

## POWER SUPPLY PROCUREMENT PLAN

### **CAMARINES SUR II ELECTRIC COOPERATIVE, INC.** **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.

## POWER SUPPLY PROCUREMENT PLAN

The content of the PSSP 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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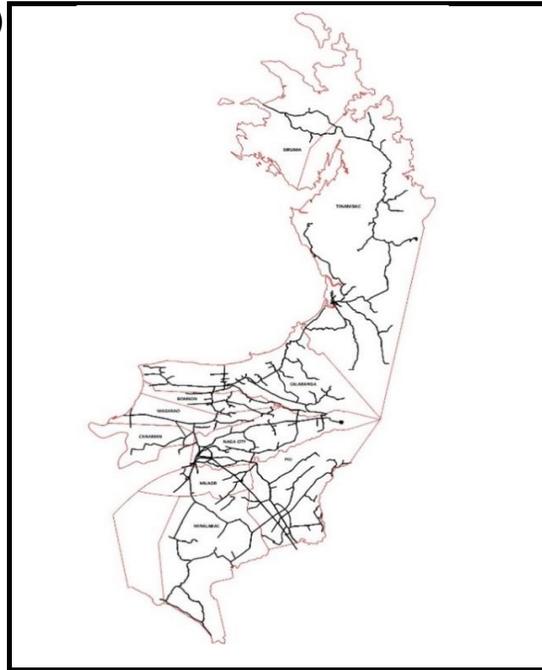
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# INTRODUCTION

## DISTRIBUTION UTILITIES PROFILE

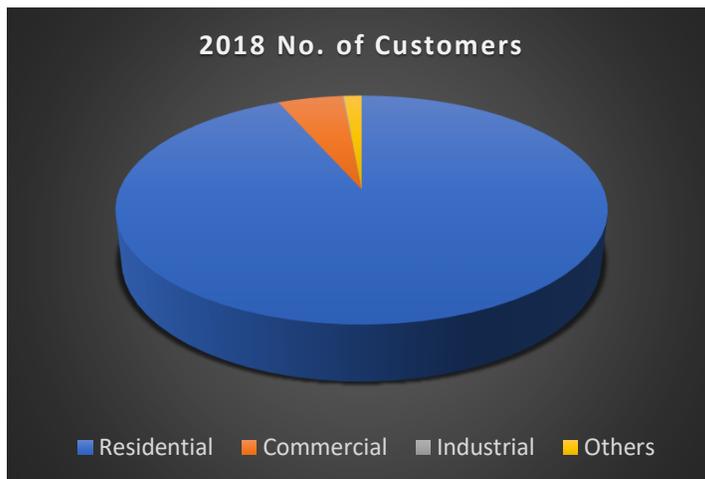
DU's Franchise MAP

**Camarines Sur II Electric Cooperative, Inc.** caters one (1) city and nine (9) municipalities, namely: Naga City and Municipalities of Pili, Minalabac, Milaor, Canaman, Magarao, Bombon, Calabanga, Tinambac and Siruma. It is composed of 259 barangays, one of which is an off-grid barangay named Butawanan, Siruma. As of December 2018, it has an energized households of 124,521.



Number of Customer Connections	ACTUAL	FORECAST									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Residential	100040	104305	108538	112718	116826	120855	124798	128655	132426	136112	139715
Commercial	5453	5546	5647	5775	5933	6128	6369	6660	7007	7417	7895
Industrial	91	93	95	96	98	99	101	101	103	104	105
Others	1490	1527	1545	1562	1579	1597	1614	1631	1649	1667	1685
Contestable	2	4	4	6	6	8	8	9	9	9	9
<b>Total (Capti</b>	<b>107074</b>	<b>111471</b>	<b>115825</b>	<b>120150</b>	<b>124436</b>	<b>128678</b>	<b>132881</b>	<b>137047</b>	<b>141184</b>	<b>145299</b>	<b>149400</b>

We have anticipated in our forecast the possible influx of potential large loads such as Bicol Medical Center, Winwin Mall, SM Expansion, Ayala Mall, Ecozone and also the upcoming private subdivisions such as Bria, BellaVita, Deca Vistanza, St. Andrew's Homes and Camella and other socialized housing projects, to connect on year 2019 and onwards. However, we also considered the possible connection of existing and potential contestable loads to RES in our projections.

