	0	3,370	2,828	542	47%	0.00%	0.00%	16.09%
2010	1.05	3,850	0	3,850	3,250	600	42%	0.00%	0.00%	15.59%
2011	1.05	3,084	0	3,084	2,622	463	34%	0.00%	0.00%	15.00%
2012	1.10	3,806	0	3,806	3,239	567	39%	0.00%	0.00%	14.89%
2013	1.15	4,114	0	4,114	3,474	641	41%	0.00%	0.00%	15.58%
2014	1.20	4,319	0	4,319	3,637	683	41%	0.00%	0.00%	15.81%
2015	1.31	4,469	0	4,469	3,833	636	39%	0.00%	0.00%	14.24%
2016	1.52	6,073	0	6,073	5,491	582	46%	0.00%	0.00%	9.58%
2017	1.71	7,511	0	7,511	6,857	720	50%	0.87%	0.00%	9.58%
2018	1.72	8,325	0	8,325	7,605	720	55%	0.00%	0.00%	8.65%
2019	1.89	8,971	0	8,971	8,398	574	54%	0.00%	0.00%	6.40%

Peak Demand increased from 1.31 MW in 2015 to 1.52 MW in 2016 at a rate of 16% while MWh Offtake (Purchased) also increased from 4,469 MWh in 2015 to 6,073 MWh in 2016 at a rate of 35.89%. The reason behind this increase is due to NPC-SPUG's increase in operating hours from 16 hours to 24 hours a day starting April 2016. Within the same period 2015-2016, Load Factor ranged from 39% to 46%.

We acknowledged NEA comments that there are some inconsistencies on QUEZELCO II data particularly on the Historical data. These data were verified and found to be incorrect. We corrected these data for the submission of QUEZELCO II's latest DDP-PSPP 2020.

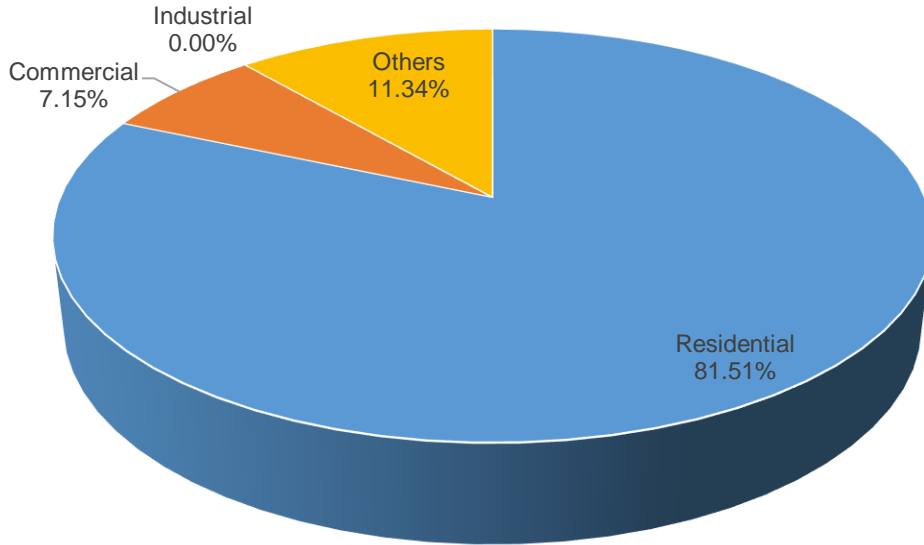


Since there was an NPC 24 hours operations MWh Output (Sales) increased from year 2015 to year 2016 at a rate of 43.26%, while MWh System Loss decreased from 14.24% to 9.58% a reduction equivalent to 8.49% within the same period.



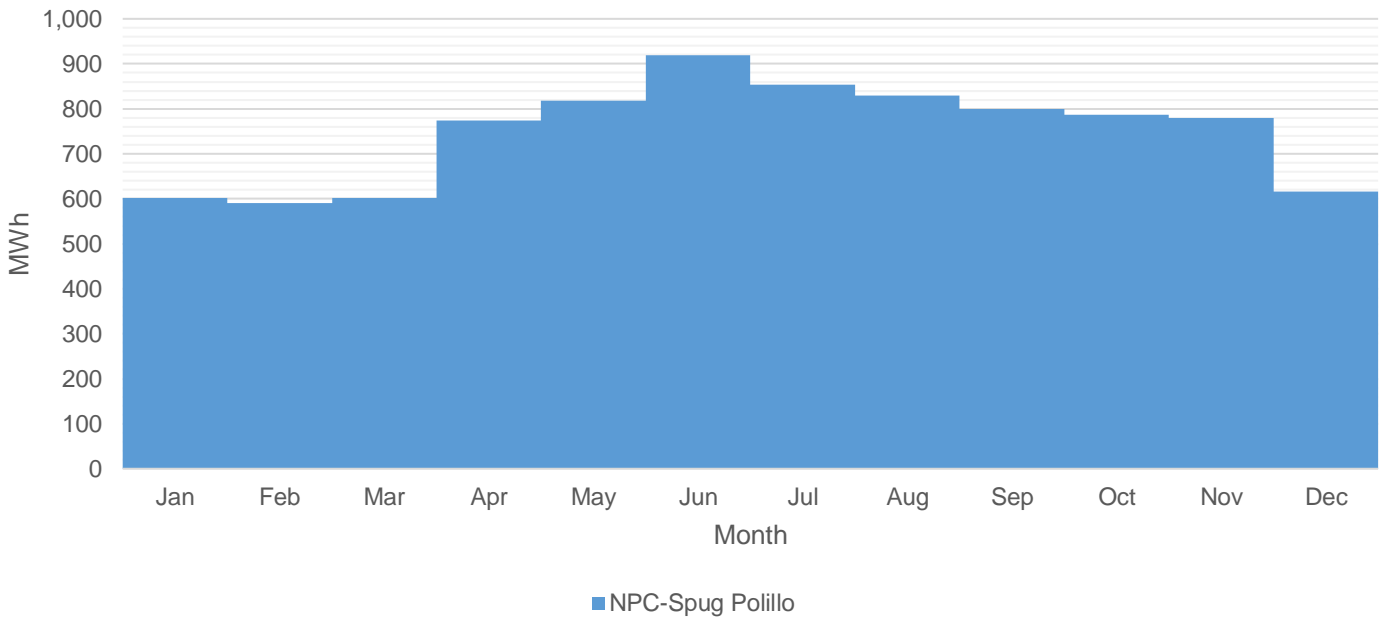
Historically, System Loss ranged from 6.40% to 18.20%. System Loss registered high at 18.20% on year 2006 because at that time, electric distribution system going to Panukulan, Quezon is only single phase with undersized conductors resulting to low voltage and unbalanced system. Also, there was ongoing electrification to different barangays of Polillo, Panukulan, and Burdeos resulted to additional line losses for Polillo Island Electric Distribution System.

