

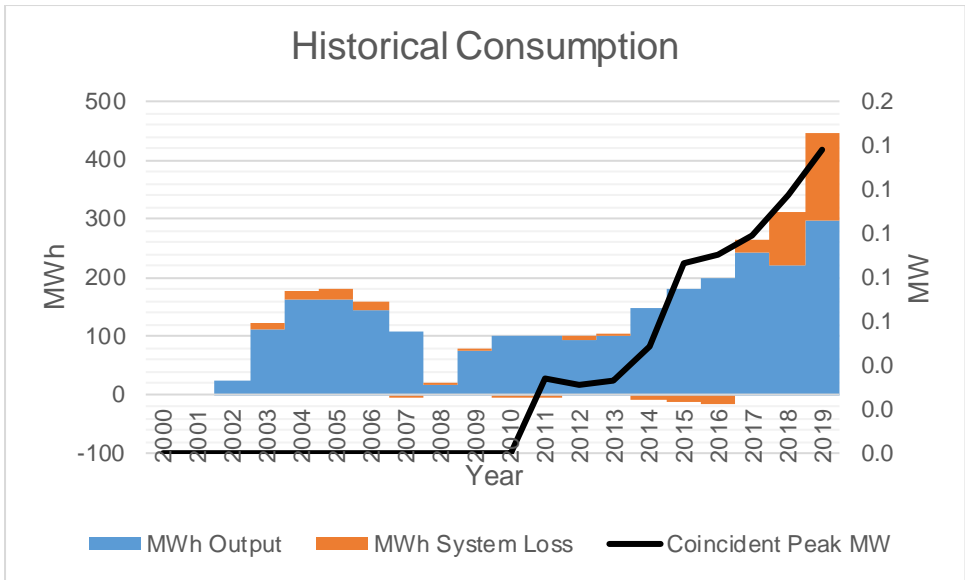
# **Power Supply Procurement Plan 2020**

**ZAMBOANGA CITY ELECTRIC COOPERATIVE, INC.  
(ZAMCELCO)  
SACOL ISLAND**

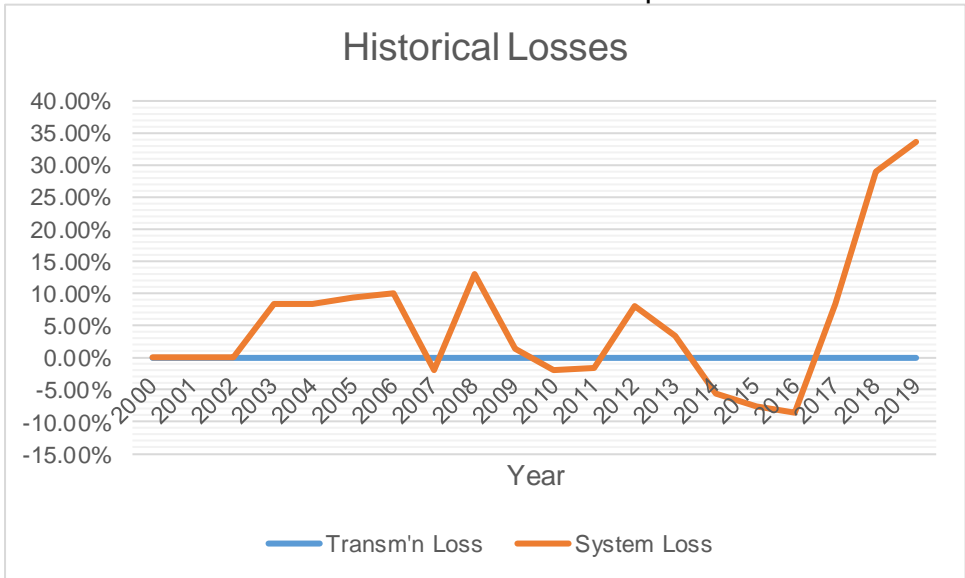
## Historical Consumption Data

	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	25	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2003	0.00	121	0	121	110	10	#DIV/0!	0.00%	0.00%	8.43%
2004	0.00	178	0	178	163	15	#DIV/0!	0.00%	0.00%	8.49%
2005	0.00	180	0	180	163	17	#DIV/0!	0.00%	0.00%	9.30%
2006	0.00	158	0	158	142	16	#DIV/0!	0.00%	0.00%	10.09%
2007	0.00	105	0	105	107	-2	#DIV/0!	0.00%	0.00%	-1.74%
2008	0.00	19	0	19	17	3	#DIV/0!	0.00%	0.00%	13.03%
2009	0.00	76	0	76	74	1	#DIV/0!	0.00%	0.00%	1.52%
2010	0.00	98	0	98	100	-2	#DIV/0!	0.00%	0.00%	-1.94%
2011	0.03	99	0	99	101	-2	34%	0.00%	0.00%	-1.72%
2012	0.03	101	0	101	93	8	37%	0.00%	0.00%	8.10%
2013	0.03	104	0	104	100	3	35%	0.00%	0.00%	3.29%
2014	0.05	133	0	133	146	-7	31%	4.81%	0.00%	-5.48%
2015	0.09	167	0	167	180	-13	22%	0.00%	0.00%	-7.58%
2016	0.09	181	0	181	197	-15	23%	0.00%	0.00%	-8.53%
2017	0.10	264	0	264	242	23	30%	0.05%	0.00%	8.55%
2018	0.12	307	0	307	220	89	30%	0.75%	0.00%	29.11%
2019	0.14	446	0	446	297	150	37%	0.14%	0.00%	33.63%

Peak Demand increased from 0.03 MW in 2011 to 0.14 MW in 2019 at a rate of 0.08% due to high demand consumption. MWh Offtake increased from 121 MWh in 2003 to 446 MWh in 2019 at a rate of 15.48% due to high energy consumption. Within the same period, Load Factor ranged from 22% to 37%. There was an abrupt change in consumption on MWh due to high demand consumption.

