CENTRAL NEGROS ELECTRIC COOPERATIVE, INC. (CENECO)
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 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. DU's Current Supply and Demand
VIII. Schedule of Power Supply Procurement
IX. Timeline of the CSP

For inquiries, you may send it at 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

DISTRIBUTION UTILITIES PROFILE

CENECO is one of the 119 electric cooperatives in the Philippines. It was incorporated on February 24, 1975. It is currently serving the cities of Bacolod, Bago, Talisay, Silay and the municipalities of Murcia and Don Salvador Benedicto. As of December, 2018, the total barangays energized is 158 out of 158 or 100%. Total connections served is 231,764 out of 264,300 or 87.69%. The systems loss of CENECO for the year 2018 is 11.12%.

CENECO
COVERAGE AREA

No. of City = 4
No. of Municipality = 2
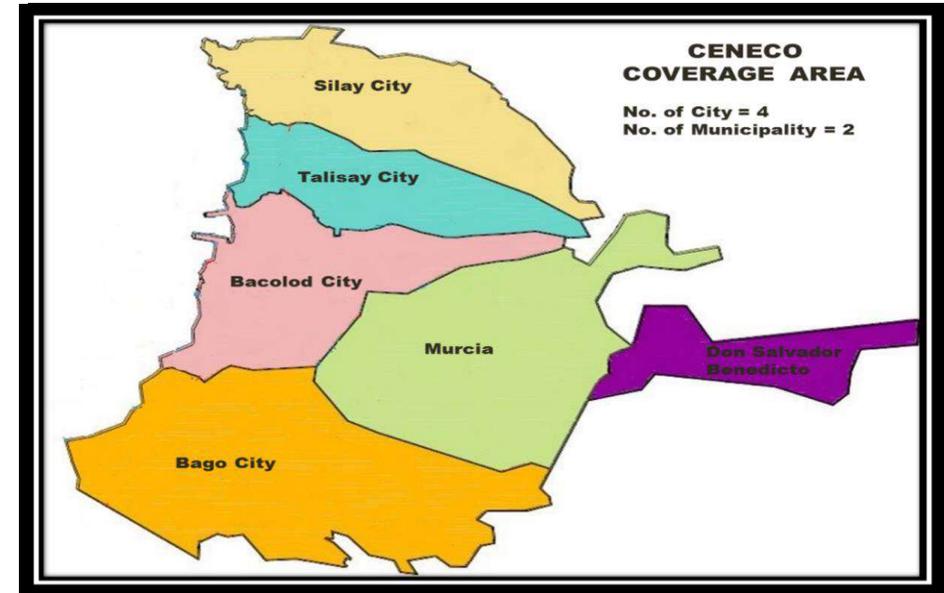
Number of Customer Connections in Franchise	ACTUAL	FORECAST									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Residential	177,747	184,005	190,473	196,940	203,408	209,875	216,343	222,811	229,278	235,746	242,213
Commercial	11,823	12,239	12,669	13,100	13,530	13,960	14,390	14,820	15,251	15,681	16,111
Industrial	191	198	205	212	219	226	232	239	246	253	260
Others	689	713	738	763	788	814	839	864	889	914	939
Contestable Customers served by RES	8	8	8	8	8	8	8	8	8	8	8
Total (Captive Customers)	190,450	197,155	204,085	211,015	217,945	224,875	231,804	238,734	245,664	252,594	259,524

CENECO's consumers has steadily increase by an average of 4.44 % in the last five years, Residential Consumers account for 93.33% of the total consumers' population; Commercial Consumers account for 6.21%; Industrial Consumers account for 0.10%.