### Previous Year's Shares of Energy Sales



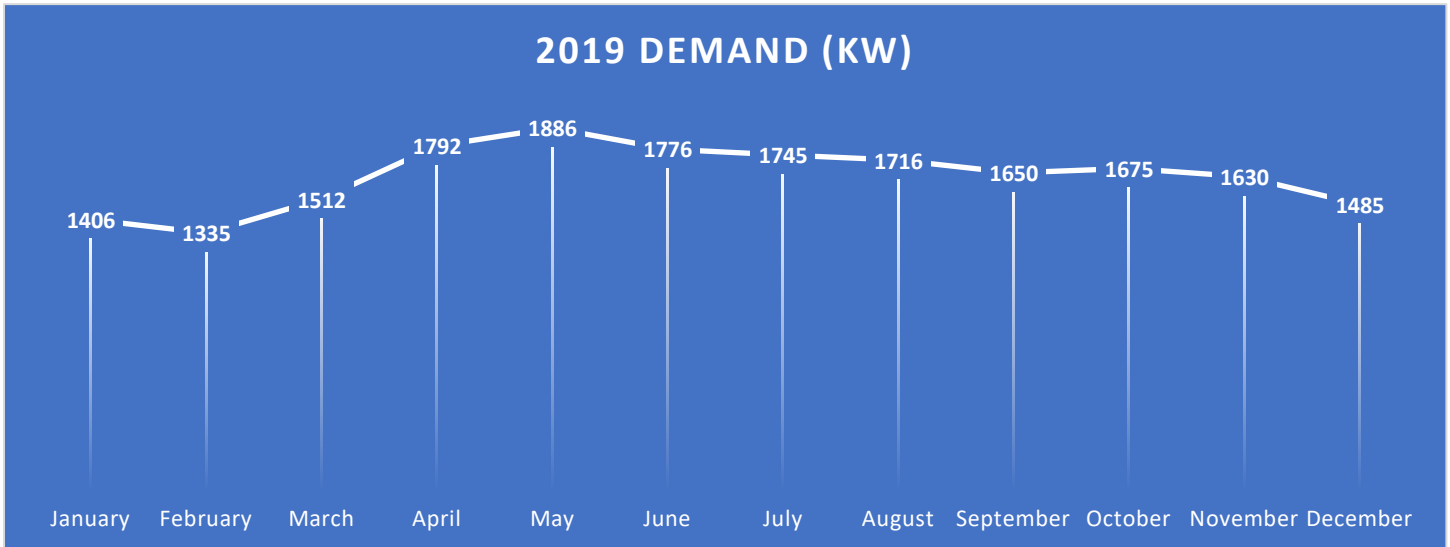
Residential customers account for the bulk of energy sales at 81.51% due to the high number of connections. In addition, Commercial customers accounted for only 7.15% of energy sales due to few numbers of connections. There are no Industrial customers in Polillo Group of Islands.

### MWh Offtake for Last Historical Year



NPC operated its remaining months from January to May last year (2019), then Renesons Energy Polillo started their operation as the new Power Plant Provider of Quezelco II.

## Previous Year's Load Profile



Peak kW usually occurred on May 2019 due to summer season. Off-peak occurred on the first quarter of the year due to rainy season.

## 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
2020	Jan	1.61	0.00	2.50	0.000		0%	156%	0.89
	Feb	1.53	0.00	2.50	0.000		0%	164%	0.98
	Mar	1.73	0.00	2.50	0.000		0%	145%	0.77
	Apr	2.05	0.00	2.50	0.000		0%	122%	0.45
	May	2.16	0.00	2.50	0.000		0%	116%	0.35
	Jun	2.03	0.00	2.50	0.000		0%	123%	0.47
	Jul	1.99	0.00	2.50	0.000		0%	125%	0.51
	Aug	1.96	0.00	2.50	0.000		0%	127%	0.54
	Sep	1.89	0.00	2.50	0.000		0%	133%	0.62
	Oct	1.91	0.00	2.50	0.000		0%	131%	0.59
	Nov	1.86	0.00	2.50	0.000		0%	134%	0.64
	Dec	1.70	0.00	2.50	0.000		0%	147%	0.80
2021	Jan	1.69	0.00	2.50	0.000		0%	148%	0.81
	Feb	1.61	0.00	2.50	0.000		0%	156%	0.90
	Mar	1.82	0.00	2.50	0.000		0%	138%	0.68
	Apr	2.15	0.00	2.50	0.000		0%	116%	0.35
	May	2.27	0.00	2.50	0.000		0%	110%	0.23
	Jun	2.14	0.00	2.50	0.000		0%	117%	0.37
	Jul	2.10	0.00	2.50	0.000		0%	119%	0.40
	Aug	2.06	0.00	2.50	0.000		0%	121%	0.44
	Sep	1.98	0.00	2.50	0.000		0%	126%	0.52
	Oct	2.01	0.00	2.50	0.000		0%	124%	0.49
	Nov	1.96	0.00	2.50	0.000		0%	128%	0.54
	Dec	1.79	0.00	2.50	0.000		0%	140%	0.72
2022	Jan	1.77	0.00	3.50	0.000		0%	197%	1.73
	Feb	1.68	0.00	3.50	0.000		0%	208%	1.82
	Mar	1.91	0.00	3.50	0.000		0%	184%	1.59
	Apr	2.26	0.00	3.50	0.000		0%	155%	1.24
	May	2.38	0.00	3.50	0.000		0%	147%	1.12

