

## POWER SUPPLY PROCUREMENT PLAN

### **ISABELA II ELECTRIC COOPERATIVE POWER SUPPLY PROCUREMENT PLAN**

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

## TABLE OF CONTENTS

<b>Title</b>	<b>Page</b>
Introduction	1
ISELCO II Profile	
ISELCO II Freanchise Area	
Number of Customer (Actual and Forecast)	
Energy Sales and Purchase Historical and Forecast	2
Energy Purchase vs Energy Sales	
Demand	3
Coincident Peak vs Off Peak Demand	
Daily Load Profile and Load Duration Curve	4
ISELCO II Hourly Load Profile	
ISELCO II Load Load Curve	
Current Supply and Demand	
ISELCO II Mix Supply vs Demand and the Optimal Supply	5
List of Existing GenCos and Details	6
Distribution Impact Study	7
Schedule of Competitive Selection Process (CSP)	8
10 Year Monthly Data (Forecast)	9, 10, 11

## INTRODUCTION

### DISTRIBUTION UTILITIES PROFILE

ISELCO II is one of the two electric cooperatives providing electric service to the province of Isabela. The province is situated at the heart of the Cagayan Valley on the northeastern part of the main island of Luzon. It is bounded by the Province of Cagayan on the north, Nueva Viscaya, Aurora and Quirino on the south: Kalinga, Apayao, Ifugao and Mt. Province on the west and the Pacific Ocean on the east. Its fertile plains and valleys are bounded by two mountain ranges, namely, the Sierra Madre Mountain range on the east and the Cordillera on the west. Isabela experiences moderate rainfall which is more or less evenly distributed throughout the year making it an ideal rice granary. Isabela occupies a land area of 10,665 square kilometers which is 3.5% of the total land area of the country and is composed of thirty-seven (37) municipalities and one thirty-nine (1,039) barangays. Ilagan serves as its provincial capital.

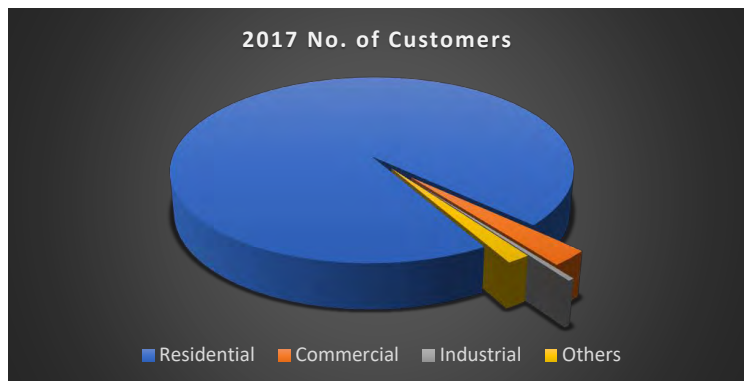
ISELCO II occupies the northern half of the province of Isabela as its because three of the 22 municipalities covered are coastal towns isolated by the Sierra Madre Mountain ranges, a total of 509 barangays. The municipalities are Ilagan, Tumaui, Cabagan, San Pablo, Sta. Maria, Delfin Albano, Sto. Tomas, Gamu, Naguilian, Benito Soliven, San Mariano, Burgos, Roxas, San Manuel, Aurora, Quirino, Mallig, Quezon and City of Ilagan.



Number of Customer Connections in Franchise	ACTUAL	FORECAST									
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	139,170	145,167	149,336	153,259	156,967	160,483	163,828	167,020	170,072	173,000	175,812
Commercial	3,986	3,884	3,995	4,100	4,199	4,294	4,383	4,469	4,551	4,629	4,704
Industrial	653	579	596	612	626	640	654	666	678	690	701
Others	2,375	2,374	2,442	2,506	2,566	2,624	2,679	2,731	2,781	2,828	2,875
Contestable Customers served by RES											
Total (Captive Customers)	146,184	152,004	156,369	160,477	164,358	168,041	171,544	174,886	178,082	181,147	184,092