2018 No. of Customers

Residential ■ Commercial ■ Industrial ■ Others
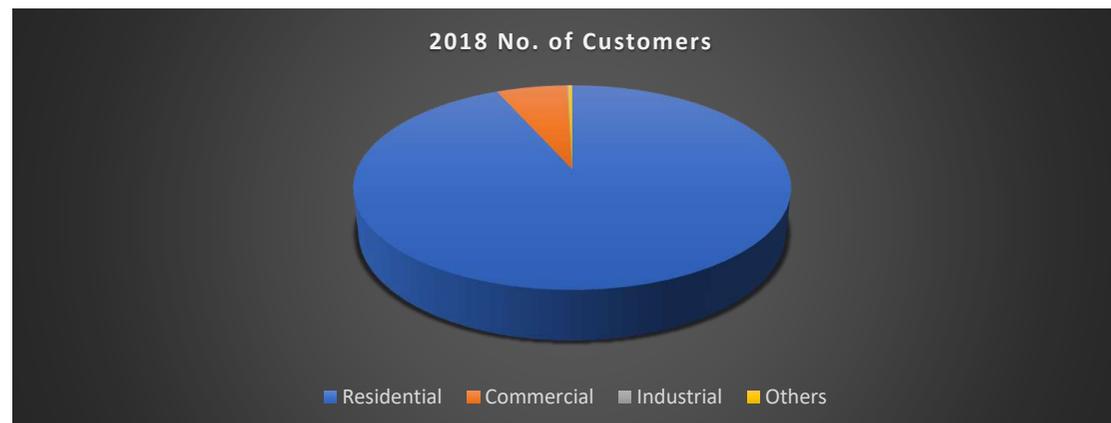
II. DEMAND

Demand	HISTORICAL									
	2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Coincident Peak Demand (MW)	110	113	111	116	124	129	133	141	142	149
Off Peak Demand (MW)				36	44	33	36	40	47	54

Demand	FORECASTED									
	2019	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
Coincident Peak Demand (MW)	156	163	170	177	184	190	196	203	209	215
Off Peak Demand (MW)	57	60	62	65	67	70	72	74	76	79

Coincident Peak Demand vs Off-peak Demand
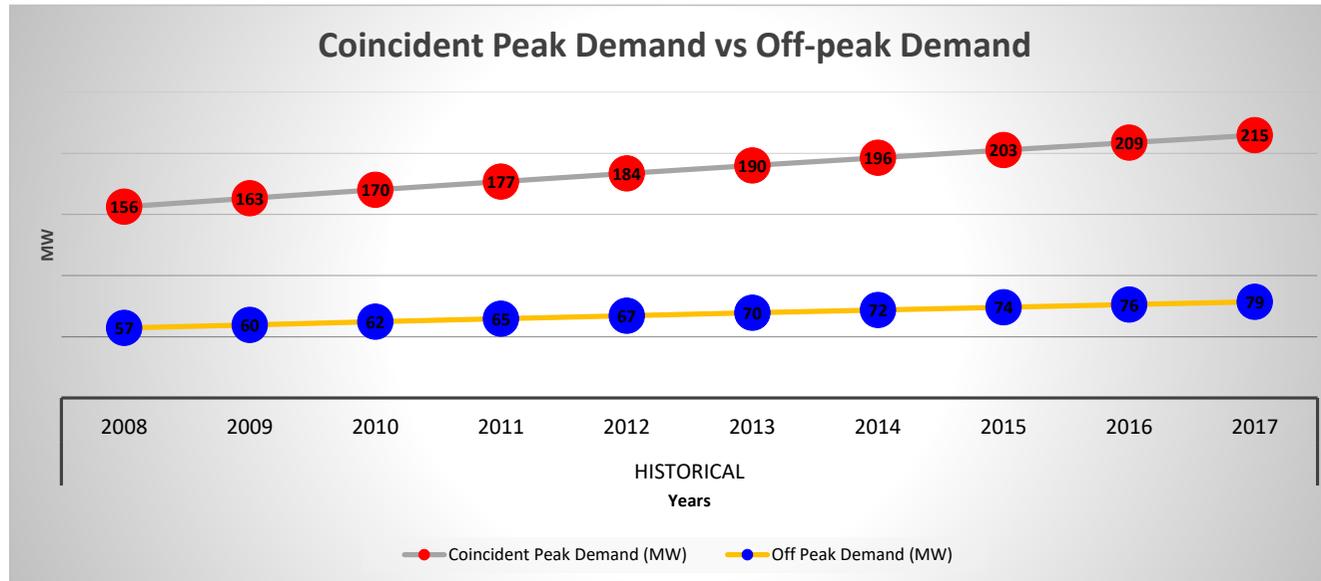
CENECO maximum demand has reached 149 MW in 2018 with an average growth rate of 3.77% in the last five years.Aaverage growth rate of 3.75% in the next ten years 2019 - 2028.