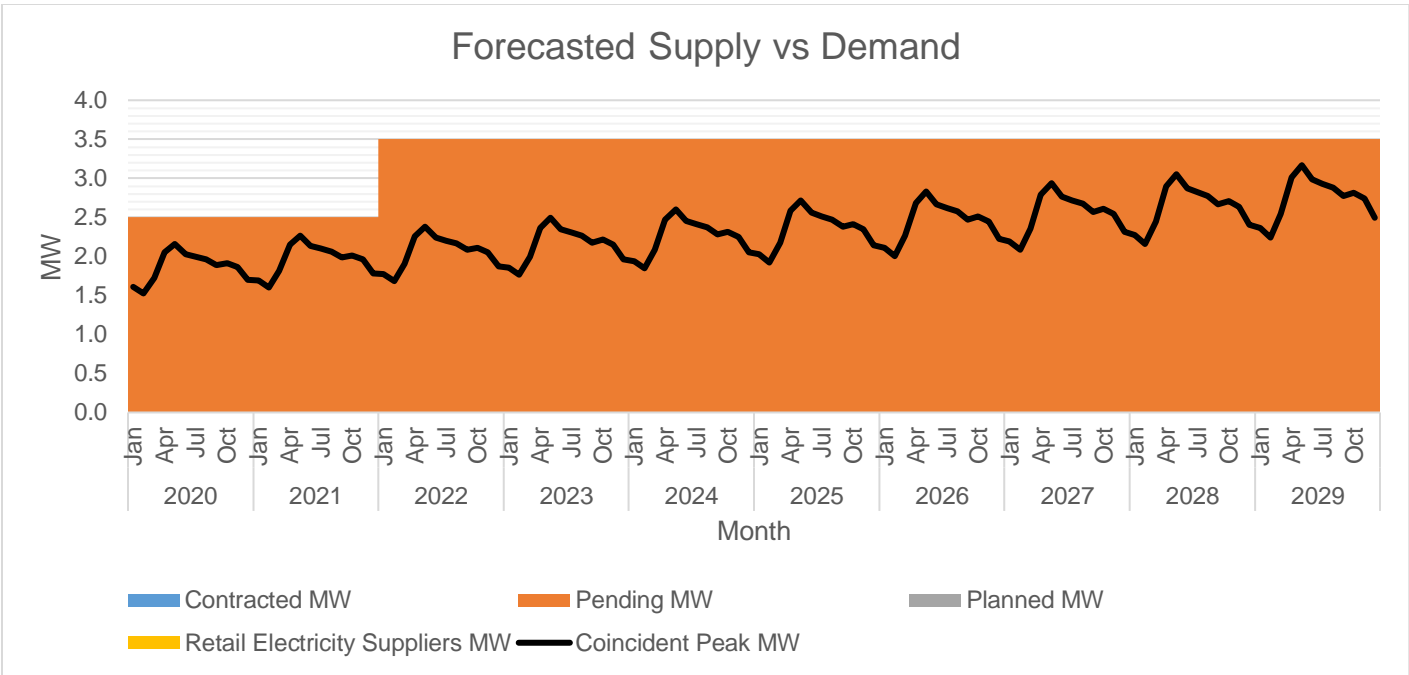
		Coincident Peak MW	Contracted MW	Pending MW	Planned MW	Retail Electricity Suppliers MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
	Jun	2.24	0.00	3.50	0.000		0%	156%	1.26
	Jul	2.20	0.00	3.50	0.000		0%	159%	1.30
	Aug	2.17	0.00	3.50	0.000		0%	162%	1.34
	Sep	2.08	0.00	3.50	0.000		0%	168%	1.42
	Oct	2.11	0.00	3.50	0.000		0%	166%	1.39
	Nov	2.06	0.00	3.50	0.000		0%	170%	1.44
	Dec	1.87	0.00	3.50	0.000		0%	187%	1.63
2023	Jan	1.86	0.00	3.50	0.000		0%	188%	1.64
	Feb	1.76	0.00	3.50	0.000		0%	199%	1.74
	Mar	2.00	0.00	3.50	0.000		0%	175%	1.50
	Apr	2.37	0.00	3.50	0.000		0%	148%	1.13
	May	2.49	0.00	3.50	0.000		0%	141%	1.01
	Jun	2.35	0.00	3.50	0.000		0%	149%	1.15
	Jul	2.31	0.00	3.50	0.000		0%	152%	1.20
	Aug	2.27	0.00	3.50	0.000		0%	154%	1.23
	Sep	2.18	0.00	3.50	0.000		0%	161%	1.32
	Oct	2.21	0.00	3.50	0.000		0%	158%	1.29
	Nov	2.15	0.00	3.50	0.000		0%	163%	1.35
	Dec	1.96	0.00	3.50	0.000		0%	178%	1.54
2024	Jan	1.94	0.00	3.50	0.000		0%	180%	1.56
	Feb	1.84	0.00	3.50	0.000		0%	190%	1.66
	Mar	2.09	0.00	3.50	0.000		0%	168%	1.41
	Apr	2.47	0.00	3.50	0.000		0%	141%	1.03
	May	2.60	0.00	3.50	0.000		0%	134%	0.90
	Jun	2.45	0.00	3.50	0.000		0%	143%	1.05
	Jul	2.41	0.00	3.50	0.000		0%	145%	1.09
	Aug	2.37	0.00	3.50	0.000		0%	148%	1.13
	Sep	2.28	0.00	3.50	0.000		0%	154%	1.22
	Oct	2.31	0.00	3.50	0.000		0%	151%	1.19
	Nov	2.25	0.00	3.50	0.000		0%	155%	1.25
	Dec	2.05	0.00	3.50	0.000		0%	171%	1.45