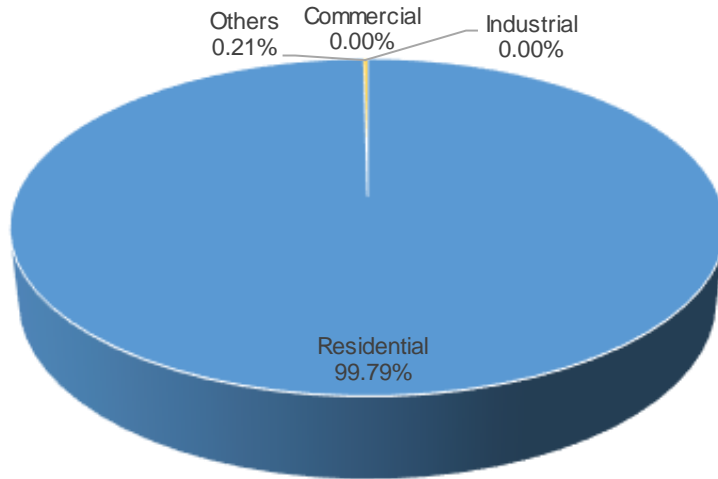


MWh Output increased from year to year 2003 at 2019 a rate of 26.57%, while MWh system loss increased at a rate 6.27% of within the same period.



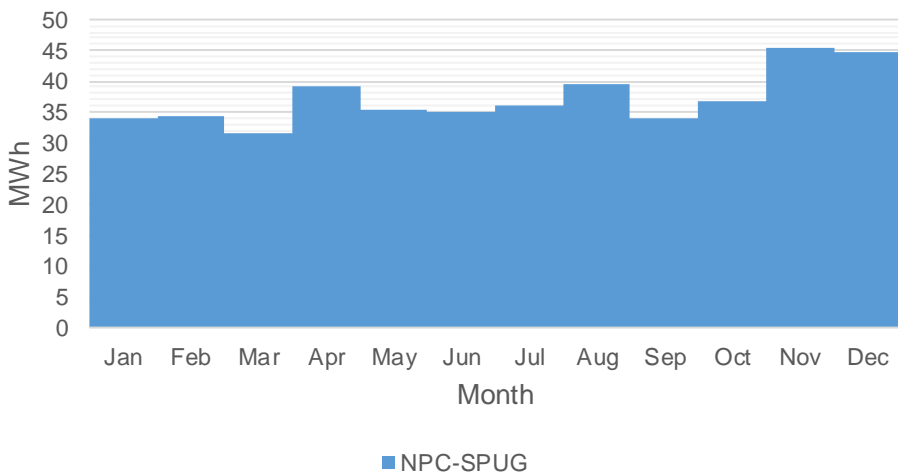
System Loss peaked at 33.63% on year 2019 because of high both technical and non-technical losses.

## Previous Year's Shares of Energy Sales

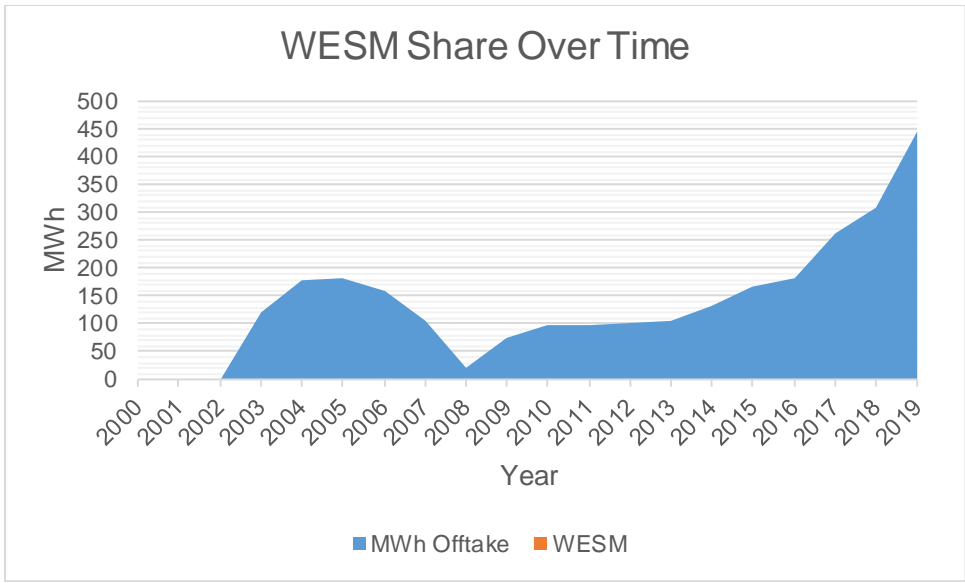


Residential customers account for the bulk of energy sales at 99.79% due to the high number of connections. In contrast, Others (Public Building) customers accounted for only 0.21% of energy sales due to the low number of connections.