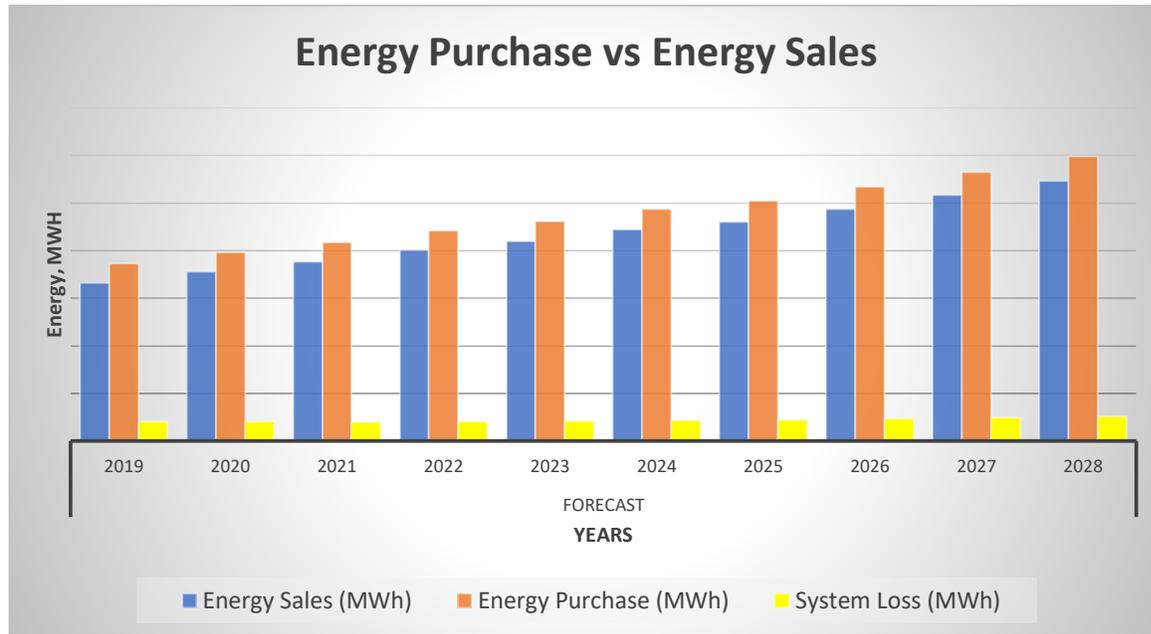


## ENERGY SALES AND PURCHASE

(10 YEAR HISTORICAL & FORECAST)

ENERGY SALES AND PURCHASE	HISTORICAL									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Energy Sales (MWh)	191188	212024	199552	210125	225526	229471	258326	288232	290010	319335
Energy Purchase (MWh)	226361	253052	240760	250761	266127	267929	299903	334109	330722	363291
System Loss (MWh)	35013	39782	41210	40636	40601	38458	41577	45877	40711	43956

ENERGY SALES AND PURCHASE	FORECAST									
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Energy Sales (MWh)	332449	355260	377011	401848	420019	444908	460277	487795	516687	546960
Energy Purchase (MWh)	372828	396041	417051	442169	461631	487584	504247	534116	565475	598330
System Loss (MWh)	40380	40780	40040	40320	41612	42676	43970	46321	48788	51370



