

## POWER SUPPLY PROCUREMENT PLAN

### FIRST LAGUNA ELECTRIC COOPERATIVE, INC. (FLECO)

In compliance with the Department of Energy's (DOE) Department Circular No. DC 2018-02-0003, "Adopting and Prescribing the Policy for the Competitive Selection Process in the Procurement by the Distribution Utilities of Power Supply Agreement for the Captive Market" or the Competitive Selection process (CSP) Policy, the Power Supply Procurement Plan (PSPP) Report is hereby created, pursuant to the Section 4 of the said Circular.

The PSPP refers to the DUs' plan for the acquisition of a variety of demand-side and supply-side resources to cost-effectively meet the electricity needs of its customers. The PSPP is an integral part of the Distribution Utilities' Distribution Development Plan (DDP) and must be submitted to the Department of Energy with supported Board Resolution and/or notarized Secretary's Certificate.

The Third-Party Bids and Awards Committee (TPBAC), Joint TPBAC or Third Party Auctioneer (TPA) shall submit to the DOE and in the case of Electric Cooperatives (ECs), through the National Electrification Administration (NEA) the following:

- a. Power Supply Procurement Plan;
- b. Distribution Impact Study/ Load Flow Analysis conducted that served as the basis of the Terms of Reference; and
- c. Due diligence report of the existing generation plant

All Distribution Utilities' shall follow and submit the attached report to the Department of Energy for posting on the DOE CSP Portal. For ECs such reports shall be submitted to DOE and NEA. The NEA shall review the submitted report within ten (10) working days upon receipt prior to its submission to DOE for posting at the DOE CSP Portal.

The content of the PSPP shall be consistent with the DDP. The tables and graph format to be use on the PSPP report is provided on the following sheets. Further, the PSPP shall contain the following sections:

- i. Table of Contents
- II. Introduction
- III. Energy and Demand Forecast (10 year historical and forecast)
- IV. Energy Sales and Purchase
- V. Daily Load Profile and Load Duration Curve
- VI. Existing Contracts & Existing GenCos due diligence report
- VII. Currently approved SAGR for Off-Grid ECs to be passed-on to consumers;
- VIII. DU's Current Supply and Demand
- IX. Distribution Impact Study
- X. Schedule of Power Supply Procurement
- XI. Timeline of the CSP

For inquiries, you may send it at [doe.csp@gmail.com](mailto:doe.csp@gmail.com) or you may contact us through telephone numbers (02) 840-2173 and (02) 479-2900 local 202.

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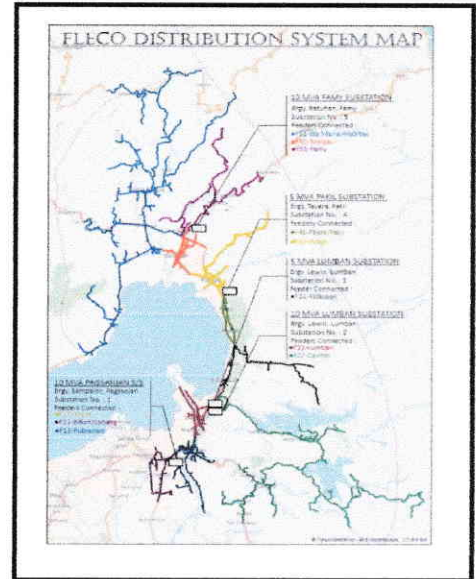
- I. Introduction
- II. Energy Sales and Purchase (10 year historical and forecast)
- III. Demand (10 year historical and forecast)
- IV. Load Profile and Load Curve
- V. Power Supply Contracts
- VI. Proposed CSP Schedule
- VII. Distribution Impact Study
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## INTRODUCTION

### DISTRIBUTION UTILITIES PROFILE

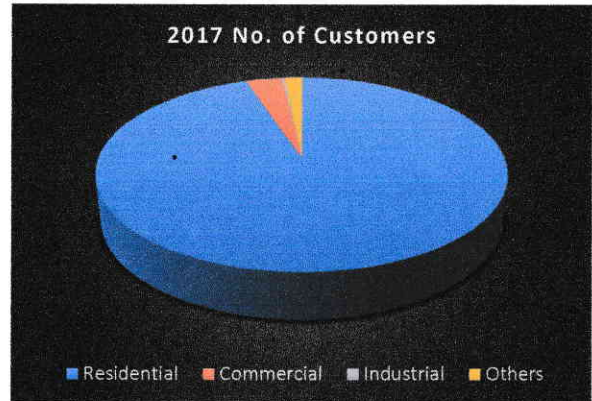
The First Laguna Electric Cooperative, Inc. (FLECO) was incorporated and registered with the National Electrification Administration (NEA) on April 3, 1973, under Presidential Decree 269. The Operation of FLECO commenced on September 1, 1973, when it took-over the 7 private electric franchises and municipal systems. Initially, FLECO contracted a loan with NEA used chiefly as payment for taken-over private systems, rehabilitation of old lines and service expansion.