Note: Data are sample only for graph presentation

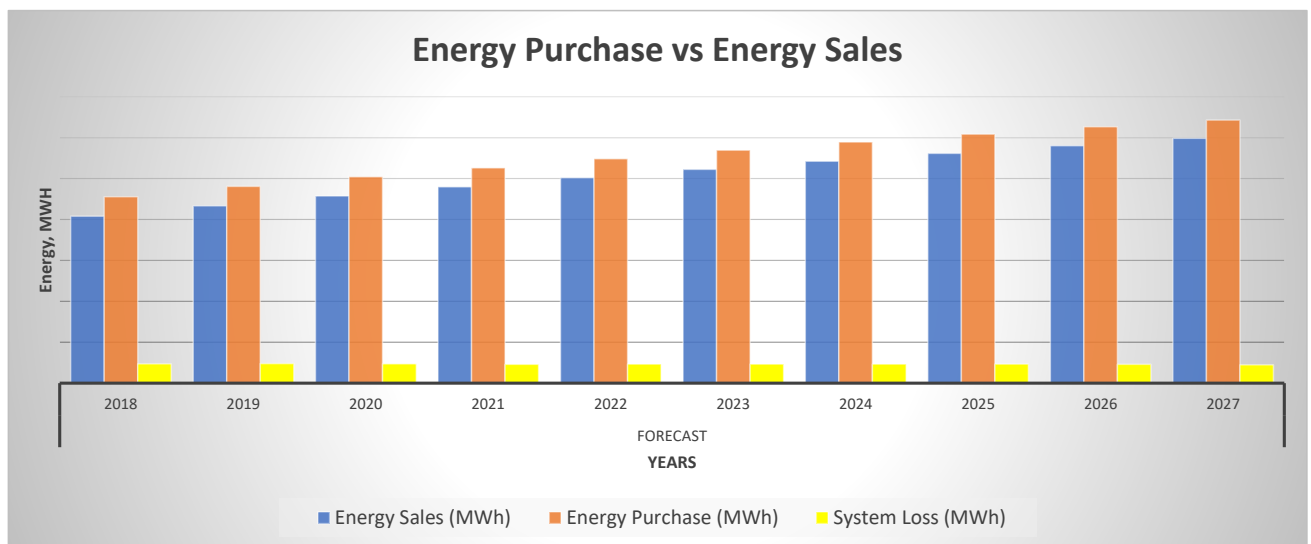
Brief highlight on the increase of demand (eg. Entry of big loads etc.)



## ENERGY SALES AND PURCHASE

ENERGY SALES AND PURCHASE	HISTORICAL									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Energy Sales (MWh)	87,108	93,502	96,638	110,203	121,623	134,943	147,937	161,407	177,254	191,175
Energy Purchase (MWh)	106,722	112,866	114,628	130,480	145,447	158,988	172,768	188,772	208,808	220,164
System Loss (MWh)	19,614	19,364	17,990	20,277	23,824	24,045	24,831	27,365	31,554	28,989

ENERGY SALES AND PURCHASE	FORECAST									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Energy Sales (MWh)	204,126	216,663	228,615	240,023	250,926	261,366	271,380	281,001	290,260	299,185
Energy Purchase (MWh)	227,834	240,587	252,356	263,134	274,223	284,783	294,818	304,308	313,266	321,521
System Loss (MWh)	23,709	23,925	23,740	23,111	23,297	23,417	23,438	23,307	23,005	22,335