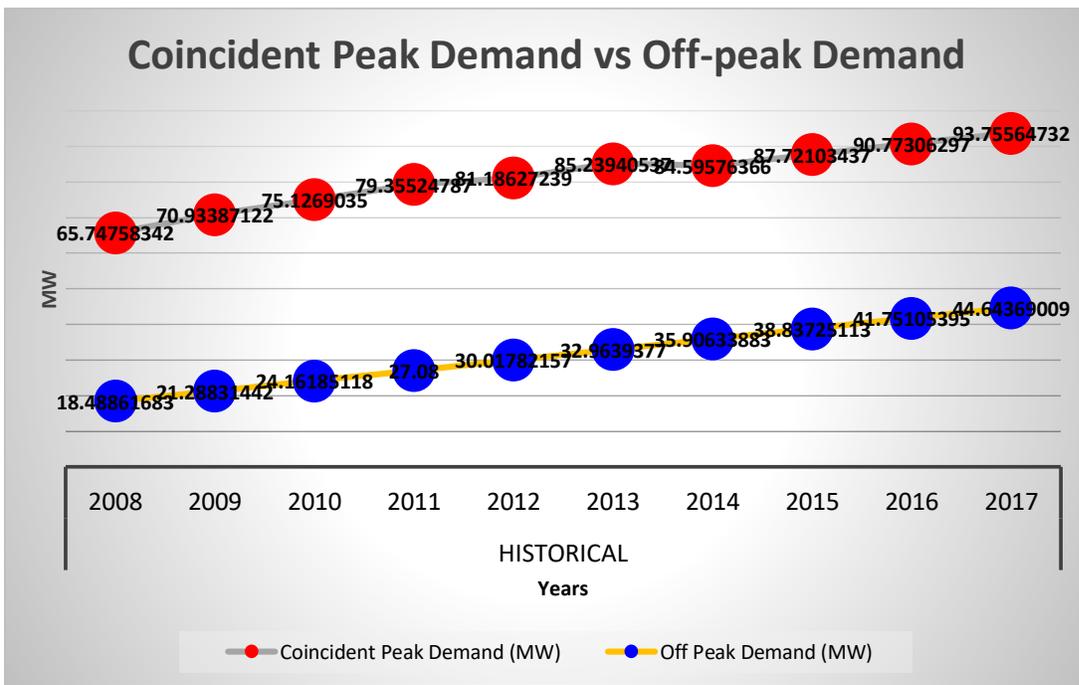
The Camarines Sur II Electric Cooperative, Inc. (CASURECO II) has observed a great increase in kWh Sales and load demand for the previous year, 2018. This is due to the connection of Vista Mall Phase 1 and load upgrading of some existing big load consumers specially some commercial loads in Naga City, such as hotels and restaurants. We have also anticipated the possible influx of potential large loads such as Bicol Medical Center Expansion, SM Expansion, Ayala Mall, WinWin Mall, Ecozone, and also the upcoming private subdivisions such as Bria, BellaVita, Deca Vistanza, St. Andrew's Homes and Camella and other socialized housing projects, to connect on year 2019 and onwards. We also considered the possible connection of existing and potential contestable loads to RES in our projections.

## DEMAND

(10 YEAR HISTORICAL & FORECAST)