		Coincident Peak MW	Contracted MW	Pending MW	Planned MW	Retail Electricity Suppliers MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
2025	Jan	2.03	0.00	3.50	0.000		0%	173%	1.48
	Feb	1.92	0.00	3.50	0.000		0%	182%	1.58
	Mar	2.18	0.00	3.50	0.000		0%	161%	1.32
	Apr	2.58	0.00	3.50	0.000		0%	136%	0.92
	May	2.72	0.00	3.50	0.000		0%	129%	0.78
	Jun	2.56	0.00	3.50	0.000		0%	137%	0.94
	Jul	2.51	0.00	3.50	0.000		0%	139%	0.99
	Aug	2.47	0.00	3.50	0.000		0%	142%	1.03
	Sep	2.38	0.00	3.50	0.000		0%	147%	1.12
	Oct	2.41	0.00	3.50	0.000		0%	145%	1.09
	Nov	2.35	0.00	3.50	0.000		0%	149%	1.15
	Dec	2.14	0.00	3.50	0.000		0%	164%	1.36
2026	Jan	2.11	0.00	3.50	0.000		0%	166%	1.39
	Feb	2.00	0.00	3.50	0.000		0%	175%	1.50
	Mar	2.27	0.00	3.50	0.000		0%	154%	1.23
	Apr	2.69	0.00	3.50	0.000		0%	130%	0.81
	May	2.83	0.00	3.50	0.000		0%	124%	0.67
	Jun	2.66	0.00	3.50	0.000		0%	131%	0.84
	Jul	2.62	0.00	3.50	0.000		0%	134%	0.88
	Aug	2.57	0.00	3.50	0.000		0%	136%	0.93
	Sep	2.47	0.00	3.50	0.000		0%	141%	1.03
	Oct	2.51	0.00	3.50	0.000		0%	139%	0.99
	Nov	2.44	0.00	3.50	0.000		0%	143%	1.06
	Dec	2.23	0.00	3.50	0.000		0%	157%	1.27
2027	Jan	2.19	0.00	3.50	0.000		0%	160%	1.31
	Feb	2.08	0.00	3.50	0.000		0%	168%	1.42
	Mar	2.36	0.00	3.50	0.000		0%	148%	1.14
	Apr	2.79	0.00	3.50	0.000		0%	125%	0.71
	May	2.94	0.00	3.50	0.000		0%	119%	0.56
	Jun	2.77	0.00	3.50	0.000		0%	126%	0.73
	Jul	2.72	0.00	3.50	0.000		0%	129%	0.78