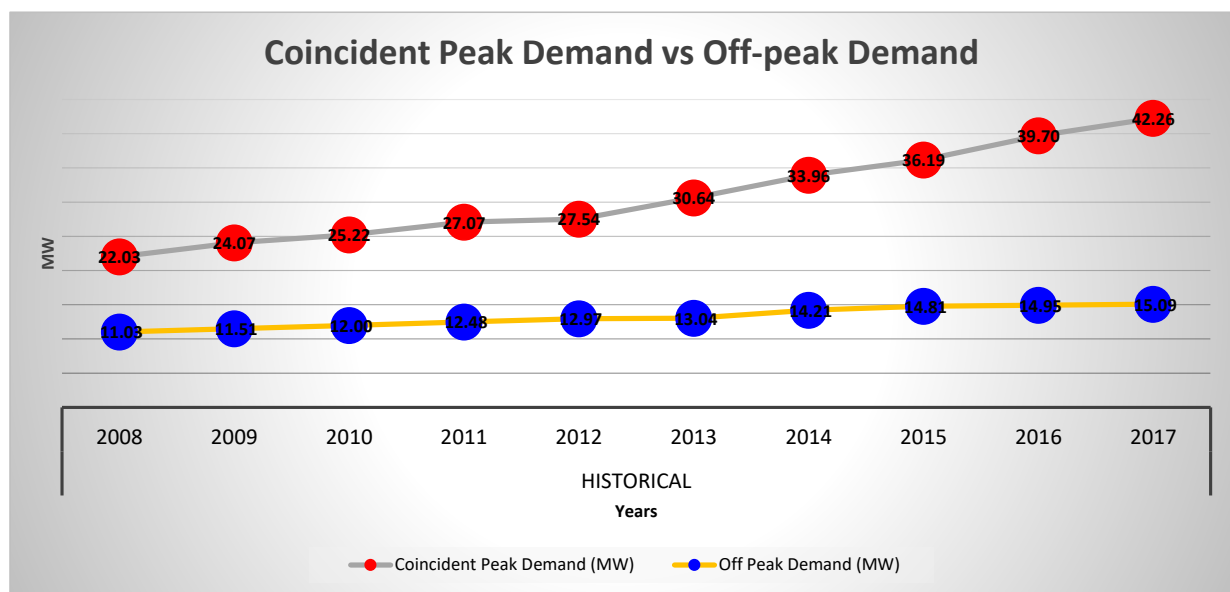


Brief highlight/report

## DEMAND

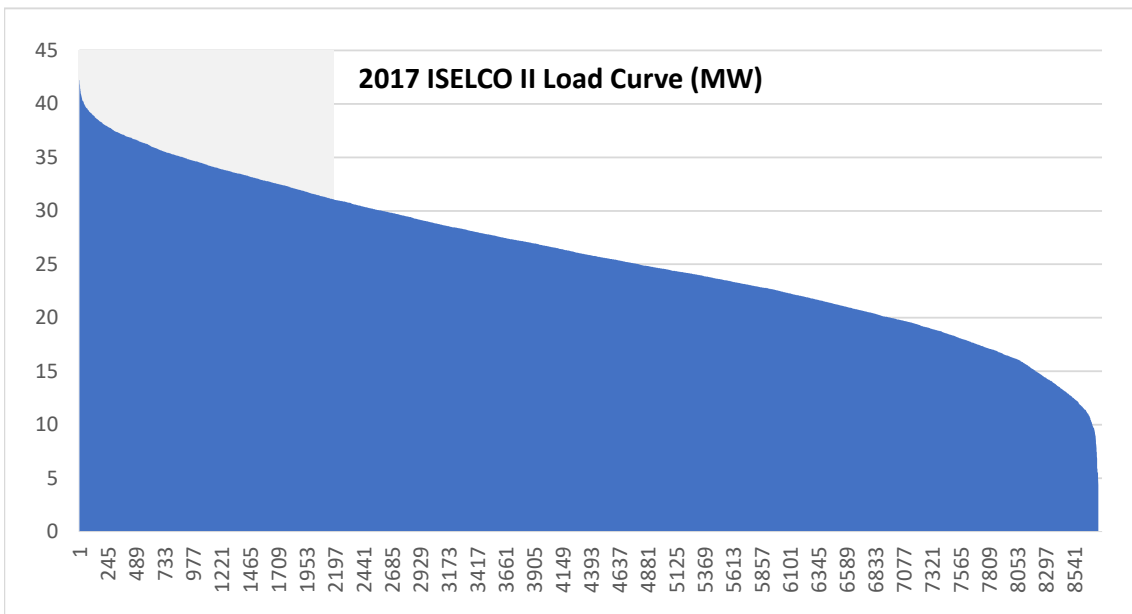
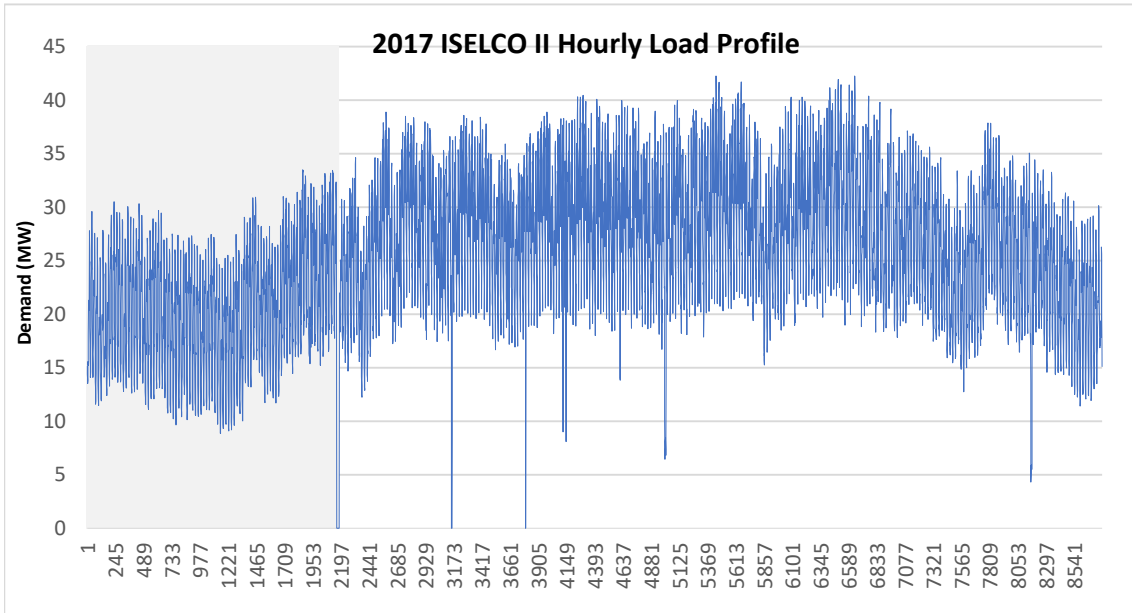
Demand	HISTORICAL									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Coincident Peak Demand (MW)	22.03	24.07	25.22	27.07	27.54	30.64	33.96	36.19	39.70	42.26
Off Peak Demand (MW)	11.03	11.51	12.00	12.48	12.97	13.04	14.21	14.81	14.95	<b>15.09</b>