## MWh Offtake for Last Historical Year

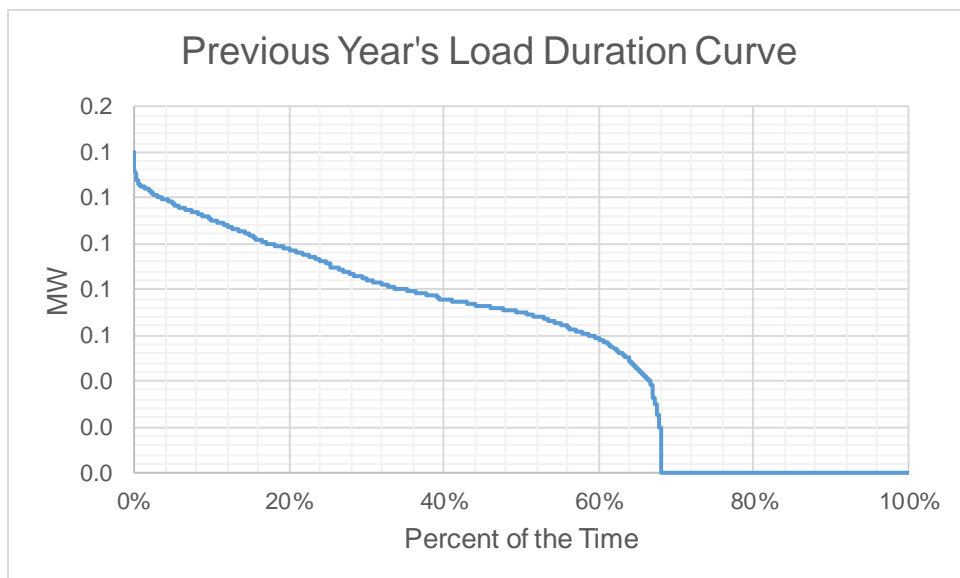


For NPC-SPUG, the total Offtake for the last historical year is lower than the quantity stipulated in the PSA. The PSA with NPC-SPUG accounts for the bulk of MWh Offtake.

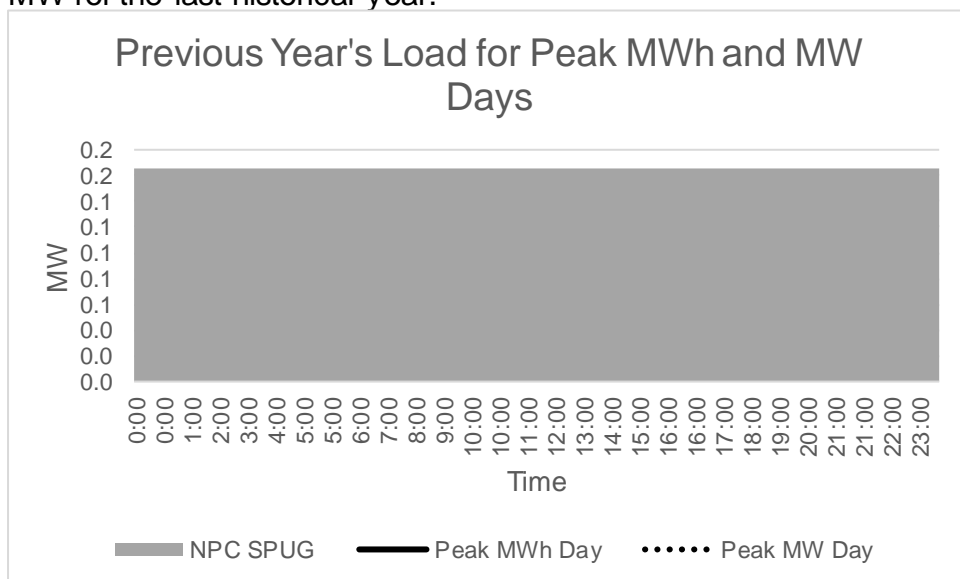


ZAMCELCO is now processing its application to Wholesale Electricity Spot Market.

## Previous Year's Load Profile

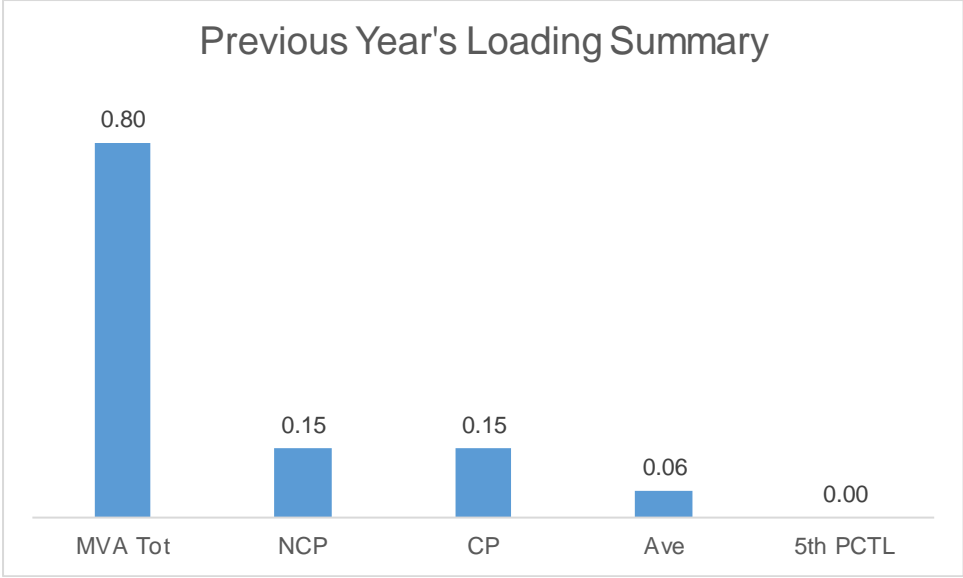


Based on the Load Duration Curve, the minimum load is 0 MW and the maximum load is 0.148 MW for the last historical year.



Peak MW occurred on July 11, 2019 due to high demand consumption. Peak daily MWh occurred on July 13, 2019 due to high energy consumption. 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 0.15 MW, which is around 19.13% of the total substation capacity of 0.8 MVA at a power factor of 98%. The load factor or the ratio between the Average Load of 0.06 MW and the Non-coincident Peak Demand is 40%. 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
Sacol Island	0.8	0.148

The substations will not be loaded above 70% by the year 2029.