At present, FLECO provides electricity to 11 of the 16 municipalities in the 4th District of Laguna and has attained the 100% energization of the 164 barangays in its coverage area. The municipalities under the FLECO franchise area include Cavinti, Pagsanjan, Lumban, Kalayaan, Paete, Pakil, Pangil, Siniloan, Mabitac, Famy and Sta. Maria, all located in the northeastern part of the Province of Laguna, covering about 571 square kilometers.



Number of Customer Connections in Franchise	ACTUAL	FORECAST									
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	64,505	66,327	68,169	70,034	71,923	73,839	75,784	77,760	79,769	81,814	83,774
Commercial	2,335	2,402	2,470	2,539	2,608	2,678	2,750	2,822	2,896	2,971	3,047
Industrial	167	172	177	182	187	192	197	202	207	212	218
Others	1,064	1,095	1,126	1,157	1,189	1,221	1,253	1,286	1,320	1,354	1,389
Contestable Customers served by RES											
Total (Captive Customers)	68,071	69,996	71,942	73,912	75,907	77,930	79,984	82,070	84,192	86,351	88,428

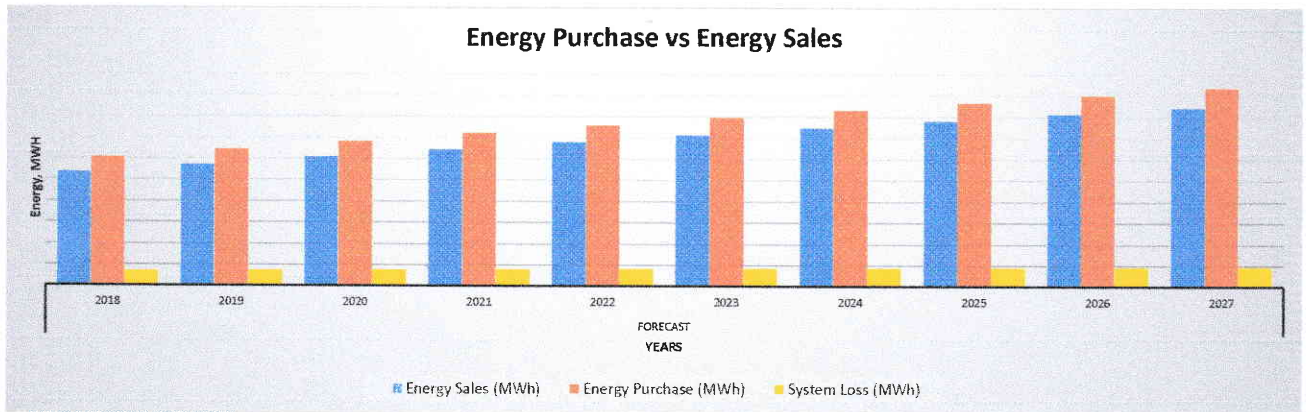
Presently, FLECO's billed consumers are 94.76% residential as compared to 3.43% commercial, 1.56% public buildings and 0.25% industrial. Although the projected demand increase is still dominated by the number of billed residential consumers, establishment of big load consumers are also expected.



**ENERGY SALES AND PURCHASE**

ENERGY SALES AND PURCHASE	HISTORICAL									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Energy Sales (MWh)	56,555	63,432	68,983	68,351	72,225	77,087	79,605	85,169	94,806	99,431
Energy Purchase (MWh)	74,927	77,009	80,994	78,836	83,444	88,797	90,584	97,694	108,394	113,002
System Loss (MWh)	18,787	14,163	12,011	10,484	11,219	11,710	10,978	12,525	13,588	13,571

ENERGY SALES AND PURCHASE	FORECAST									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Energy Sales (MWh)	106,659	113,924	121,146	128,281	135,311	142,212	148,981	155,611	162,116	168,488
Energy Purchase (MWh)	120,754	128,530	136,242	143,858	151,353	158,709	165,914	172,982	179,902	186,972
System Loss (MWh)	14,094	14,606	15,096	15,576	16,042	16,496	16,933	17,371	17,786	18,485