Demand	FORECAST									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Coincident Peak Demand (MW)	45.50	48.61	51.71	54.78	57.80	60.78	63.70	66.57	69.39	72.15
Off Peak Demand (MW)	16.25	17.36	18.47	19.57	20.65	21.71	22.75	23.78	24.78	25.77



In 2013, there was a substantial increase of demand of 11.245% due to the installation and operation of our 1-10MVA unit in the area of mallig region where large load consumers are present in the areas such as industrial rice mills and commercial establishments in the area, voltage imbalance was also addressed in the area.

## LOAD PROFILE AND LOAD DURATION CURVE



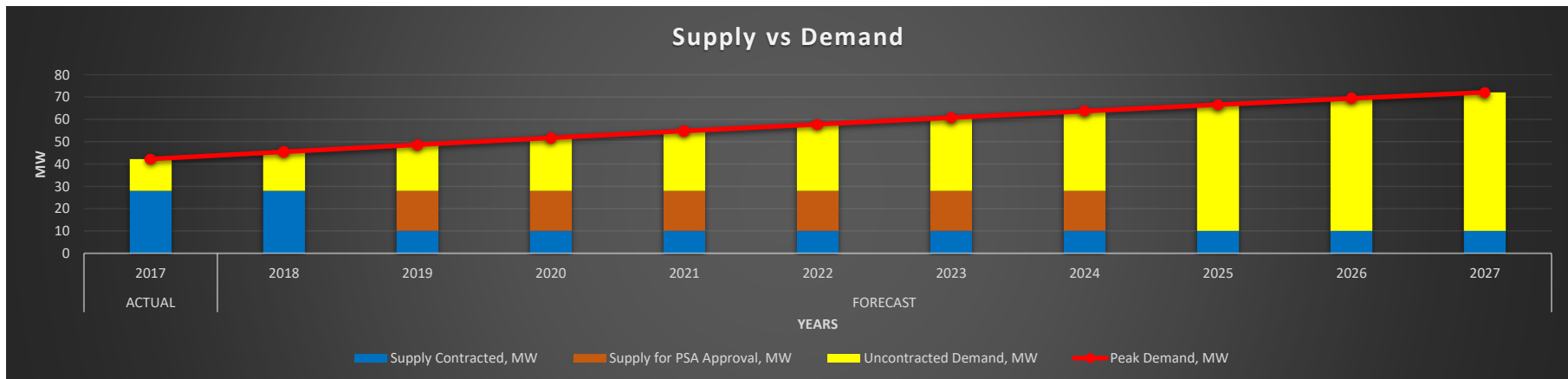
**Brief highlight:**

Based on the load profile and load curve the peak demand for ISELCO II is 42.256 MW at 5445 hour and base-load of 20.959 MW.