## 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	0.16	0.17	0.00	0.000		102%	102%	0.00
	Feb	0.12	0.23	0.00	0.000		188%	188%	0.11
	Mar	0.12	0.18	0.00	0.000		145%	145%	0.06
	Apr	0.12	0.11	0.00	0.000		91%	91%	-0.01
	May	0.12	0.11	0.00	0.000		91%	91%	-0.01
	Jun	0.13	0.25	0.00	0.000		196%	196%	0.12
	Jul	0.12	0.24	0.00	0.000		197%	197%	0.12
	Aug	0.15	0.26	0.00	0.000		178%	178%	0.12
	Sep	0.14	0.26	0.00	0.000		185%	185%	0.12
	Oct	0.14	0.25	0.00	0.000		180%	180%	0.11
	Nov	0.15	0.28	0.00	0.000		187%	187%	0.13
	Dec	0.14	0.23	0.00	0.000		158%	158%	0.08
2021	Jan	0.22	0.19	0.00	0.000		88%	88%	-0.03
	Feb	0.16	0.26	0.00	0.000		161%	161%	0.10
	Mar	0.17	0.21	0.00	0.000		125%	125%	0.04
	Apr	0.16	0.12	0.00	0.000		78%	78%	-0.04
	May	0.17	0.13	0.00	0.000		79%	79%	-0.04
	Jun	0.17	0.29	0.00	0.000		169%	169%	0.12
	Jul	0.16	0.28	0.00	0.000		169%	169%	0.11
	Aug	0.20	0.31	0.00	0.000		153%	153%	0.11
	Sep	0.19	0.30	0.00	0.000		159%	159%	0.11
	Oct	0.19	0.29	0.00	0.000		156%	156%	0.10
	Nov	0.20	0.32	0.00	0.000		160%	160%	0.12
	Dec	0.19	0.26	0.00	0.000		136%	136%	0.07
2022	Jan	0.30	0.22	0.00	0.000		74%	74%	-0.08
	Feb	0.22	0.30	0.00	0.000		136%	136%	0.08
	Mar	0.23	0.24	0.00	0.000		105%	105%	0.01
	Apr	0.22	0.14	0.00	0.000		65%	65%	-0.08



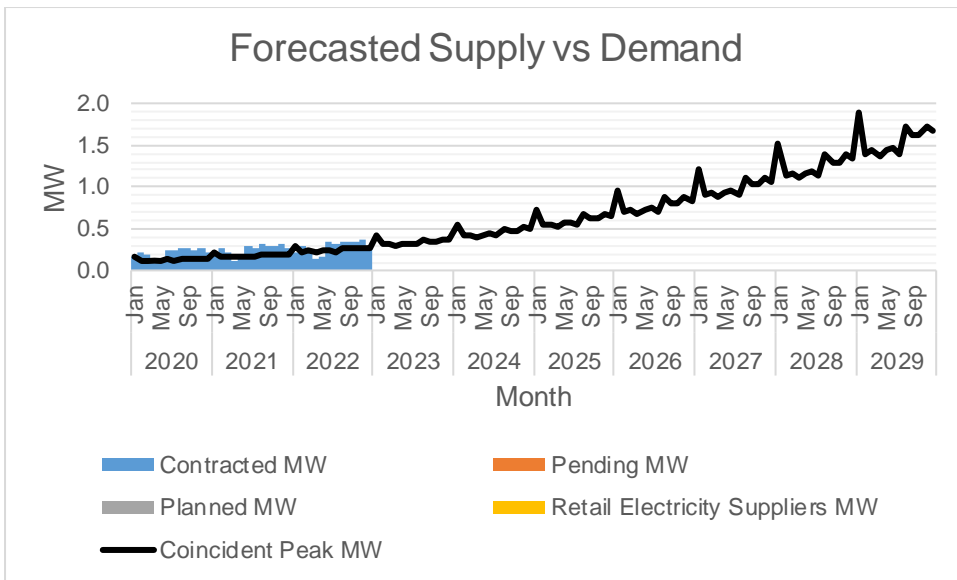
		Coincident Peak MW	Contracted MW	Pending MW	Planned MW	Retail Electricity Suppliers MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
	May	0.23	0.15	0.00	0.000		66%	66%	-0.08
	Jun	0.24	0.34	0.00	0.000		142%	142%	0.10
	Jul	0.22	0.32	0.00	0.000		142%	142%	0.10
	Aug	0.28	0.36	0.00	0.000		128%	128%	0.08
	Sep	0.26	0.34	0.00	0.000		133%	133%	0.09
	Oct	0.26	0.34	0.00	0.000		131%	131%	0.08
	Nov	0.28	0.38	0.00	0.000		135%	135%	0.10
	Dec	0.27	0.30	0.00	0.000		114%	114%	0.04
2023	Jan	0.41	0.00	0.00	0.000		0%	0%	-0.41
	Feb	0.31	0.00	0.00	0.000		0%	0%	-0.31
	Mar	0.31	0.00	0.00	0.000		0%	0%	-0.31
	Apr	0.30	0.00	0.00	0.000		0%	0%	-0.30
	May	0.32	0.00	0.00	0.000		0%	0%	-0.32
	Jun	0.32	0.00	0.00	0.000		0%	0%	-0.32
	Jul	0.31	0.00	0.00	0.000		0%	0%	-0.31
	Aug	0.38	0.00	0.00	0.000		0%	0%	-0.38
	Sep	0.35	0.00	0.00	0.000		0%	0%	-0.35
	Oct	0.35	0.00	0.00	0.000		0%	0%	-0.35
	Nov	0.38	0.00	0.00	0.000		0%	0%	-0.38
	Dec	0.36	0.00	0.00	0.000		0%	0%	-0.36
2024	Jan	0.56	0.00	0.00	0.000		0%	0%	-0.56
	Feb	0.41	0.00	0.00	0.000		0%	0%	-0.41
	Mar	0.42	0.00	0.00	0.000		0%	0%	-0.42
	Apr	0.40	0.00	0.00	0.000		0%	0%	-0.40
	May	0.43	0.00	0.00	0.000		0%	0%	-0.43
	Jun	0.43	0.00	0.00	0.000		0%	0%	-0.43
	Jul	0.41	0.00	0.00	0.000		0%	0%	-0.41
	Aug	0.51	0.00	0.00	0.000		0%	0%	-0.51
	Sep	0.47	0.00	0.00	0.000		0%	0%	-0.47
	Oct	0.47	0.00	0.00	0.000		0%	0%	-0.47