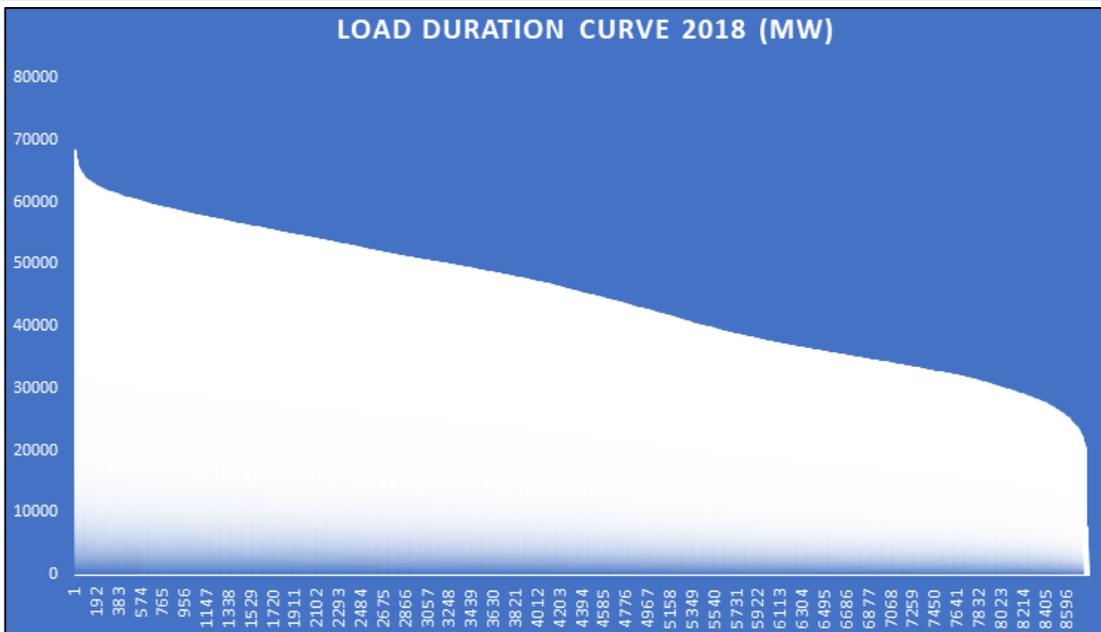
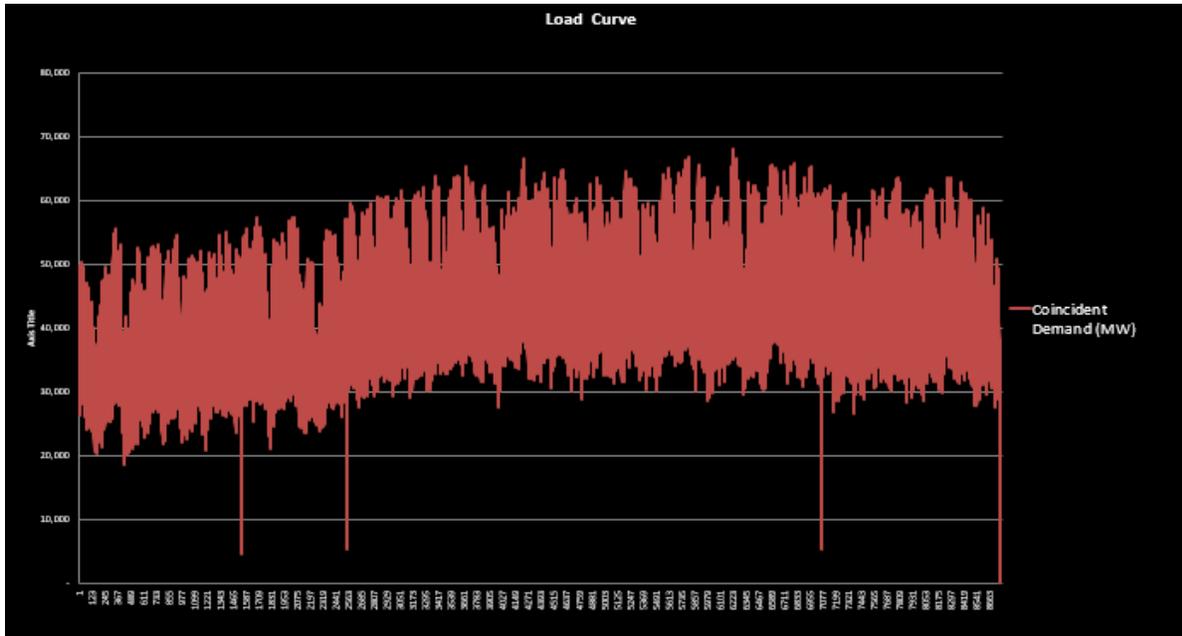
Demand	HISTORICAL									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Coincident Peak Demand (MW)	44.84	44.84	45.02	44.68	48.36	51.73	54.65	58.89	62.37	62.35
Off Peak Demand (MW)	7.56	7.56	7.59	7.93	12.09	4.28	3.87	10.16	11.15	16.00

Demand	FORECAST									
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Coincident Peak Demand (MW)	65.75	70.93	75.13	79.36	81.19	85.24	84.6	87.72	90.77	93.76
Off Peak Demand (MW)	18.49	21.29	24.16	27.08	30.02	32.96	35.91	38.84	41.75	44.64