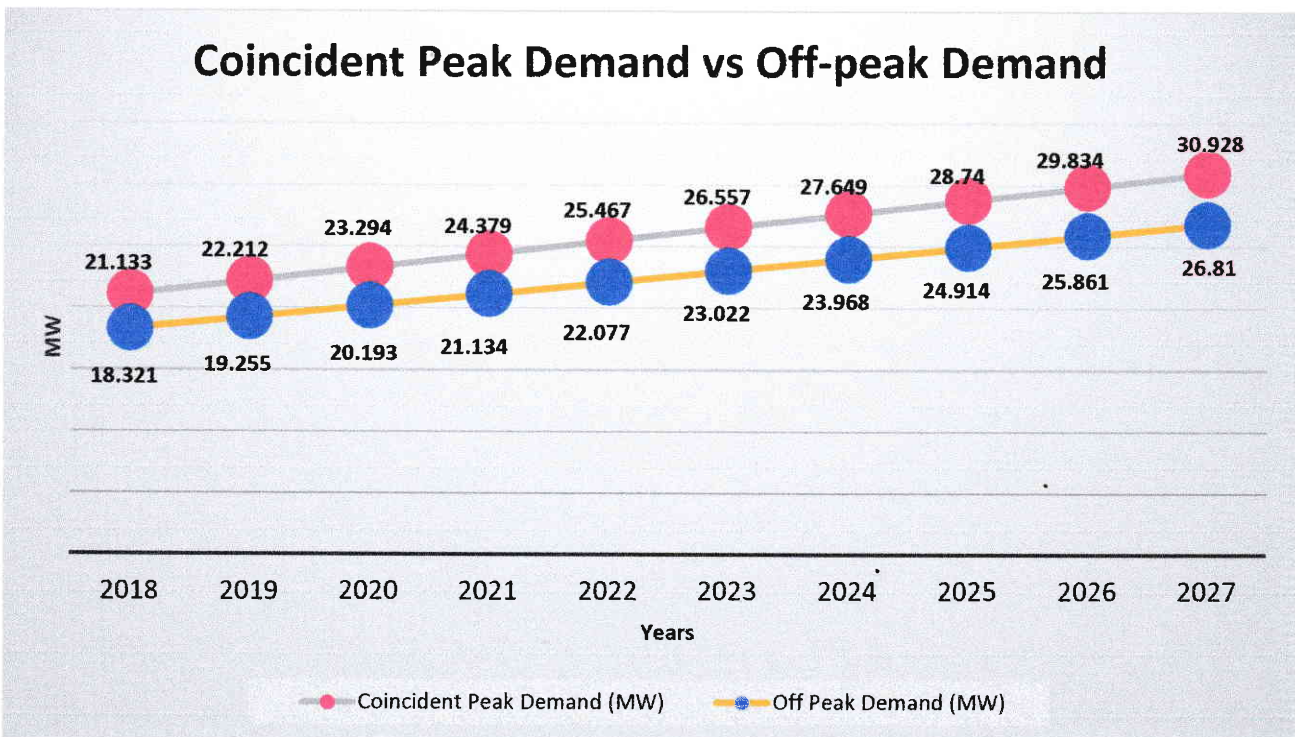
Since 2014, the 14MW energy requirement of FLECO is being supplied by GNPowder Mariveles Coal Plant, Ltd. (GMCP) with a 15 year long term contract, the deficit in the supply are temporarily drafted from the WESM until the approval of the additional 5-10MW capacity from SMC's LIMAY PREMIER POWER CORP (SMC). The additional capacity was considered in order to address the deficit in energy requirement due to the continuous increase in demand and to lessen market exposure.