		Coincident Peak MW	Contracted MW	Pending MW	Planned MW	Retail Electricity Suppliers MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
	Nov	0.51	0.00	0.00	0.000		0%	0%	-0.51
	Dec	0.49	0.00	0.00	0.000		0%	0%	-0.49
2025	Jan	0.73	0.00	0.00	0.000		0%	0%	-0.73
	Feb	0.54	0.00	0.00	0.000		0%	0%	-0.54
	Mar	0.56	0.00	0.00	0.000		0%	0%	-0.56
	Apr	0.53	0.00	0.00	0.000		0%	0%	-0.53
	May	0.56	0.00	0.00	0.000		0%	0%	-0.56
	Jun	0.57	0.00	0.00	0.000		0%	0%	-0.57
	Jul	0.54	0.00	0.00	0.000		0%	0%	-0.54
	Aug	0.67	0.00	0.00	0.000		0%	0%	-0.67
	Sep	0.63	0.00	0.00	0.000		0%	0%	-0.63
	Oct	0.63	0.00	0.00	0.000		0%	0%	-0.63
	Nov	0.67	0.00	0.00	0.000		0%	0%	-0.67
	Dec	0.64	0.00	0.00	0.000		0%	0%	-0.64
2026	Jan	0.95	0.00	0.00	0.000		0%	0%	-0.95
	Feb	0.70	0.00	0.00	0.000		0%	0%	-0.70
	Mar	0.72	0.00	0.00	0.000		0%	0%	-0.72
	Apr	0.69	0.00	0.00	0.000		0%	0%	-0.69
	May	0.73	0.00	0.00	0.000		0%	0%	-0.73
	Jun	0.74	0.00	0.00	0.000		0%	0%	-0.74
	Jul	0.70	0.00	0.00	0.000		0%	0%	-0.70
	Aug	0.87	0.00	0.00	0.000		0%	0%	-0.87
	Sep	0.81	0.00	0.00	0.000		0%	0%	-0.81
	Oct	0.81	0.00	0.00	0.000		0%	0%	-0.81
	Nov	0.87	0.00	0.00	0.000		0%	0%	-0.87
	Dec	0.84	0.00	0.00	0.000		0%	0%	-0.84
2027	Jan	1.21	0.00	0.00	0.000		0%	0%	-1.21
	Feb	0.90	0.00	0.00	0.000		0%	0%	-0.90
	Mar	0.92	0.00	0.00	0.000		0%	0%	-0.92
	Apr	0.88	0.00	0.00	0.000		0%	0%	-0.88

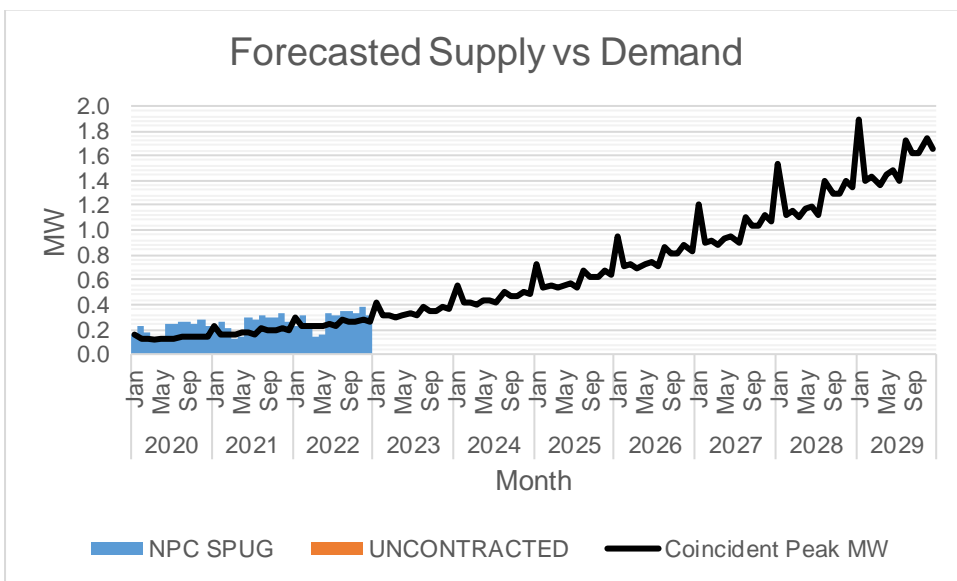
		Coincident Peak MW	Contracted MW	Pending MW	Planned MW	Retail Electricity Suppliers MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
	May	0.93	0.00	0.00	0.000		0%	0%	-0.93
	Jun	0.95	0.00	0.00	0.000		0%	0%	-0.95
	Jul	0.90	0.00	0.00	0.000		0%	0%	-0.90
	Aug	1.11	0.00	0.00	0.000		0%	0%	-1.11
	Sep	1.04	0.00	0.00	0.000		0%	0%	-1.04
	Oct	1.04	0.00	0.00	0.000		0%	0%	-1.04
	Nov	1.11	0.00	0.00	0.000		0%	0%	-1.11
	Dec	1.07	0.00	0.00	0.000		0%	0%	-1.07
2028	Jan	1.53	0.00	0.00	0.000		0%	0%	-1.53
	Feb	1.13	0.00	0.00	0.000		0%	0%	-1.13
	Mar	1.15	0.00	0.00	0.000		0%	0%	-1.15
	Apr	1.10	0.00	0.00	0.000		0%	0%	-1.10
	May	1.17	0.00	0.00	0.000		0%	0%	-1.17
	Jun	1.19	0.00	0.00	0.000		0%	0%	-1.19
	Jul	1.13	0.00	0.00	0.000		0%	0%	-1.13
	Aug	1.39	0.00	0.00	0.000		0%	0%	-1.39
	Sep	1.30	0.00	0.00	0.000		0%	0%	-1.30
	Oct	1.30	0.00	0.00	0.000		0%	0%	-1.30
	Nov	1.40	0.00	0.00	0.000		0%	0%	-1.40
	Dec	1.34	0.00	0.00	0.000		0%	0%	-1.34
2029	Jan	1.89	0.00	0.00	0.000		0%	0%	-1.89
	Feb	1.40	0.00	0.00	0.000		0%	0%	-1.40
	Mar	1.43	0.00	0.00	0.000		0%	0%	-1.43
	Apr	1.36	0.00	0.00	0.000		0%	0%	-1.36
	May	1.45	0.00	0.00	0.000		0%	0%	-1.45
	Jun	1.48	0.00	0.00	0.000		0%	0%	-1.48
	Jul	1.40	0.00	0.00	0.000		0%	0%	-1.40
	Aug	1.73	0.00	0.00	0.000		0%	0%	-1.73
	Sep	1.61	0.00	0.00	0.000		0%	0%	-1.61
	Oct	1.61	0.00	0.00	0.000		0%	0%	-1.61