### 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>	42.25617	45.49564	48.61305	51.71324	54.77946	57.80212	60.77594	63.69829	66.56823	69.38586	72.15193
<b>Supply Contracted, MW</b>	28	28	10	10	10	10	10	10	10	10	10
* San Miguel Energy Corporation	23.00	23.00									
ANDA Power Corporation	5.00	5.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
<b>Supply for PSA Approval, MW</b>	0	0	18	18	18	18	18	18	0	0	0
Generation Plant Name 1			18.00	18.00	18.00	18.00	18.00	18.00			
Generation Plant Name 2											
Generation Plant Name 3											
<b>Uncontracted Demand, MW</b>	14.25617	17.49564	20.61305	23.71324	26.77946	29.80212	32.77594	35.69829	56.56823	59.38586	62.15193

Note : \* Our contract with San Miguel Energy Corporation will expire this 2018, a bridge contract is settled and agreed by the board and management of ISELCO II to Limay Premiere Power Corporation of 18 Mega Watts (ERC Case No. -121RC) for approval to ERC.



POWER SUPPLY PROCUREMENT PLAN

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)
SMEC	SMEC		12/2014	12/2018	23		Base	Grid Connected	IPP	Operational	Coal		
LPPC	LPPC		12/2019	12/2024	18		Mid Merit/Peaking	Grid Connected	IPP	Operational	Coal		
ANDA	ANDA		08/2016	08/2030	10		Base	Grid Connected	IPP	Operational	Coal		

Discuss the following:

Performance of the existing Contracted Generation Companies.

For off-grid DUs specify the approved SAGR

Further, discuss the **optimal supply mix** for the DU given the load curve, performance of the existing contracted generation companies and other factors as found significant



## **DISTRIBUTION IMPACT STUDY**

ISELCO II has carefully map out strategies on how to meet the compliance requisites of the Philippine Distribution and Grid Codes while at the same time achieving its mandate.

Readiness of substation and distribution lines on the growing demand of power. As part of the technical evaluation, Different projects were laid out to determine the most practical and feasible solutions. The approach used in formulating the alternative solutions to determine specific major capacity projects, combine sequential or complementary projects to solve power quality and system loss problems as well.

Capacity and Safety were given priorities respectively. This is to ensure the safe installation and operation of the distribution system, while performing its main mandate in terms of capacity to distribute energy to its franchise area.

Power quality problem will be addressed in phases within the 5-year planning horizon. Voltage correction will be prioritized in primary lines.