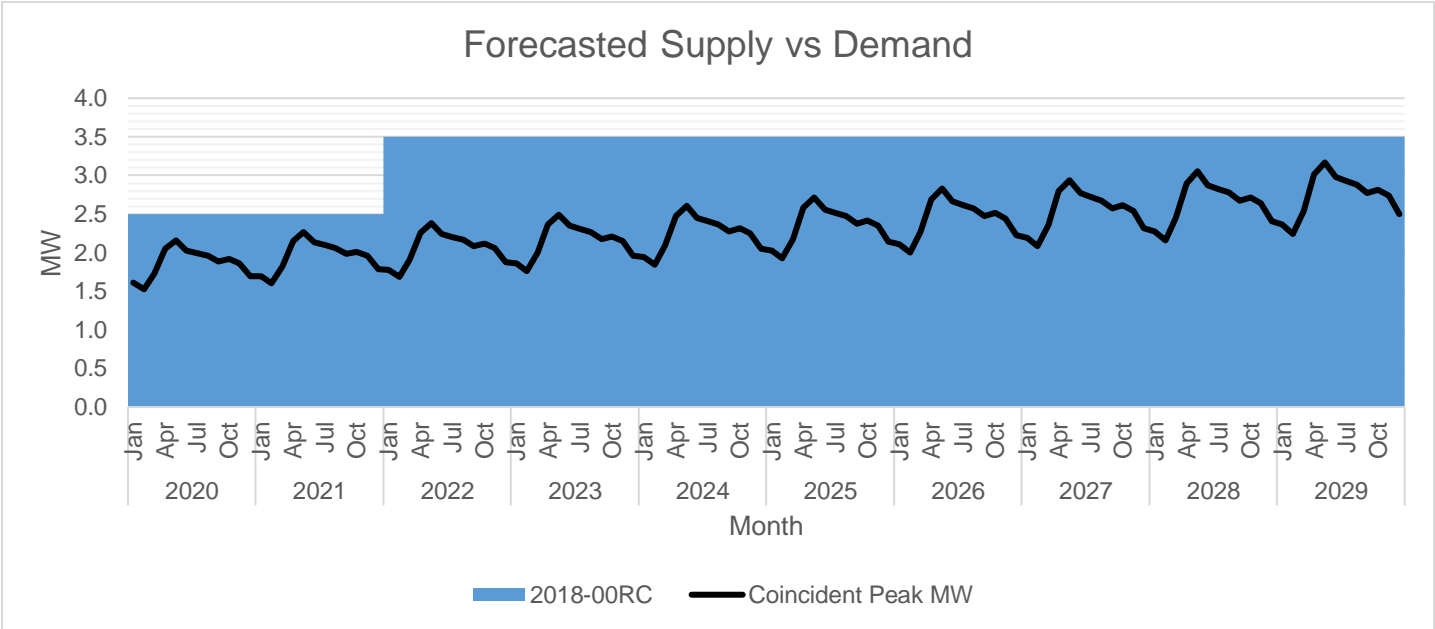


		Coincident Peak MW	Contracted MW	Pending MW	Planned MW	Retail Electricity Suppliers MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
	Aug	2.68	0.00	3.50	0.000		0%	131%	0.83
	Sep	2.57	0.00	3.50	0.000		0%	136%	0.93
	Oct	2.61	0.00	3.50	0.000		0%	134%	0.89
	Nov	2.54	0.00	3.50	0.000		0%	138%	0.96
	Dec	2.32	0.00	3.50	0.000		0%	151%	1.19
2028	Jan	2.28	0.00	3.50	0.000		0%	154%	1.23
	Feb	2.16	0.00	3.50	0.000		0%	162%	1.34
	Mar	2.45	0.00	3.50	0.000		0%	143%	1.05
	Apr	2.90	0.00	3.50	0.000		0%	121%	0.60
	May	3.05	0.00	3.50	0.000		0%	115%	0.45
	Jun	2.87	0.00	3.50	0.000		0%	122%	0.63
	Jul	2.82	0.00	3.50	0.000		0%	124%	0.68
	Aug	2.78	0.00	3.50	0.000		0%	126%	0.72
	Sep	2.67	0.00	3.50	0.000		0%	131%	0.83
	Oct	2.71	0.00	3.50	0.000		0%	129%	0.79
	Nov	2.64	0.00	3.50	0.000		0%	133%	0.86
	Dec	2.40	0.00	3.50	0.000		0%	146%	1.10
2029	Jan	2.36	0.00	3.50	0.000		0%	148%	1.14
	Feb	2.24	0.00	3.50	0.000		0%	156%	1.26
	Mar	2.54	0.00	3.50	0.000		0%	138%	0.96
	Apr	3.01	0.00	3.50	0.000		0%	116%	0.49
	May	3.17	0.00	3.50	0.000		0%	110%	0.33
	Jun	2.98	0.00	3.50	0.000		0%	117%	0.52
	Jul	2.93	0.00	3.50	0.000		0%	119%	0.57
	Aug	2.88	0.00	3.50	0.000		0%	121%	0.62
	Sep	2.77	0.00	3.50	0.000		0%	126%	0.73
	Oct	2.81	0.00	3.50	0.000		0%	124%	0.69
	Nov	2.74	0.00	3.50	0.000		0%	128%	0.76
	Dec	2.50	0.00	3.50	0.000		0%	140%	1.01

The Peak Demand was forecasted using Linear Trend Method of Forecasting. Quezelco II uses Historical Data on this process. Peak Demand was forecasted to occur on the month of May due to summer season. Monthly Peak Demand is at its lowest on the month of February due to rainy season. In general, Peak Demand is expected to grow at a rate of 4.38% annually.



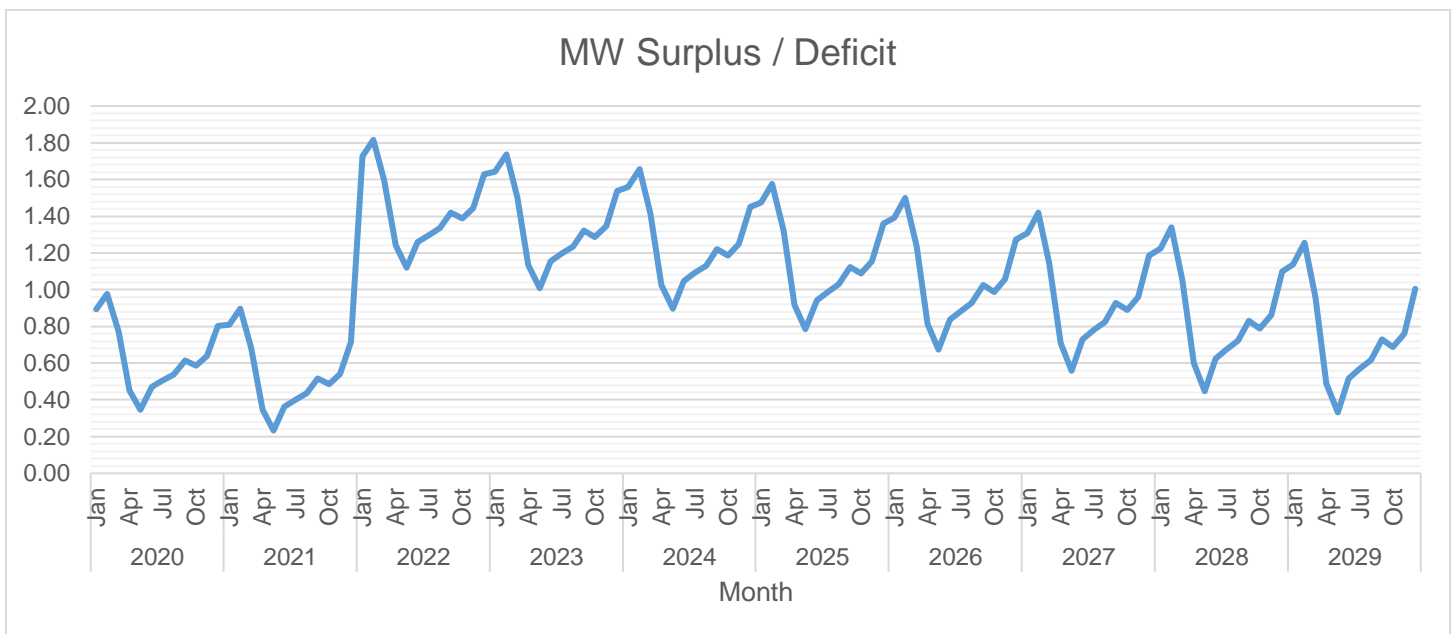
The installed plant capacity is sufficient enough to serve the peak demand of the Island. The available supply is generally above the Peak Demand. This is because of the new Power Plant's installed standby generators.



Of the available supply, the largest is 2.5 MW from year 2020 to 2021. This is followed by 1.5 MW for a total of 3.5 MW from 2022 to 2029. If the load of the Island reach to 80% of the installed capacity, additional 2 MW will be added. This is included in Quezelco II PSA with Renesons Energy Polillo.



The highest target contracting level is 208% from the peak demand which is expected to occur on February 2022. The lowest target contracting level is 110% which is expected to occur on May 2021. However, on these figures the Renesons Energy Polillo were using modular generator sets to address the efficiency issues due to demand related operations.



The highest surplus is 1.82 MW which is expected to occur on the month of February 2022. The lowest surplus is 0.23 MW which is expected to occur on the month of May 2021. However, on these figures the Renesons Energy Polillo were using modular generator sets to address the efficiency issues due to demand related operations.