		Coincident Peak MW	Contracted MW	Pending MW	Planned MW	Retail Electricity Suppliers MW	Existing Contracting Level	Target Contracting Level	MW Surplus / Deficit
	Nov	1.73	0.00	0.00	0.000		0%	0%	-1.73
	Dec	1.66	0.00	0.00	0.000		0%	0%	-1.66

The Peak Demand was forecasted using different methods of load forecasting and was assumed to occur on the month of January 2029 due to high demand consumption. Monthly Peak Demand is at its lowest on the month of February 2020 . In general, Peak Demand is expected to grow at a rate of 3.34% annually.



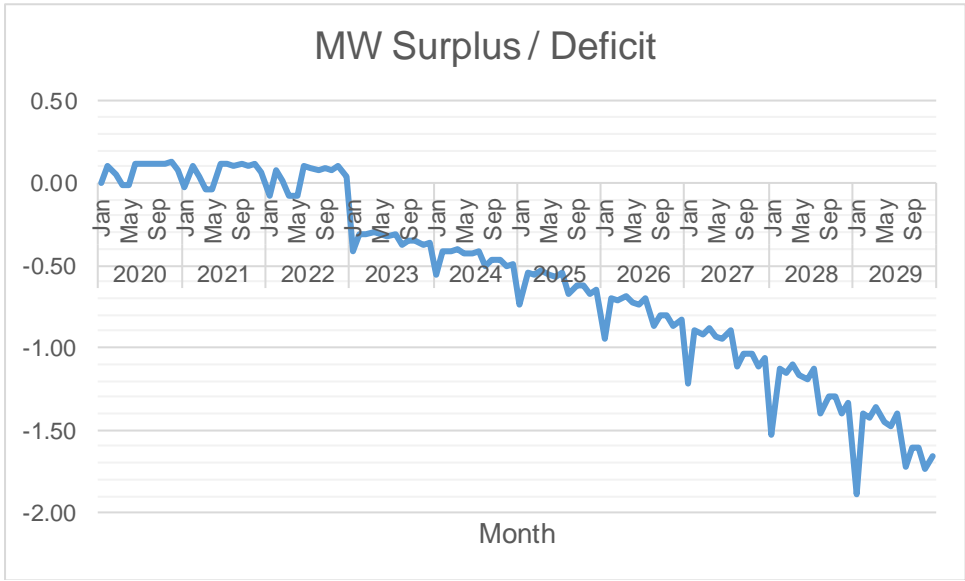
The available supply is generally below the Peak Demand.



Of the available supply, the largest is 0.25 MW from NPC



Currently, there is over-contracting by 6%. The highest target contracting level is 197 % which is expected to occur on June 2020. The lowest target contracting level is 0% which is expected to occur after the expiration of PSA.



Currently, there is over-contracting by 0.06 MW. The highest deficit is -1.89 MW which is expected to occur on the month of January 2029. The lowest deficit 0.13 MW which is expected to occur on the month of November 2020.

		MWh Offtake	MWh Output	MWh System Loss	Transm'n Loss	System Loss
2020	Jan	39	26	13	0.87%	32.95%
	Feb	39	31	9	-0.94%	21.94%
	Mar	36	30	7	-1.97%	18.26%
	Apr	45	31	13	0.43%	30.11%
	May	40	33	8	-1.37%	19.98%
	Jun	40	30	10	-0.40%	25.36%
	Jul	41	29	13	0.33%	30.64%
	Aug	45	31	14	0.61%	30.78%
	Sep	39	29	10	-0.50%	25.94%
	Oct	42	29	13	0.21%	30.26%
	Nov	52	32	19	1.89%	37.43%