Various forecasting models were used to arrive at forecast that passed all the parameters set by the EC DU Planning Manual. Adjusted R2 and R2 with at least 99% MAPEs that do not exceed 5% and p-value that is lower than 0, t-statistics that are greater than 2 and less than 2 for the model to be valid were considered as parameters for choosing the appropriate result. Outliers in the historical data were also considered in the forecasting to achieve a more accurate and practical data applicable to the operations of CASURECO II. The cooperative chose different forecasting models namely, Quadratic Trending, Linear Trending w/ Smoothing, Linear & Logarithmic Trending w/ Smoothing, Quadratic & Logarithmic Trending w/ Smoothing, Quadratic Smoothing, Cubic & Logarithmic Trending w/ Smoothing and Quadratic & Logarithmic Trending to the per consumer type sales, total number of consumers and total demand forecasts.

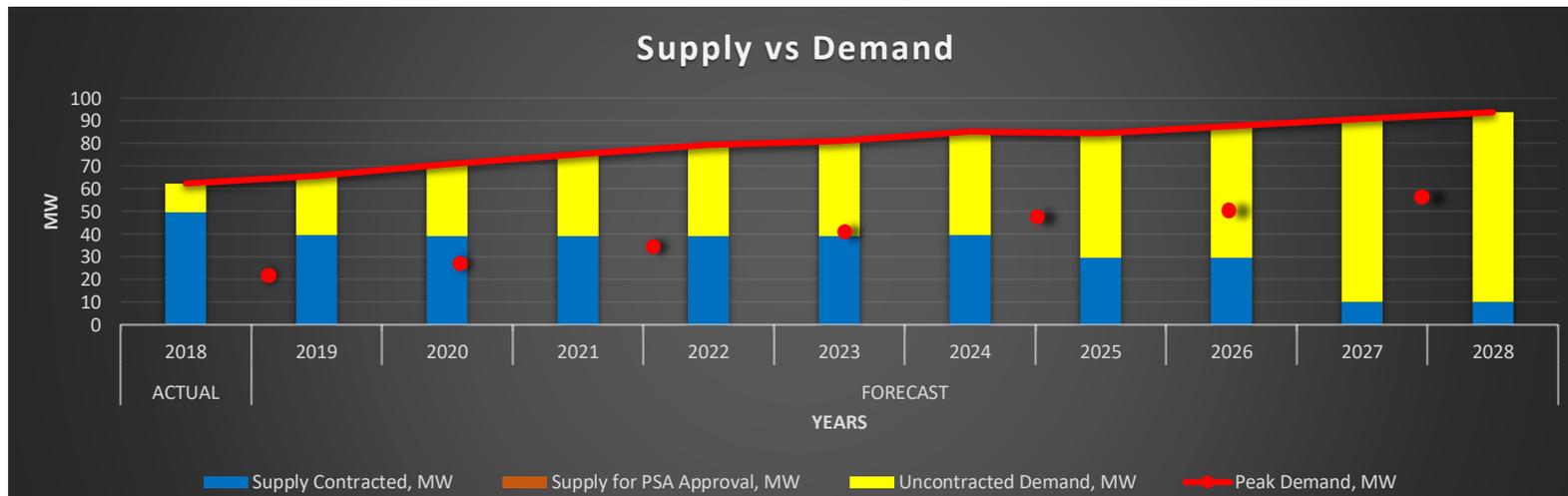
## LOAD PROFILE AND LOAD DURATION CURVE



Based on the behavior of CASURECO II's load profile, it prefers to have a mid-merit or load following supply contract due to volatility of its demand.