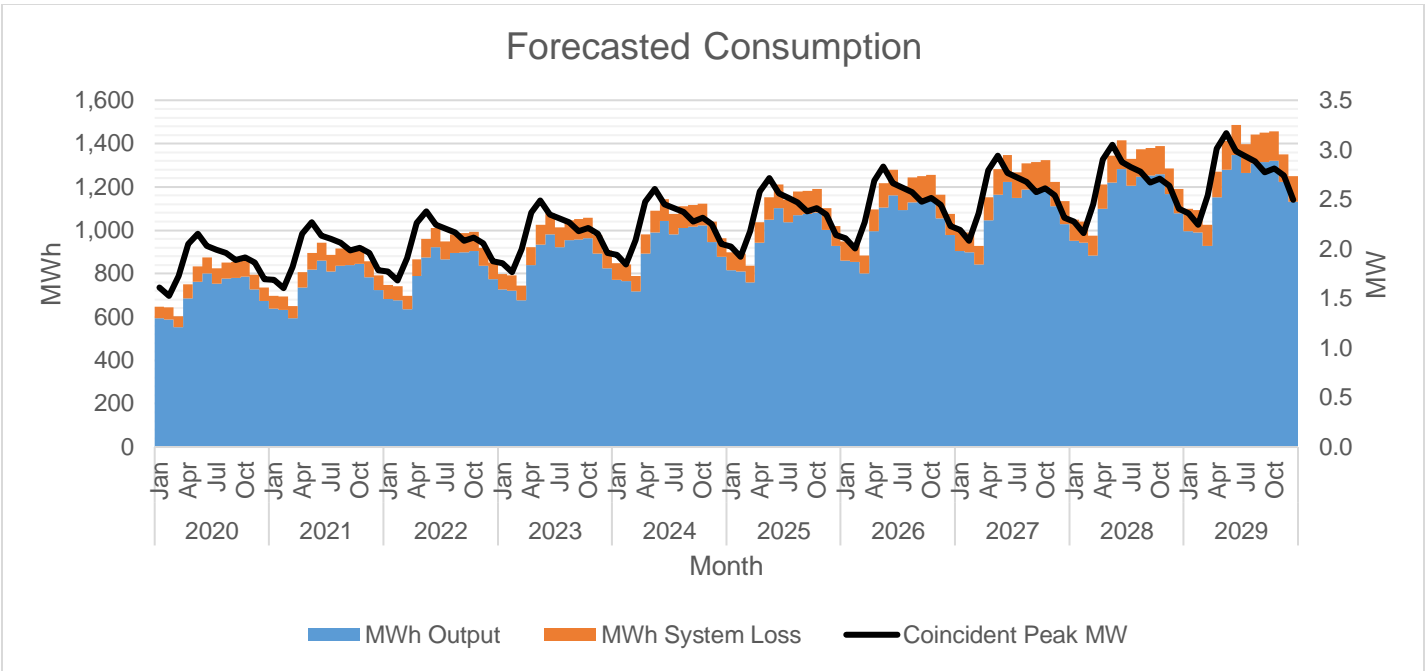
		MWh Offtake	MWh Output	MWh System Loss	Transm'n Loss	System Loss
2020	Jan	648.37	593	55	0.00%	8.55%
	Feb	643.70	589	55	0.00%	8.55%
	Mar	603.94	552	52	0.00%	8.55%
	Apr	749.65	686	64	0.00%	8.55%
	May	832.69	762	71	0.00%	8.55%
	Jun	875.48	801	75	0.00%	8.55%
	Jul	823.32	753	70	0.00%	8.55%
	Aug	850.46	778	73	0.00%	8.55%
	Sep	854.44	781	73	0.00%	8.55%
	Oct	859.35	786	73	0.00%	8.55%
	Nov	795.51	728	68	0.00%	8.55%
	Dec	736.58	674	63	0.00%	8.55%
2021	Jan	698.26	638	61	0.00%	8.69%
	Feb	693.24	633	60	0.00%	8.69%
	Mar	650.41	594	57	0.00%	8.69%
	Apr	807.34	737	70	0.00%	8.69%
	May	896.76	819	78	0.00%	8.69%
	Jun	942.85	861	82	0.00%	8.69%
	Jul	886.68	810	77	0.00%	8.69%
	Aug	915.91	836	80	0.00%	8.69%
	Sep	920.19	840	80	0.00%	8.69%
	Oct	925.48	845	80	0.00%	8.69%
	Nov	856.73	782	74	0.00%	8.69%
	Dec	793.26	724	69	0.00%	8.69%
2022	Jan	748.16	682	66	0.00%	8.81%
	Feb	742.77	677	65	0.00%	8.81%
	Mar	696.89	635	61	0.00%	8.81%
	Apr	865.03	789	76	0.00%	8.81%
	May	960.84	876	85	0.00%	8.81%
	Jun	1,010.22	921	89	0.00%	8.81%
	Jul	950.03	866	84	0.00%	8.81%
	Aug	981.35	895	86	0.00%	8.81%
	Sep	985.94	899	87	0.00%	8.81%
	Oct	991.61	904	87	0.00%	8.81%
	Nov	917.95	837	81	0.00%	8.81%
	Dec	849.94	775	75	0.00%	8.81%
2023	Jan	798.05	727	71	0.00%	8.92%
	Feb	792.31	722	71	0.00%	8.92%
	Mar	743.36	677	66	0.00%	8.92%
	Apr	922.72	840	82	0.00%	8.92%
	May	1,024.92	934	91	0.00%	8.92%
	Jun	1,077.59	981	96	0.00%	8.92%
	Jul	1,013.39	923	90	0.00%	8.92%