## DEMAND

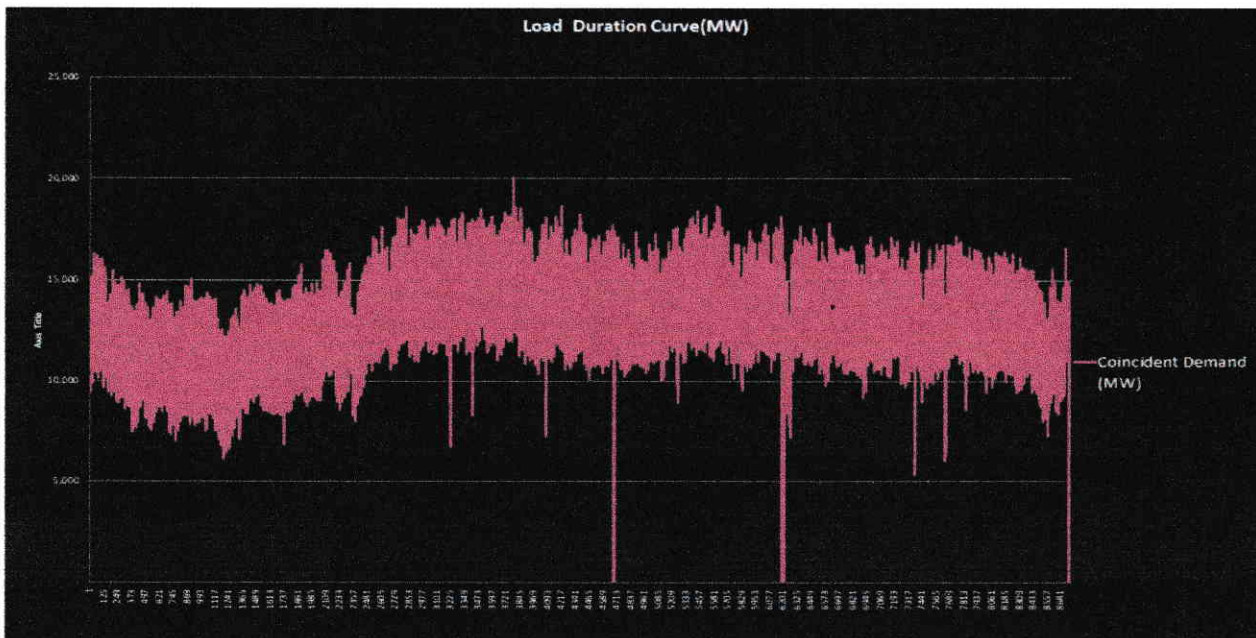
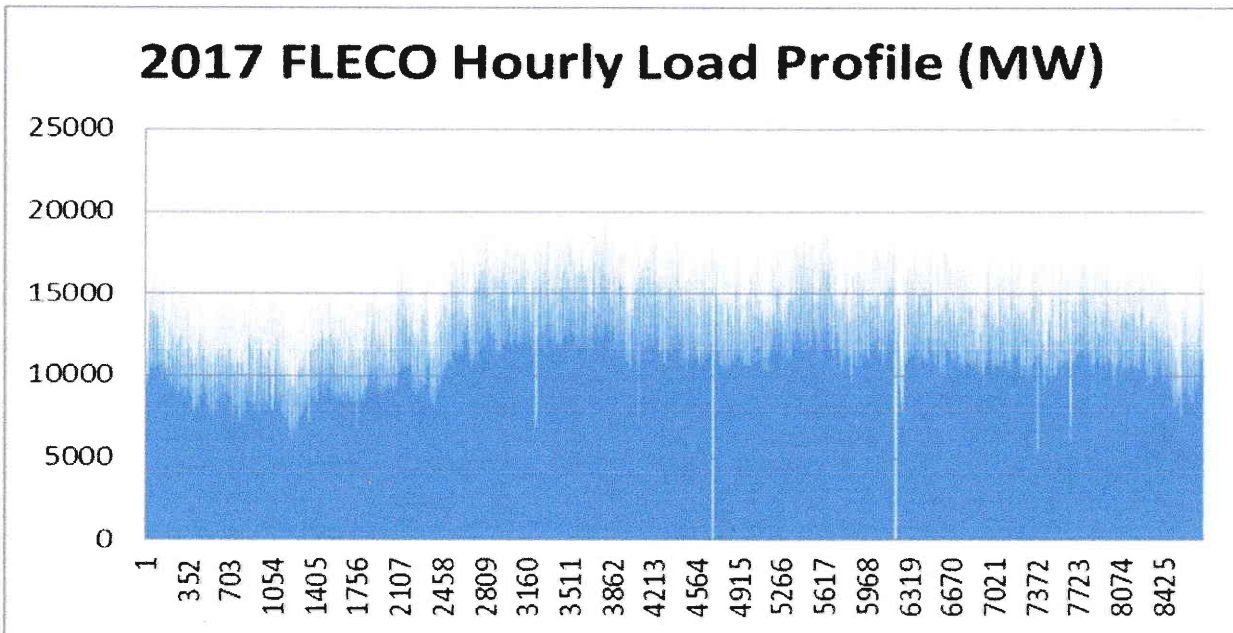
Demand	HISTORICAL									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Coincident Peak Demand (MW)	13.62	13.93	14.41	14.79	14.91	16.16	16.8	17.76	18.8	20.06
Off Peak Demand (MW)	13.43	13.48	13.82	13.87	13.9	14.12	15.1	15.34	15.89	17.76

Demand	FORECAST									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Coincident Peak Demand (MW)	21.13	22.21	23.29	24.38	25.47	26.56	27.65	28.74	29.83	30.93
Off Peak Demand (MW)	18.32	19.26	20.19	21.13	22.08	23.02	23.97	24.91	25.86	26.81



FLECO is using a Linear with Smoothing forecasting method with a seven year historical data. Forecasted demand for the years 2018 onwards indicates an increasing growth of 4.4% that can be attributed to the establishments of some commercial and industrial buildings in the year 2017.