### MIXSUPPLY VS DEMAND AND THE OPTIMAL SUPPLY

Supply Demand	ACTUAL	FORECAST									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Peak Demand, MW	62.3	65.7	70.9	75.1	79.4	81.2	85.2	84.6	87.7	90.8	93.8
Supply Contracted, MW	49.5	39.5	39	39	39	39	39.5	29.5	29.5	10	10
AES-MASINLOC	18.5	18.5	19	19	19	19	19.5	19.5	19.5		
BAC-MAN GEOTHERMAL INC.	20										
SAN MIGUEL ENERGY CORP.	10	10	10	10	10	10	10				
BICOL HYDROPOWER CORP.	1	1									
AES-MASINLOC (forward contract)		10	10	10	10	10	10	10	10	10	10
Supply for PSA Approval, MW	0	0	0	0	0	0	0	0	0	0	0
Uncontracted Demand, MW	12.84879	26.24758	31.93387	36.1269	40.35525	42.18627	45.73941	55.09576	58.22103	80.77306	83.75565



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)
MPPCL	AES-MASIN	80%	May 2010	July 2026	18.5	2287112	BASELOAD	GRID	IPP	Active	COAL POWER PLANT		
MPPCL	AES-MASIN	100%	Jan 2019	Jan 2029	10	613200	BASELOAD	GRID	IPP	Active	COAL POWER PLANT		
BGI	BAC-MAN	80%	Jan 2013	Jan 2018 (Ext)	20	500251.6	PEAKING	GRID	IPP	Expired	GEOHERMAL PLANT		
SMEC	SAN MIGUEL	35%	Oct-14	Oct 2024	10	319902	MID-MERIT	GRID	IPP	Active	COAL POWER PLANT		
BHYDRO	BICOL HYDRO	100%	Oct 2013	Oct 2018	1	16765.16	BASE	EMBEDDED	IPP	Active	HYDRO		

From November 2006 to present, CASURECO II is a registered and a member of Wholesale Electricity Spot Market (WESM). We are also engaged into a Supply Contract with the other power suppliers namely, Bacman Geothermal Inc., AES Philippines, Therma Luzon Inc., San Miguel Energy Corporation and Bicol Mini-Hydro Power Corporation (BHPC). With the promulgation of ERC Resolution No. 1 Series of 2016 – Clarifying the effectivity of the Power Suppliers Competitive Selection Process (CSP), CASURECO II Management is creating the Third Party Bids and Awards Committee (TPBAC) on Power Supplier CSP whose task is to study, analyse, assist and recommend to the Board and the Management on the conduct of the bidding process and to determine the needed power requirements of the cooperative for CSP taking into consideration of ending Power Supply Agreement with one of our Power Supplier (Bacman Geothermal Inc. BGI) last January 2019 and Bicol Hydro Power Corporation (BHPC) October of this year coupled with new big load customers that will be connected in our distribution system.

## **DISTRIBUTION IMPACT STUDY**

Due to the abrupt increase of our demand and the possible entry of large potential load customers this 2019 and onwards, we have recently installed and energized an additional 20 MVA Power Transformer at Del Rosario Substation and is on the process of putting up this 2019 a new 20 MVA Power Substation at San Felipe, Naga City and possible uprating of our existing 10 MVA Power Transformer to 20 MVA at Pili Substation on 2020. Accordingly, we have considered and prepared the reconfiguration of feeders to properly accommodate the existing and additional customers to avoid overloading of our substations. As of December 2018, most of our substations are reaching beyond 80% of its allowable capacity thus there is a great need for these additional capacity projects to be realized.