		MWh Offtake	MWh Output	MWh System Loss	Transm'n Loss	System Loss
	Aug	1,046.80	953	93	0.00%	8.92%
	Sep	1,051.70	958	94	0.00%	8.92%
	Oct	1,057.74	963	94	0.00%	8.92%
	Nov	979.16	892	87	0.00%	8.92%
	Dec	906.63	826	81	0.00%	8.92%
2024	Jan	847.95	772	76	0.00%	9.01%
	Feb	841.84	766	76	0.00%	9.01%
	Mar	789.84	719	71	0.00%	9.01%
	Apr	980.40	892	88	0.00%	9.01%
	May	1,089.00	991	98	0.00%	9.01%
	Jun	1,144.96	1,042	103	0.00%	9.01%
	Jul	1,076.75	980	97	0.00%	9.01%
	Aug	1,112.24	1,012	100	0.00%	9.01%
	Sep	1,117.45	1,017	101	0.00%	9.01%
	Oct	1,123.87	1,023	101	0.00%	9.01%
	Nov	1,040.38	947	94	0.00%	9.01%
	Dec	963.31	876	87	0.00%	9.01%
2025	Jan	897.84	816	82	0.00%	9.10%
	Feb	891.38	810	81	0.00%	9.10%
	Mar	836.31	760	76	0.00%	9.10%
	Apr	1,038.09	944	94	0.00%	9.10%
	May	1,153.07	1,048	105	0.00%	9.10%
	Jun	1,212.33	1,102	110	0.00%	9.10%
	Jul	1,140.10	1,036	104	0.00%	9.10%
	Aug	1,177.69	1,071	107	0.00%	9.10%
	Sep	1,183.20	1,076	108	0.00%	9.10%
	Oct	1,190.00	1,082	108	0.00%	9.10%
	Nov	1,101.60	1,001	100	0.00%	9.10%
	Dec	1,019.99	927	93	0.00%	9.10%
2026	Jan	947.73	861	87	0.00%	9.17%
	Feb	940.91	855	86	0.00%	9.17%
	Mar	882.79	802	81	0.00%	9.17%
	Apr	1,095.78	995	101	0.00%	9.17%
	May	1,217.15	1,105	112	0.00%	9.17%
	Jun	1,279.70	1,162	117	0.00%	9.17%
	Jul	1,203.46	1,093	110	0.00%	9.17%
	Aug	1,243.13	1,129	114	0.00%	9.17%
	Sep	1,248.95	1,134	115	0.00%	9.17%
	Oct	1,256.13	1,141	115	0.00%	9.17%
	Nov	1,162.81	1,056	107	0.00%	9.17%
	Dec	1,076.67	978	99	0.00%	9.17%
2027	Jan	997.63	905	92	0.00%	9.24%
	Feb	990.45	899	92	0.00%	9.24%

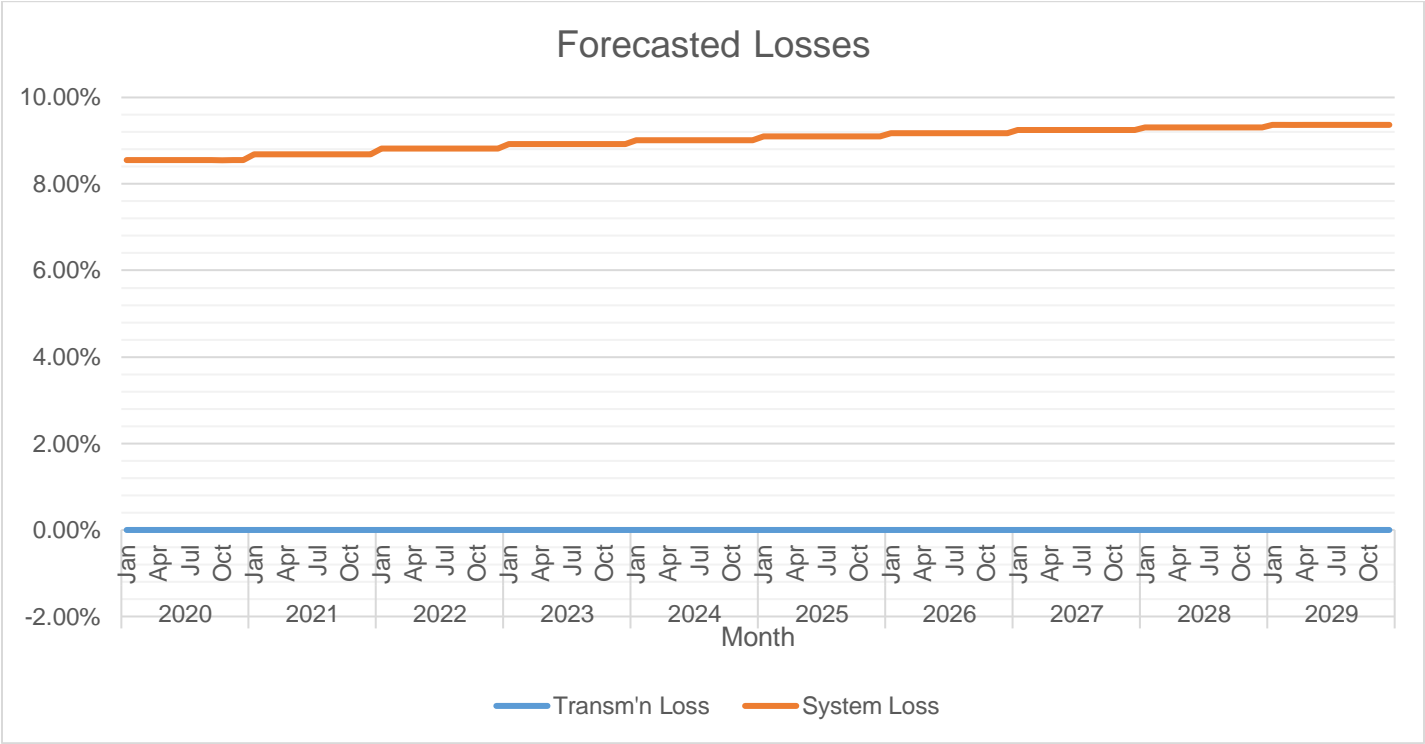
		MWh Offtake	MWh Output	MWh System Loss	Transm'n Loss	System Loss
	Mar	929.26	843	86	0.00%	9.24%
	Apr	1,153.47	1,047	107	0.00%	9.24%
	May	1,281.23	1,163	118	0.00%	9.24%
	Jun	1,347.07	1,223	124	0.00%	9.24%
	Jul	1,266.82	1,150	117	0.00%	9.24%
	Aug	1,308.58	1,188	121	0.00%	9.24%
	Sep	1,314.70	1,193	122	0.00%	9.24%
	Oct	1,322.26	1,200	122	0.00%	9.24%
	Nov	1,224.03	1,111	113	0.00%	9.24%
	Dec	1,133.35	1,029	105	0.00%	9.24%
2028	Jan	1,047.52	950	97	0.00%	9.30%
	Feb	1,039.98	943	97	0.00%	9.30%
	Mar	975.74	885	91	0.00%	9.30%
	Apr	1,211.16	1,098	113	0.00%	9.30%
	May	1,345.30	1,220	125	0.00%	9.30%
	Jun	1,414.44	1,283	132	0.00%	9.30%
	Jul	1,330.17	1,206	124	0.00%	9.30%
	Aug	1,374.02	1,246	128	0.00%	9.30%
	Sep	1,380.45	1,252	128	0.00%	9.30%
	Oct	1,388.39	1,259	129	0.00%	9.30%
	Nov	1,285.25	1,166	120	0.00%	9.30%
	Dec	1,190.03	1,079	111	0.00%	9.30%
2029	Jan	1,099.91	997	103	0.00%	9.36%
	Feb	1,092.00	990	102	0.00%	9.36%
	Mar	1,024.53	929	96	0.00%	9.36%
	Apr	1,271.73	1,153	119	0.00%	9.36%
	May	1,412.58	1,280	132	0.00%	9.36%
	Jun	1,485.18	1,346	139	0.00%	9.36%
	Jul	1,396.70	1,266	131	0.00%	9.36%
	Aug	1,442.74	1,308	135	0.00%	9.36%
	Sep	1,449.49	1,314	136	0.00%	9.36%
	Oct	1,457.82	1,321	137	0.00%	9.36%
	Nov	1,349.52	1,223	126	0.00%	9.36%
	Dec	1,249.55	1,133	117	0.00%	9.36%