III. ENERGY SALES AND PURCHASE

ENERGY SALES AND PURCHASE	HISTORICAL									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Energy Sales (MWh)	522,020	557,008	555,361	574,459	593,018	608,671	651,589	713,684	749,322	783,316
Energy Purchase (MWh)	582,925	629,690	633,788	654,865	689,068	713,680	749,589	810,805	845,533	881,297
System Loss (MWh)	60,905	72,682	78,427	80,406	96,051	105,009	98,000	97,121	96,211	97,981

ENERGY SALES AND PURCHASE	FORECAST									
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Energy Sales (MWh)	825,755	872,496	924,462	961,177	997,167	1,032,434	1,066,990	1,100,855	1,134,051	1,166,602
Energy Purchase (MWh)	927,814	969,440	1,010,341	1,050,467	1,089,800	1,128,343	1,166,110	1,203,120	1,239,400	1,274,974
System Loss (MWh)	102,060	96,944	85,879	89,290	92,633	95,909	99,119	102,265	105,349	108,373
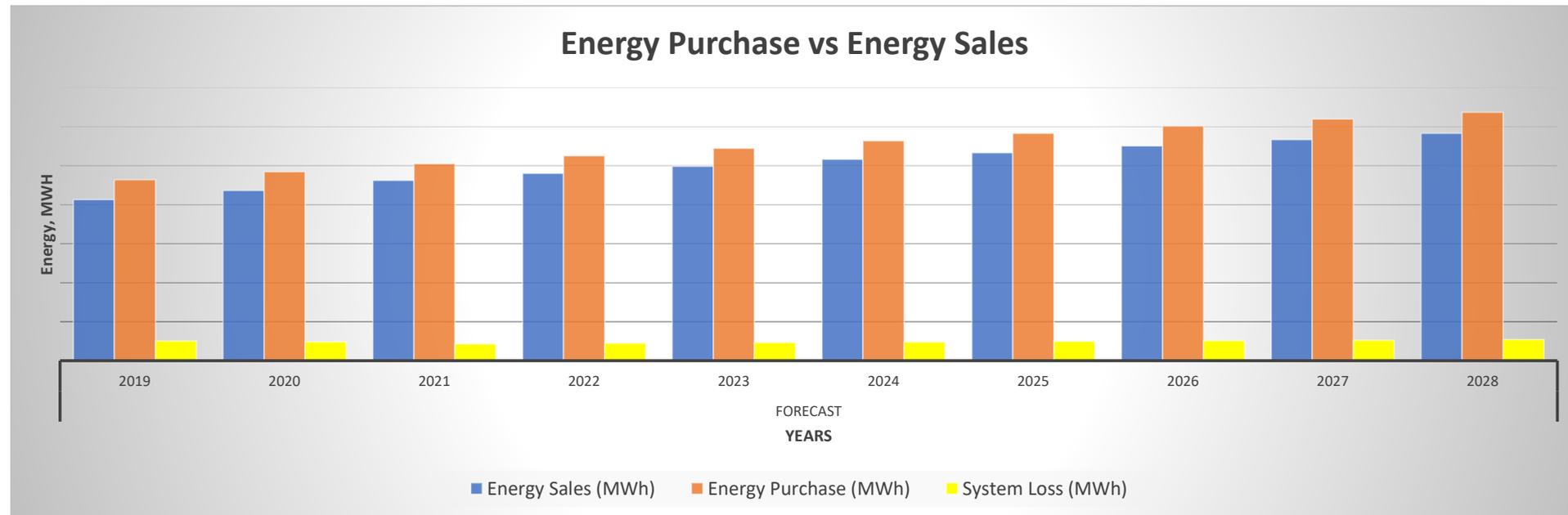
The average historical growth rate of CENECO sales energy for years 2016-2018 is 5.56% and the average forecasted growth rate for years 2019-2028 is 3.76%.