POWER SUPPLY PROCUREMENT PLAN

Jan	64.72	30.88	31,959.56	39.00	24,677.17	25.72	7,282.39	20.00	
Feb	64.17	34.43	33,687.45	39.00	24,720.02	25.17	8,967.43	20.00	
Mar	66.87	35.20	30,638.25	39.00	24,839.95	27.87	5,798.31	20.00	
Apr	70.65	27.08	35,308.95	39.00	25,559.33	31.65	9,749.62	20.00	
May	74.28	47.53	38,347.34	39.00	26,171.29	35.28	12,176.05	20.00	
Jun	77.57	45.88	39,870.47	39.00	25,907.74	38.57	13,962.73	20.00	
Jul	75.36	47.63	39,240.63	39.00	23,347.26	36.36	15,893.37	20.00	
Aug	77.73	43.94	40,822.95	39.00	22,252.41	38.73	18,570.54	20.00	
Sep	79.36	43.26	39,822.72	39.00	22,252.41	40.36	17,570.31	20.00	
Oct	76.57	39.55	39,401.68	39.00	21,770.21	37.57	17,631.47	20.00	
Nov	73.97	44.44	37,083.93	39.00	22,649.72	34.97	14,434.21	20.00	
Dec	74.07	45.05	35,984.62	39.00	22,026.94	35.07	13,957.68	20.00	
2023									
Jan	66.22	34.23	33,366.26	39.00	24,839.27	27.22	8,526.99	20.00	
Feb	65.65	38.16	35,170.20	39.00	24,883.54	26.65	10,286.66	20.00	
Mar	68.41	39.02	31,986.80	39.00	25,047.70	29.41	6,939.10	20.00	
Apr	72.28	30.02	36,863.07	39.00	25,750.77	33.28	11,112.30	20.00	
May	75.99	52.69	40,035.20	39.00	26,396.49	36.99	13,638.70	20.00	
Jun	79.36	50.85	41,625.38	39.00	26,110.77	40.36	15,514.60	20.00	
Jul	77.10	52.79	40,967.81	39.00	23,478.54	38.10	17,489.27	20.00	
Aug	79.52	48.71	42,619.77	39.00	22,333.85	40.52	20,285.92	20.00	
Sep	81.19	47.95	41,575.52	39.00	22,333.85	42.19	19,241.66	20.00	
Oct	78.34	43.85	41,135.95	39.00	21,849.03	39.34	19,286.92	20.00	
Nov	75.67	49.26	38,716.19	39.00	22,744.39	36.67	15,971.80	20.00	
Dec	75.78	49.94	37,568.49	39.00	22,114.30	36.78	15,454.19	20.00	
2024									
Jan	69.52	37.59	35,242.13	39.50	25,125.72	30.02	10,116.41	30.00	
Feb	68.93	41.91	37,147.49	39.50	25,171.41	29.43	11,976.08	30.00	
Mar	71.83	42.85	33,785.11	39.50	25,367.49	32.33	8,417.62	30.00	
Apr	75.89	32.96	38,935.53	39.50	26,066.42	36.39	12,869.11	30.00	
May	79.78	57.86	42,286.00	39.50	26,741.76	40.28	15,544.24	30.00	
Jun	83.33	55.85	43,965.57	39.50	26,437.96	43.83	17,527.61	30.00	
Jul	80.95	57.98	43,271.04	39.50	23,730.31	41.45	19,540.73	30.00	
Aug	83.49	53.49	45,015.88	39.50	22,540.03	43.99	22,475.85	30.00	
Sep	85.24	52.66	43,912.91	39.50	22,540.03	45.74	21,372.89	30.00	
Oct	82.25	48.15	43,448.63	39.50	22,048.59	42.75	21,400.04	30.00	
Nov	79.45	54.09	40,892.83	39.50	22,963.72	39.95	17,929.11	30.00	
Dec	79.56	54.84	39,680.61	39.50	22,322.36	40.06	17,358.25	30.00	
2025									
Jan	69.00	40.95	36,446.53	29.50	19,928.70	39.50	16,517.83	30.00	
Feb	68.41	45.65	38,417.00	29.50	19,928.70	38.91	18,488.30	30.00	
Mar	71.29	46.67	34,939.72	29.50	18,706.80	41.79	16,232.92	30.00	
Apr	75.31	35.91	40,266.15	29.50	19,928.70	45.81	20,337.45	30.00	
May	79.18	63.02	43,731.12	29.50	19,521.50	49.68	24,209.62	30.00	
Jun	82.70	60.83	45,468.10	29.50	19,928.70	53.20	25,539.40	30.00	
Jul	80.34	63.15	44,749.83	29.50	19,521.50	50.84	25,228.33	30.00	
Aug	82.86	58.26	46,554.29	29.50	19,928.70	53.36	26,625.59	30.00	
Sep	84.60	57.36	45,413.64	29.50	19,928.70	55.10	25,484.94	30.00	
Oct	81.63	52.45	44,933.49	29.50	19,521.50	52.13	25,411.99	30.00	
Nov	78.85	58.92	42,290.34	29.50	19,928.70	49.35	22,361.64	30.00	