## 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									
Aug	45.50	22.84	22,711.92	28.00		17.50			
Sep	45.14	20.95	22,435.12	28.00		17.14			
Oct	45.46	22.48	20,522.72	28.00		17.46			
Nov	40.78	21.01	18,745.22	28.00		12.78			
Dec	37.73	17.77	15,840.35	28.00		9.73			
2019									
Jan	35.08	19.24	15,570.51	28.00		7.08		-	-
Feb	35.57	17.36	14,639.36	28.00		7.57		-	-
Mar	38.49	18.05	16,138.29	28.00		10.49		-	-
Apr	44.74	21.33	21,195.44	28.00		16.74		-	-
May	44.36	21.77	21,714.41	28.00		16.36		-	-
Jun	46.54	23.65	23,245.84	28.00		18.54		-	-
Jul	46.12	32.61	22,216.44	28.00		18.12		-	-
Aug	48.61	24.41	23,983.20	28.00		20.61		-	-
Sep	48.24	22.38	23,690.91	28.00		20.24		-	-
Oct	48.58	24.03	21,671.47	28.00		20.58		-	-
Nov	43.57	22.45	19,794.47	28.00		15.57		2.00	1,359.51
Dec	40.31	18.99	16,727.01	28.00		12.31		2.00	1,324.18
2020									
Jan	37.32	20.47	16,332.14	28.00		9.32		2.00	1,096.90
Feb	37.84	18.47	15,355.44	28.00		9.84		2.00	1,204.87
Mar	40.95	19.20	16,927.69	28.00		12.95		2.00	1,235.16
Apr	47.59	22.70	22,232.21	28.00		19.59		2.00	1,245.69
May	47.19	23.16	22,776.56	28.00		19.19		2.00	1,264.98
Jun	49.51	25.16	24,382.91	28.00		21.51		2.00	1,189.53
Jul	49.06	34.69	23,303.16	28.00		21.06		2.00	1,310.03
Aug	51.71	25.96	25,156.34	28.00		23.71		2.00	1,219.32
Sep	51.31	23.81	24,849.75	28.00		23.31		2.00	1,201.30
Oct	51.68	25.56	22,731.52	28.00		23.68		2.00	1,250.80
Nov	46.35	23.88	20,762.72	28.00		18.35		2.00	1,359.51
Dec	42.89	20.20	17,545.21	28.00		14.89		2.00	1,324.18
2021									
Jan	39.53	21.68	17,029.70	28.00		11.53		2.00	1,096.90
Feb	40.08	19.57	16,011.29	28.00		12.08		2.00	1,204.87
Mar	43.37	20.34	17,650.69	28.00		15.37		2.00	1,235.16
Apr	50.41	24.04	23,181.77	28.00		22.41		2.00	1,245.69
May	49.99	24.53	23,749.37	28.00		21.99		7.00	2,194.98
Jun	52.44	26.65	25,424.32	28.00		24.44		7.00	2,089.53
Jul	51.97	36.75	24,298.46	28.00		23.97		7.00	2,240.03
Aug	54.78	27.50	26,230.79	28.00		26.78		7.00	2,149.32
Sep	54.35	25.22	25,911.10	28.00		26.35		7.00	2,101.30
Oct	54.74	27.07	23,702.41	28.00		26.74		7.00	2,180.80
Nov	49.10	25.29	21,649.51	28.00		21.10		7.00	2,259.51
Dec	45.43	21.40	18,294.58	28.00		17.43		7.00	2,254.18