IV. LOAD PROFILE AND LOAD DURATION CURVE

CENECO Hourly Load profile (MWh)

CENECO 2018 Load Duration Profile (MWh)
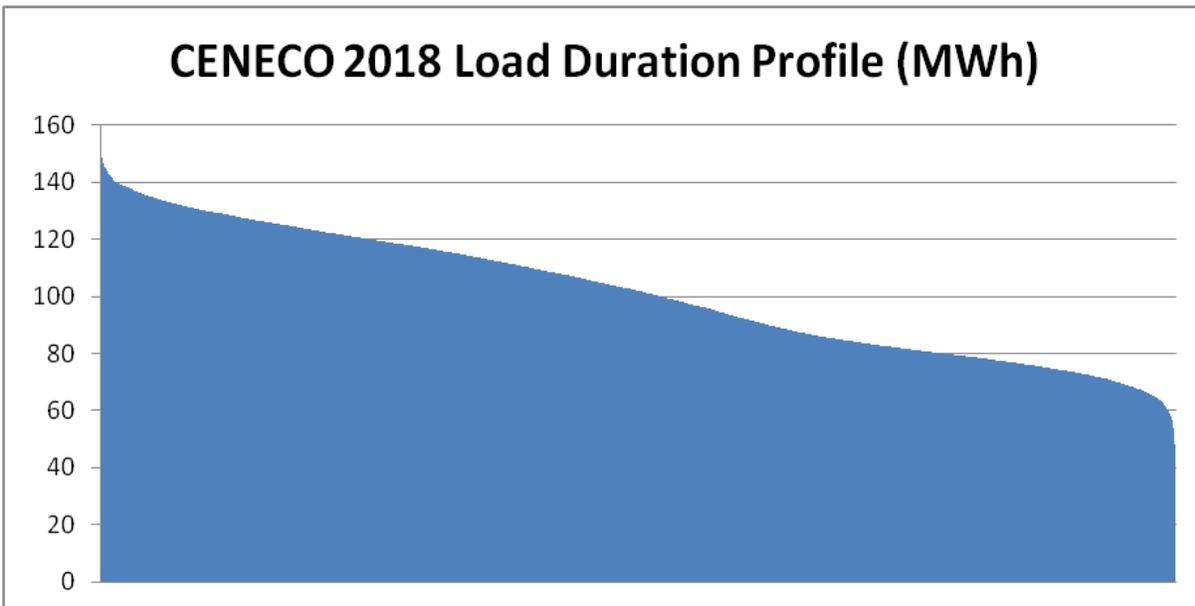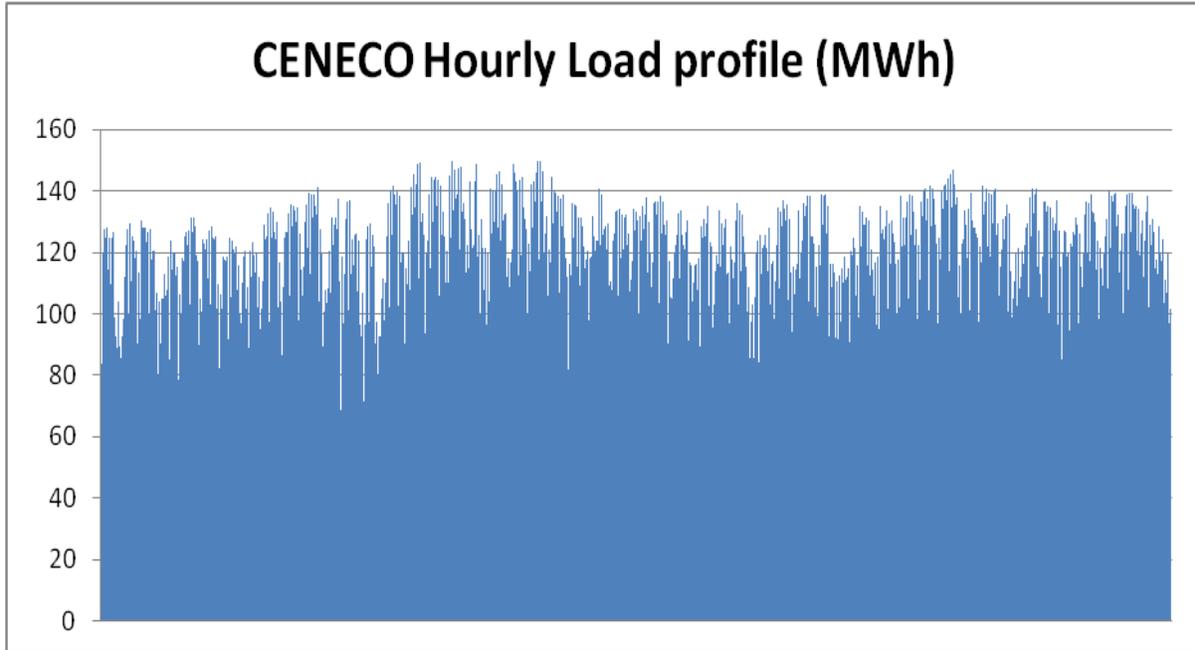
CENECO 2018 annual load profile depicts a baseload of 71 MW with a load factor of 99.47%, a mid-merit load of 48 MW with a load factor of 58.13% and a peaking load of 30 MW with 7.92% load factor.