**LOAD PROFILE AND LOAD DURATION CURVE**

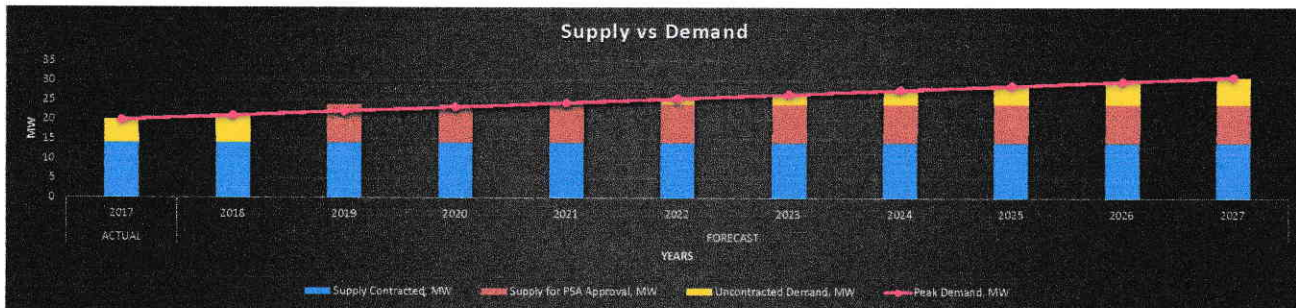


Based on the load curve above, FLECO's peak load is at 20MW, mid-merit at 13.5MW and a base load of 7MW.



**MIXSUPPLY VS DEMAND AND THE OPTIMAL SUPPLY**

Supply Demand	ACTUAL	FORECAST									
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<b>Peak Demand, MW</b>	20.063	21.133	22.212	23.294	24.379	25.467	26.557	27.649	28.74	29.834	30.928
<b>Supply Contracted, MW</b>	14	14	14	14	14	14	14	14	14	14	14
GNPower Mariveles Coal Plant Ltd. Co.	14	14	14	14	14	14	14	14	14	14	14
<b>Supply for PSA Approval, MW</b>	0	0	10	10	10	10	10	10	10	10	10
LIMAY PREMIER POWER CORP (SMC) SMW - 10 MW			10	10	10	10	10	10	10	10	10
<b>Uncontracted Demand, MW</b>	6.063	7.133	0	0	0.379	1.467	2.557	3.649	4.74	5.834	6.928



**List of Existing Contracts and Details**

Supply Contracted	Plant Owner/ Operator	Capacity Factor	PSA Effectivity (MM/YR)	PSA Expiration (MM/YR)	Contracted Capacity, MW	Contracted Energy, MWH	Base / Mid-merit / Peaking	Embedded / Grid Connected	Utility-owned / NPC / IPP / NPC-IPP	Status	Fuel Type	Installed Capacity (MW)	Net Dependable Capacity (MW)
GNPower Mariveles Coal Plant Ltd. Co.	John Anthony Becker		2014	2029	14	81,743	0	0	0		COAL	600	
GenCo 2													
GenCo 3													
GenCo 4													
GenCo 5													

GMCP supplied the 14MW requirement of FLECO and the uncontracted energy was drafted from WESM until the ERC approval of the 10MW SMC Power Supply Agreement. GMCP maintenance shutdowns were also scheduled annually during the months of February and March. The table above shows that the supply requirement level will generally improve once the SMC PSA has been approved. FLECO is also entitled to request additional contract capacity from SMC if there is an increase in the yearly demand not exceeding its maximum capacity of 10MW.





## DISTRIBUTION IMPACT STUDY

The total MVA capacity of FLECO is now at 40 MVA. It has 5 substations which are Pagsanjan, Lumban 1 & 2, Pakil and Famy substation and consist of 11 feeders. The forecasted increased of loads were compared to the existing installed capacity of the existing system. The forecasted demand at 90% power factor was then allocated based on the historical demand of per substation and then compared to the rated (ONAF) capacity (MVA) of per substation. At present, the 10MVA Pagsanjan, 10MVA Lumban 1 and 5MVA Lumban 2 Substation has a loading of 41.09%, 39.65% and 29.35% respectively. These substations have ideal stage of loading and will be sufficient to accommodate the load growth for the coming years. While the 5MVA Pakil Substation is loaded at 77.24%, it has a plan for upgrading to 10MVA capacity for the coming year 2019. The 10MVA Famy Substation serving three(3) feeders is also loaded at 80.46% and has a plan for upgrading to 20MVA capacity by the year 2020.

As per the Distributor's Compliance

Monitoring Report to the Philippine Distribution Code, 53 out of 97 reportorial documents were fully complied by FLECO for the year 2017. Some of the remaining non-compliant documents were not yet submitted because of unavailability of data/records and on-going establishment of procedure for each criteria.