MWh Offtake was forecasted using Linear Trend Method of Forecasting based on Historical Data. The assumed load factor is around 48 to 72%.

Quezelco II is on the process of data gathering to segregate system losses to facilitate load flow simulations. The target completion is on June 2020.



MWh Output (Sales) based on Quezelco II forecast was expected to grow at a rate of 5.95% annually.



System Loss is expected to range from 8.55% to 9.36%. Increase is due to continued expansion of electric distribution lines related to Sitio Electrification Program mandated by the Government, NEA and DOE in particular.

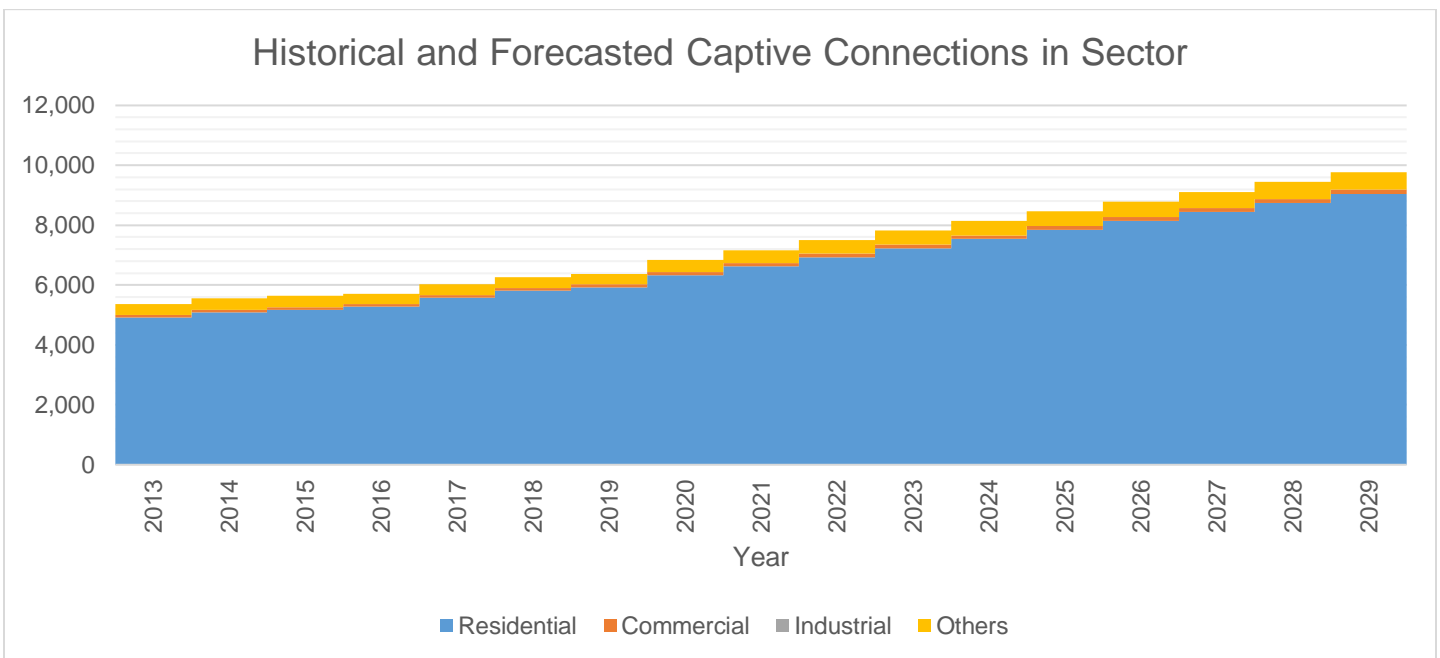


# Power Supply

Case No.	Type	GenCo	Minimum MW	Minimum MWh/yr	PSA Start	PSA End
2018-00RC	Base	Other	2.00	17,520	5/24/2018	5/24/2041

The PSA with Renesons Energy Polillo filed with ERC under Case No. 2018-00RC was conducted through competitive bidding. It was selected to provide for base load requirements due to load characteristics of Quezelco II which is residential in nature.

## Captive Customer Connections



For Polillo, Panukulan, and Burdeos, Quezon, the number of Residential connections is expected to grow at an average rate of 4.33% annually. Said customer class is expected to account for 92.57% of the total consumption.

We acknowledged NEA comments that there are some inconsistencies on QUEZELCO II data particularly on the Historical data. These data were verified and found to be incorrect. We corrected these data for the submission of QUEZELCO II's latest DDP-PSPP 2020.

Prepared by:

**Engr. Vincent E. Villaruel**    **Yvette S. Astrera**  
*OIC – TSD Manager*            *AD Chief*

Approved by:

**Engr. Von Erwin G. Azagra**  
*OIC - General Manager*