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Dec	78.96	59.73	41,036.69	29.50	19,521.50	49.46	21,515.19	30.00	
2026									
Jan	71.55	44.29	38,605.43	29.50	19,928.70	42.05	18,676.73	30.00	
Feb	70.93	49.38	40,692.62	29.50	19,928.70	41.43	20,763.92	30.00	
Mar	73.92	50.48	37,009.36	29.50	18,706.80	44.42	18,302.56	30.00	
Apr	78.09	38.84	42,651.31	29.50	19,928.70	48.59	22,722.61	30.00	
May	82.11	68.17	46,321.52	29.50	19,521.50	52.61	26,800.02	30.00	
Jun	85.75	65.80	48,161.39	29.50	7,300.00	56.25	40,861.39	30.00	
Jul	83.31	68.31	47,400.58	29.50	7,300.00	53.81	40,100.58	30.00	
Aug	85.93	63.02	49,311.92	10.00	7,300.00	75.93	42,011.92	30.00	
Sep	87.72	62.04	48,103.70	10.00	7,300.00	77.72	40,803.70	30.00	
Oct	84.65	56.73	47,595.11	10.00	7,300.00	74.65	40,295.11	30.00	
Nov	81.76	63.73	44,795.40	10.00	7,300.00	71.76	37,495.40	30.00	
Dec	81.88	64.61	43,467.49	10.00	7,300.00	71.88	36,167.49	30.00	
2027									
Jan	74.03	47.61	40,872.01	10.00	7,300.00	64.03	33,572.01	50.00	
Feb	73.40	53.08	43,081.75	10.00	7,300.00	63.40	35,781.75	50.00	
Mar	76.49	54.27	39,182.24	10.00	7,300.00	66.49	31,882.24	50.00	
Apr	80.81	41.75	45,155.43	10.00	7,300.00	70.81	37,855.43	50.00	
May	84.96	73.28	49,041.13	10.00	7,300.00	74.96	41,741.13	50.00	
Jun	88.73	70.73	50,989.02	10.00	7,300.00	78.73	43,689.02	50.00	
Jul	86.20	73.43	50,183.54	10.00	7,300.00	76.20	42,883.54	50.00	
Aug	88.92	67.74	52,207.11	10.00	7,300.00	78.92	44,907.11	50.00	
Sep	90.77	66.69	50,927.95	10.00	7,300.00	80.77	43,627.95	50.00	
Oct	87.59	60.98	50,389.50	10.00	7,300.00	77.59	43,089.50	50.00	
Nov	84.61	68.51	47,425.41	10.00	7,300.00	74.61	40,125.41	50.00	
Dec	84.73	69.46	46,019.54	10.00	7,300.00	74.73	38,719.54	50.00	
2028									
Jan	76.47	50.91	43,246.77	10.00	7,300.00	66.47	35,946.77	50.00	
Feb	75.81	56.76	45,584.90	10.00	7,300.00	65.81	38,284.90	50.00	
Mar	79.00	58.03	41,458.81	10.00	7,300.00	69.00	34,158.81	50.00	
Apr	83.47	44.64	47,779.06	10.00	7,300.00	73.47	40,479.06	50.00	
May	87.76	78.36	51,890.53	10.00	7,300.00	77.76	44,590.53	50.00	
Jun	91.65	75.63	53,951.59	10.00	7,300.00	81.65	46,651.59	50.00	
Jul	89.04	78.52	53,099.31	10.00	7,300.00	79.04	45,799.31	50.00	
Aug	91.84	72.44	55,240.45	10.00	7,300.00	81.84	47,940.45	50.00	
Sep	93.76	71.31	53,886.97	10.00	7,300.00	83.76	46,586.97	50.00	
Oct	90.47	65.21	53,317.24	10.00	7,300.00	80.47	46,017.24	50.00	
Nov	87.39	73.26	50,180.93	10.00	7,300.00	77.39	42,880.93	50.00	
Dec	87.51	74.27	48,693.37	10.00	7,300.00	77.51	41,393.37	50.00	