		MWh Offtake	MWh Output	MWh System Loss	Transm'n Loss	System Loss
	Dec	51	35	16	-0.07%	32.02%
2021	Jan	45	30	15	0.87%	32.95%
	Feb	45	36	10	-0.94%	21.94%
	Mar	41	35	8	-1.97%	18.26%
	Apr	52	36	15	0.43%	30.11%
	May	46	38	9	-1.37%	19.98%
	Jun	46	35	12	-0.40%	25.36%
	Jul	48	33	15	0.33%	30.64%
	Aug	52	36	16	0.61%	30.78%
	Sep	45	33	12	-0.50%	25.94%
	Oct	48	34	15	0.21%	30.26%
	Nov	60	37	22	1.89%	37.43%
	Dec	59	40	19	-0.07%	32.02%
2022	Jan	51	34	17	0.87%	32.95%
	Feb	52	41	12	-0.94%	21.94%
	Mar	48	40	9	-1.97%	18.26%
	Apr	59	41	18	0.43%	30.11%
	May	54	43	11	-1.37%	19.98%
	Jun	53	40	14	-0.40%	25.36%
	Jul	55	38	17	0.33%	30.64%
	Aug	60	41	18	0.61%	30.78%
	Sep	52	38	13	-0.50%	25.94%
	Oct	56	39	17	0.21%	30.26%
	Nov	69	42	25	1.89%	37.43%
	Dec	68	46	22	-0.07%	32.02%
2023	Jan	63	42	21	0.92%	32.95%
	Feb	64	50	14	-0.88%	21.94%
	Mar	58	49	11	-1.91%	18.26%
	Apr	73	51	22	0.49%	30.11%
	May	65	53	13	-1.31%	19.98%
	Jun	65	49	17	-0.34%	25.36%
	Jul	67	46	20	0.38%	30.64%
	Aug	74	51	22	0.66%	30.78%
	Sep	63	47	16	-0.45%	25.94%
	Oct	68	47	21	0.27%	30.26%
	Nov	84	52	31	1.95%	37.43%
	Dec	83	56	27	-0.02%	32.02%
2024	Jan	71	47	23	0.91%	32.95%
	Feb	73	57	16	-0.90%	21.94%
	Mar	66	55	12	-1.92%	18.26%
	Apr	82	57	25	0.48%	30.11%
	May	74	60	15	-1.32%	19.98%
	Jun	74	55	19	-0.35%	25.36%
	Jul	76	52	23	0.37%	30.64%
	Aug	83	57	26	0.65%	30.78%
	Sep	71	53	19	-0.46%	25.94%
	Oct	77	54	23	0.26%	30.26%

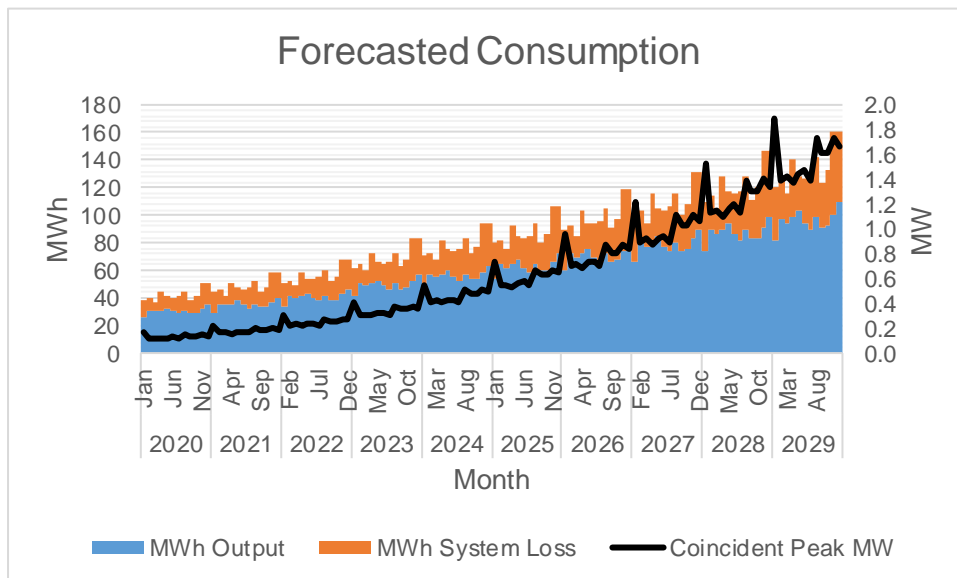
		MWh Offtake	MWh Output	MWh System Loss	Transm'n Loss	System Loss
	Nov	96	59	35	1.94%	37.43%
	Dec	94	64	30	-0.03%	32.02%
2025	Jan	80	53	26	0.85%	32.95%
	Feb	82	64	18	-0.96%	21.94%
	Mar	74	62	14	-1.99%	18.26%
	Apr	93	65	28	0.42%	30.11%
	May	84	68	17	-1.38%	19.98%
	Jun	83	62	21	-0.41%	25.36%
	Jul	86	59	26	0.31%	30.64%
	Aug	94	65	29	0.59%	30.78%
	Sep	80	60	21	-0.52%	25.94%
	Oct	87	61	26	0.20%	30.26%
	Nov	108	66	40	1.88%	37.43%
	Dec	106	72	34	-0.09%	32.02%
2026	Jan	90	60	29	0.84%	32.95%
	Feb	91	72	20	-0.97%	21.94%
	Mar	83	69	16	-2.00%	18.26%
	Apr	104	72	31	0.41%	30.11%
	May	93	76	19	-1.39%	19.98%
	Jun	93	70	24	-0.42%	25.36%
	Jul	96	66	29	0.30%	30.64%
	Aug	105	72	32	0.58%	30.78%
	Sep	90	67	23	-0.53%	25.94%
	Oct	97	68	29	0.19%	30.26%
	Nov	121	74	44	1.87%	37.43%
	Dec	118	80	38	-0.10%	32.02%
2027	Jan	100	66	33	0.87%	32.95%
	Feb	102	80	23	-0.94%	21.94%
	Mar	93	77	17	-1.97%	18.26%
	Apr	116	80	35	0.43%	30.11%
	May	104	84	21	-1.36%	19.98%
	Jun	104	78	26	-0.40%	25.36%
	Jul	107	74	33	0.33%	30.64%
	Aug	117	81	36	0.61%	30.78%
	Sep	100	75	26	-0.50%	25.94%
	Oct	108	75	33	0.21%	30.26%
	Nov	134	82	49	1.90%	37.43%
	Dec	132	90	42	-0.07%	32.02%
2028	Jan	111	74	36	0.86%	32.95%
	Feb	113	89	25	-0.95%	21.94%
	Mar	103	86	19	-1.98%	18.26%
	Apr	128	89	38	0.42%	30.11%
	May	115	93	23	-1.38%	19.98%
	Jun	115	86	29	-0.41%	25.36%
	Jul	118	82	36	0.32%	30.64%
	Aug	130	89	40	0.60%	30.78%
	Sep	111	83	29	-0.51%	25.94%