## POWER SUPPLY PROCUREMENT PLAN

2022									
Jan	41.71	22.88	17,747.36	28.00		13.71		7.00	2,026.90
Feb	42.30	20.65	16,686.03	28.00		14.30		7.00	2,044.87
Mar	45.77	21.46	18,394.52	28.00		17.77		7.00	2,165.16
Apr	53.19	25.37	24,158.69	28.00		25.19		7.00	2,145.69
May	52.75	25.88	24,750.21	28.00		24.75		7.00	2,194.98
Jun	55.34	28.12	26,495.75	28.00		27.34		7.00	2,089.53
Jul	54.84	38.77	25,322.44	28.00		26.84		18.30	2,391.68
Aug	57.80	29.02	27,336.20	28.00		29.80		18.30	5,236.00
Sep	57.35	26.62	27,003.05	28.00		29.35		18.30	3,710.46
Oct	57.76	28.57	24,701.27	28.00		29.76		18.30	8,858.28
Nov	51.80	26.69	22,561.86	28.00		23.80		18.30	8,438.69
Dec	47.93	22.58	19,065.54	28.00		19.93		18.30	9,806.04
2023									
Jan	43.86	24.06	18,430.79	28.00		15.86		18.30	8,580.47
Feb	44.47	21.71	17,328.60	28.00		16.47		18.30	8,280.11
Mar	48.12	22.57	19,102.88	28.00		20.12		18.30	6,751.07
Apr	55.93	26.67	25,089.02	28.00		27.93		18.30	3,923.47
May	55.46	27.21	25,703.32	28.00		27.46		18.30	4,283.63
Jun	58.18	29.57	27,516.08	28.00		30.18		18.30	4,003.44
Jul	57.66	40.77	26,297.58	28.00		29.66		18.30	2,391.68
Aug	60.78	30.52	28,388.90	28.00		32.78		18.30	5,236.00
Sep	60.30	27.99	28,042.91	28.00		32.30		18.30	3,710.46
Oct	60.73	30.04	25,652.49	28.00		32.73		18.30	8,858.28
Nov	54.47	28.06	23,430.70	28.00		26.47		18.30	8,438.69
Dec	50.40	23.74	19,799.74	28.00		22.40		18.30	9,806.04
2024									
Jan	45.97	25.21	19,080.22	28.00		17.97		18.30	8,580.47
Feb	46.61	22.75	17,939.19	28.00		18.61		18.30	8,310.11
Mar	50.43	23.65	19,775.99	28.00		22.43		18.30	6,751.07
Apr	58.62	27.95	25,973.06	28.00		30.62		18.30	3,923.47
May	58.13	28.52	26,609.01	28.00		30.13		18.30	4,283.63
Jun	60.98	30.99	28,485.64	28.00		32.98		18.30	4,003.44
Jul	60.43	42.73	27,224.21	28.00		32.43		18.30	2,391.68
Aug	63.70	31.98	29,389.21	28.00		35.70		18.30	5,236.00
Sep	63.20	29.33	29,031.03	28.00		35.20		18.30	3,710.46
Oct	63.65	31.48	26,556.39	28.00		35.65		18.30	8,858.28
Nov	57.09	29.41	24,256.31	28.00		29.09		18.30	8,438.69
Dec	52.82	24.88	20,497.41	28.00		24.82		18.30	9,806.04
2025									
Jan	48.04	26.35	19,694.40	10.00		38.04		18.30	8,580.47
Feb	48.71	23.78	18,516.64	10.00		38.71		18.30	8,280.11
Mar	52.71	24.72	20,412.57	10.00		42.71		18.30	6,751.07
Apr	61.26	29.21	26,809.12	10.00		51.26		18.30	3,923.47
May	60.75	29.81	27,465.53	10.00		50.75		18.30	4,283.63
Jun	63.73	32.38	29,402.57	10.00		53.73		18.30	4,003.44
Jul	63.15	44.65	28,100.54	10.00		53.15		18.30	2,391.68
Aug	66.57	33.42	30,335.23	10.00		56.57		18.30	5,236.00
Sep	66.05	30.65	29,965.52	10.00		56.05		18.30	3,710.46
Oct	66.52	32.90	27,411.22	10.00		56.52		18.30	8,858.28
Nov	59.66	30.74	25,037.10	10.00		49.66		18.30	8,438.69
Dec	55.20	26.00	21,157.21	10.00		45.20		18.30	9,806.04
2026									
Jan	48.04	27.46	20,274.16	10.00		38.04		18.30	8,580.47
Feb	48.71	24.78	19,061.73	10.00		38.71		18.30	8,280.11
Mar	52.71	25.76	21,013.47	10.00		42.71		18.30	6,751.07
Apr	61.26	30.45	27,598.31	10.00		51.26		18.30	3,923.47
May	60.75	31.07	28,274.05	10.00		50.75		18.30	4,283.63
Jun	63.73	33.75	30,268.12	10.00		53.73		18.30	4,003.44
Jul	63.15	46.55	28,927.75	10.00		53.15		18.30	2,391.68
Aug	66.57	34.84	31,228.23	10.00		56.57		18.30	5,236.00
Sep	66.05	31.95	30,847.64	10.00		56.05		18.30	3,710.46
Oct	66.52	34.29	28,218.14	10.00		56.52		18.30	8,858.28
Nov	59.66	32.04	25,774.14	10.00		49.66		18.30	8,438.69
Dec	55.20	27.10	21,780.02	10.00		45.20		18.30	9,806.04

POWER SUPPLY PROCUREMENT PLAN

2027									
Jan	52.07	28.56	20,808.40	10.00		42.07		18.30	8,580.47
Feb	52.80	25.77	19,564.02	10.00		42.80		18.30	8,280.11
Mar	57.13	26.79	21,567.19	10.00		47.13		18.30	6,751.07
Apr	66.40	31.66	28,325.56	10.00		56.40		18.30	3,923.47
May	65.84	32.31	29,019.10	10.00		55.84		18.30	4,283.63
Jun	69.08	35.10	31,065.71	10.00		59.08		18.30	4,003.44
Jul	68.45	48.40	29,690.03	10.00		58.45		18.30	2,391.68
Aug	72.15	36.23	32,051.12	10.00		62.15		18.30	5,236.00
Sep	71.59	33.22	31,660.50	10.00		61.59		18.30	3,710.46
Oct	72.10	35.66	28,961.72	10.00		62.10		18.30	8,858.28
Nov	64.66	33.32	26,453.31	10.00		54.66		18.30	8,438.69
Dec	59.83	28.18	22,353.95	10.00		49.83		18.30	9,806.04