## 10 Year Monthly Data

Year	Forecast			Contracted and For PSA Approval Demand and Energy		Uncontracted Demand and Energy		Committed for CSP	
	Coincident Peak Demand (MW)	Off Peak Demand (MW)	Energy Requirement (MWh)	Demand (MW)	Energy (MWh)	Uncontracted Demand (MW)	Uncontracted Energy (MWh)	Demand (MW)	Energy (MWh)
2018									
Jan	16.67	13.47	8,971	14.00	6,958.00	2.67	2,013.00		
Feb	16.85	13.13	8,301	14.00	6,746.00	2.85	1,555.00		
Mar	17.29	13.24	8,282	14.00	6,323.00	3.29	1,959.00		
Apr	18.93	15.33	10,503	14.00	7,197.00	4.93	3,306.00		
May	19.80	16.24	11,340	14.00	7,718.00	5.80	3,622.00		
Jun	21.13	17.24	11,552	14.00	7,651.00	7.13	3,901.00		
Jul	20.14	15.05	10,317	14.00	7,166.00	6.14	3,151.00		
Aug	20.49	15.73	11,202	14.00	7,656.00	6.49	3,546.00		
Sep	19.87	15.54	10,638	14.00	7,500.00	5.87	3,138.00		
Oct	19.47	14.77	10,112	14.00	7,270.00	5.47	2,842.00		
Nov	18.86	14.97	10,241	14.00	7,600.00	4.86	2,641.00		
Dec	18.09	14.15	9,295	14.00	7,187.00	4.09	2,108.00		
2019									
Jan	17.52	14.16	9,549	17.52	9,041.00	-	508.00		
Feb	17.71	13.80	8,836	17.71	8,830.00	-	6.00		
Mar	18.17	13.91	8,815	18.17	8,406.00	-	409.00		
Apr	19.90	16.11	11,179	19.90	9,288.00	-	1,891.00		
May	20.81	17.07	12,070	20.81	9,812.00	-	2,258.00		
Jun	22.21	18.11	12,296	22.21	9,752.00	-	2,544.00		
Jul	21.17	15.82	10,981	21.17	9,260.00	-	1,721.00		
Aug	21.53	16.54	11,923	21.53	9,750.00	-	2,173.00		
Sep	20.88	16.33	11,323	20.88	9,590.00	-	1,733.00		
Oct	20.47	15.52	10,763	20.47	9,364.00	-	1,399.00		
Nov	19.82	15.74	10,901	19.82	9,701.00	-	1,200.00		
Dec	19.02	14.87	9,894	19.02	9,281.00	-	613.00		
2020									
Jan	18.38	14.85	10,122	18.38	9,114.00	-	1,008.00		
Feb	18.57	14.47	9,366	18.57	9,152.00	-	214.00		
Mar	19.05	14.59	9,344	19.05	8,479.00	-	865.00		
Apr	20.87	16.90	11,850	20.87	9,368.00	-	2,482.00		
May	21.82	17.90	12,795	21.82	9,895.00	-	2,900.00		
Jun	23.29	19.00	13,034	23.29	9,832.00	-	3,202.00		
Jul	22.20	16.59	11,640	22.20	9,343.00	-	2,297.00		
Aug	22.58	17.34	12,639	22.58	9,833.00	-	2,806.00		
Sep	21.90	17.13	12,002	21.90	9,671.00	-	2,331.00		
Oct	21.46	16.27	11,409	21.46	9,437.00	-	1,972.00		
Nov	20.79	16.51	11,555	20.79	9,782.00	-	1,773.00		
Dec	19.94	15.60	10,487	19.94	9,364.00	-	1,123.00		
2021									
Jan	19.23	15.54	10,687	19.23	11,517.25	-	(830.25)		
Feb	19.43	15.15	9,889	19.43	11,699.66	-	(1,810.66)		
Mar	19.94	15.27	9,867	19.94	10,749.73	-	(882.73)		
Apr	21.84	17.68	12,513	21.84	13,487.65	-	(974.65)		
May	22.84	18.73	13,510	22.84	13,985.88	-	(475.88)		
Jun	24.38	19.88	13,762	24.38	14,235.69	0.38	(473.69)		
Jul	23.23	17.36	12,291	23.23	12,551.20	-	(260.20)		
Aug	23.63	18.15	13,345	23.63	13,398.80	-	(53.80)		
Sep	22.92	17.93	12,673	22.92	13,145.16	-	(472.16)		
Oct	22.46	17.03	12,047	22.46	12,206.70	-	(159.70)		
Nov	21.76	17.27	12,200	21.76	12,656.88	-	(456.88)		
Dec	20.87	16.32	11,073	20.87	11,339.44	-	(266.44)		
2022									
Jan	20.09	16.23	11,244	20.09	11,582.46	-	(338.46)		
Feb	20.30	15.82	10,404	20.30	11,772.32	-	(1,368.32)		
Mar	20.83	15.95	10,381	20.83	10,811.07	-	(430.07)		
Apr	22.81	18.47	13,164	22.81	13,571.73	-	(407.73)		
May	23.86	19.57	14,214	23.86	14,075.29	-	138.71		
Jun	25.47	20.77	14,479	25.47	14,321.06	1.47	157.94		
Jul	24.27	18.13	12,931	24.27	12,625.56	0.27	305.44		
Aug	24.69	18.96	14,041	24.69	13,482.50	0.69	558.50		
Sep	23.94	18.73	13,334	23.94	13,228.77	-	105.23		
Oct	23.47	17.79	12,674	23.47	12,279.71	-	394.29		
Nov	22.73	18.04	12,836	22.73	12,735.01	-	100.99		
Dec	21.80	17.05	11,650	21.80	11,404.57	-	245.43		
2023									
Jan	20.95	16.93	11,791	20.95	11,638.30	-	152.70		
Feb	21.17	16.50	10,910	21.17	11,826.70	-	(916.70)		
Mar	21.72	16.63	10,885	21.72	10,859.22	-	25.78		
Apr	23.79	19.26	13,804	23.79	13,634.64	-	169.36		