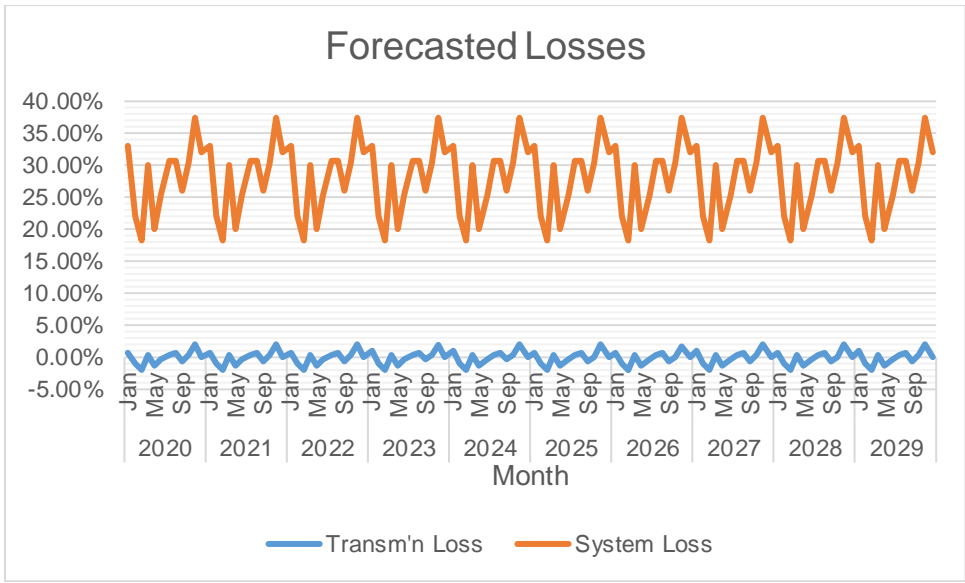
		MWh Offtake	MWh Output	MWh System Loss	Transm'n Loss	System Loss
	Oct	120	84	36	0.20%	30.26%
	Nov	149	91	55	1.88%	37.43%
	Dec	146	99	47	-0.09%	32.02%
2029	Jan	122	81	40	0.87%	32.95%
	Feb	124	98	28	-0.94%	21.94%
	Mar	113	94	21	-1.97%	18.26%
	Apr	141	98	42	0.44%	30.11%
	May	127	103	26	-1.36%	19.98%
	Jun	126	95	32	-0.40%	25.36%
	Jul	130	90	40	0.33%	30.64%
	Aug	143	98	44	0.61%	30.78%
	Sep	122	91	32	-0.50%	25.94%
	Oct	132	92	40	0.21%	30.26%
	Nov	164	101	60	1.90%	37.43%
	Dec	161	109	51	-0.07%	32.02%

MWh Offtake was forecasted using different methods of forecasting. The assumed load factor is 65%.

System Loss was calculated through a Load Flow Study conducted using synergy 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 14% annually



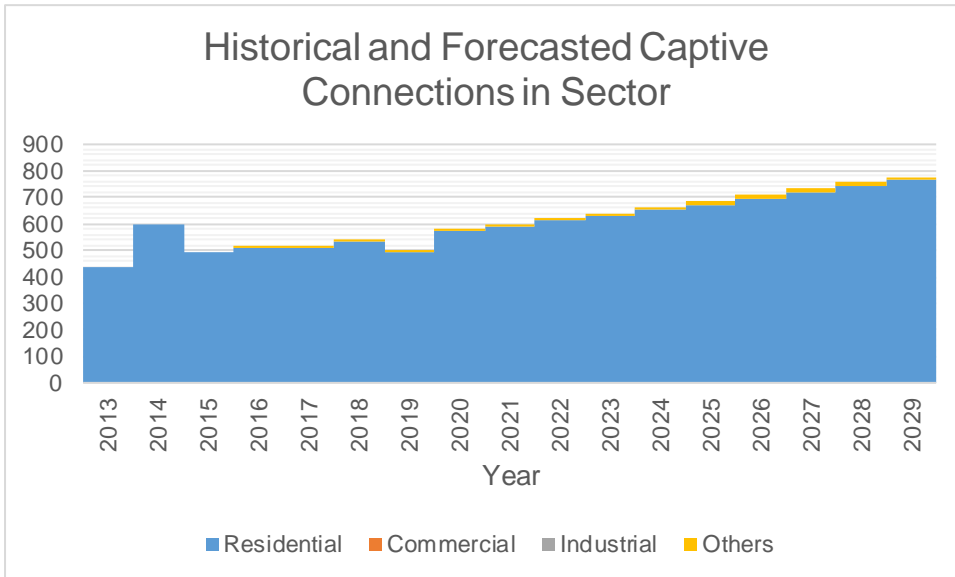
system Loss is expected to range from 18.26% to 37.43%.

## Power Supply

Case No.	Type	GenCo	Minimum MW	Minimum MWh/yr	PSA Start	PSA End
NPC SPUG	Base	National Power Corporation			12/26/2018	12/25/2022
UNCONTRACTED	Base	Other			12/26/2022	12/25/2029

The PSA with National Power Corporation filed with ERC. It was selected to provide for base requirements due to capacity to serve the off grid consumers. Historically, the utilization of the PSA is 60%. Outages of the plant led to unserved energy of around 295.03 MWh in the past year. The actual billed overall monthly charge under the PSA ranged from 4.7514 P/kWh to 4.8024 P/KWh in the same period.

## Captive Customer Connections



The number of Residential connections is expected to grow at a rate of 3.50% annually. Said customer class is expected to account for 99.79% of the total consumption.

The number of Residential connections is expected to grow at a rate of 3.82% annually. Said customer class is expected to account for 0.21% of the total consumption.