POWER SUPPLY PROCUREMENT PLAN

May	24.88	20.41	14,904	24.88	14,140.76	0.88	763.24		
Jun	26.56	21.66	15,183	26.56	14,394.00	1.69	789.00		
Jul	25.31	18.91	13,560	25.31	12,685.15	1.31	874.85		
Aug	25.74	19.77	14,723	25.74	13,548.38	1.74	1,174.62		
Sep	24.97	19.53	13,982	24.97	13,290.37	0.97	691.63		
Oct	24.47	18.55	13,290	24.47	12,338.18	0.47	951.82		
Nov	23.70	18.82	13,460	23.70	12,792.67	-	667.33		
Dec	22.74	17.78	12,217	22.74	11,460.48	-	756.52		
2024						-	-		
Jan	21.81	17.62	12,326	21.81	11,676.30	-	649.70		
Feb	22.04	17.18	11,405	22.04	11,527.03	-	(122.03)		
Mar	22.61	17.31	11,379	22.61	10,895.76	-	483.24		
Apr	24.77	20.05	14,431	24.77	13,682.05	0.77	748.95		
May	25.90	21.24	15,581	25.90	14,190.89	1.90	1,390.11		
Jun	27.65	22.55	15,872	27.65	14,444.44	3.65	1,427.56		
Jul	26.35	19.69	14,175	26.35	12,729.44	2.35	1,445.56		
Aug	26.80	20.58	15,391	26.80	13,593.90	2.80	1,797.10		
Sep	25.99	20.33	14,616	25.99	13,336.26	1.99	1,279.74		
Oct	25.48	19.32	13,894	25.48	12,383.09	1.48	1,510.91		
Nov	24.68	19.59	14,071	24.68	12,840.05	0.68	1,230.95		
Dec	23.67	18.51	12,771	23.67	11,498.60	-	1,272.40		
2025						-	-		
Jan	22.67	18.32	12,851	22.67	11,707.74	-	1,143.26		
Feb	22.91	17.85	11,891	22.91	11,897.29	-	(6.29)		
Mar	23.51	18.00	11,864	23.51	10,922.75	-	941.25		
Apr	25.74	20.85	15,046	25.74	13,716.50	1.74	1,329.50		
May	26.92	22.08	16,245	26.92	14,227.42	2.92	2,017.58		
Jun	28.74	23.44	16,548	28.74	14,481.25	4.74	2,066.75		
Jul	27.39	20.47	14,779	27.39	12,762.36	3.39	2,016.64		
Aug	27.86	21.40	16,047	27.86	13,627.25	3.86	2,419.75		
Sep	27.02	21.13	15,239	27.02	13,370.45	3.02	1,868.55		
Oct	26.48	20.08	14,486	26.48	12,411.99	2.48	2,074.01		
Nov	25.65	20.36	14,670	25.65	12,870.81	1.65	1,799.19		
Dec	24.61	19.24	13,315	24.61	11,526.66	0.61	1,788.34		
2026						-	-		
Jan	23.53	19.01	13,365	23.53	11,725.13	-	1,639.87		
Feb	23.78	18.53	12,367	23.78	11,913.27	-	453.73		
Mar	24.40	18.68	12,339	24.40	10,940.53	0.40	1,398.47		
Apr	26.72	21.64	15,648	26.72	13,738.68	2.72	1,909.32		
May	27.95	22.92	16,895	27.95	14,251.12	3.95	2,643.88		
Jun	29.83	24.33	17,210	29.83	14,505.19	5.83	2,704.81		
Jul	28.43	21.24	15,370	28.43	12,779.74	4.43	2,590.26		
Aug	28.92	22.21	16,689	28.92	13,652.70	4.92	3,036.30		
Sep	28.05	21.94	15,849	28.05	13,392.79	4.05	2,456.21		
Oct	27.49	20.84	15,065	27.49	12,433.61	3.49	2,631.39		
Nov	26.63	21.14	15,257	26.63	12,890.74	2.63	2,366.26		
Dec	25.54	19.97	13,848	25.54	11,545.08	1.54	2,302.92		
2027						-	-		
Jan	24.40	19.71	13,890	24.40	11,749.01	-	2,140.99		
Feb	24.65	19.21	12,853	24.65	11,939.53	-	913.47		
Mar	25.29	19.37	12,824	25.29	10,964.04	1.29	1,859.96		
Apr	27.70	22.43	16,263	27.70	13,768.70	3.70	2,494.30		
May	28.97	23.76	17,559	28.97	14,282.95	4.97	3,276.05		
Jun	30.93	25.22	17,887	30.93	14,533.43	6.93	3,353.57		
Jul	29.47	22.02	15,975	29.47	12,809.24	5.47	3,165.76		
Aug	29.98	23.02	17,345	29.98	13,681.62	5.98	3,663.38		
Sep	29.08	22.74	16,472	29.08	13,418.50	5.08	3,053.50		
Oct	28.50	21.61	15,657	28.50	12,458.68	4.50	3,198.32		
Nov	27.60	21.91	15,857	27.60	12,918.22	3.60	2,938.78		
Dec	26.48	20.71	14,392	26.48	11,569.51	2.48	2,822.49		



MODEL NO.	FORECASTING MODEL	MODEL DESCRIPTIONS	VALIDITY TEST						ACCURACY TEST	AVERAGE GROWTH RATE			Remarks					
			R <sup>2</sup> (>0.99)	Adjusted R <sup>2</sup> (>0.99)	Coefficient Value	T-Statistic (>2 or <-2)	P-Value (<0.1)	MAPE (<5%)		Actual Data	1st 5 Year Foreca st	6th-15th Year Foreca st						
DEMAND	Y = at + bt <sup>n</sup> + e	Linear Trending with Smoothing	0.994	Passed	0.991	Passed	a	1,608,048	3.94	Passed	0.029	Passed	0.69%	Passed	5.24%	4.89%	3.64%	Passed
							b	1,093,408	16.17	Passed	0.000	Passed						Passed
							e	12,070,306	27.50	Passed	0.000	Passed						Passed
							a	40,800,790	(5.58)	Passed	0.011	Passed						Passed
							b	(126,058,169)	11.86	Passed	0.001	Passed						Passed
PURCHASE	Y = ah(t) <sup>2</sup> + bh(t) + ct <sup>n</sup> + e	Quadratic & Logarithmic Trending with Smoothing & Horizon	0.995	Passed	0.990	Passed	c	(144,503,241)	(6.90)	Passed	0.006	Passed	1.21%	Passed	6.22%	6.02%	3.74%	Passed
							e	223,304,647	8.88	Passed	0.003	Passed						Passed
							a	38,838,436	(6.79)	Passed	0.007	Passed						Passed
							b	(120,348,353)	14.29	Passed	0.001	Passed						Passed
							c	(138,936,756)	(6.40)	Passed	0.004	Passed						Passed
SALES	Y = ah(t) <sup>2</sup> + bh(t) + ct <sup>n</sup> + e	Quadratic & Logarithmic Trending with Smoothing & Horizon	0.996	Passed	0.993	Passed	e	207,201,447	10.43	Passed	0.002	Passed	1.14%	Passed	6.47%	6.36%	3.90%	Passed
							a	0.401	2.14	Passed	0.099	Passed						Passed
							c	1,879,927	18.00	Passed	0.000	Passed						Passed
							d	54,374,943	123.71	Passed	0.000	Passed						Passed
CONSUMER HOUSEHOLD	Y = at <sup>3</sup> + ct + d	Cubic Trending with Horizon	0.996	Passed	0.994	Passed	a	0.401	2.14	Passed	0.099	Passed	0.46%	Passed	3.20%	2.78%	2.56%	Passed
							c	1,879,927	18.00	Passed	0.000	Passed						Passed
							d	54,374,943	123.71	Passed	0.000	Passed						Passed
							Passed	Passed	Passed	Passed								