V. 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	149	156	163	170	177	184	190	196	203	209	215
Supply Contracted, MW	131.6	137.9	137.9	137.9	97.9	73.9	73.9	73.9	53.9	53.9	18.9
GCGI	20	20	20	20	20	20	20	20			
KSPC40	40	40	40	40							
KSPC24	24	24	24	24	24						
PCPC	35	35	35	35	35	35	35	35	35	35	
Energreen	12.6	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9
Supply for PSA Approval, MW	0	0	0	0	0	0	0	0	0	0	0
Generation Plant Name 1											
Generation Plant Name 2											
Generation Plant Name 3											
Uncontracted Demand, MW	17	18	25	32	79	110	116	122	149	155	196
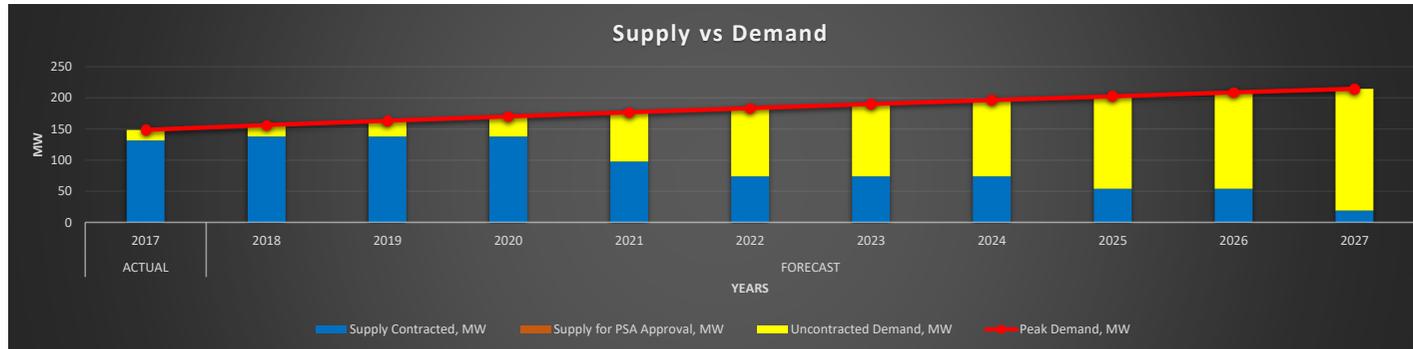
List of Existing Contracts and Details

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)
GCGI	GCGI		01/12	11/24	20	175,200	Base	Grid-Connected	IPP	Active	Geothermal	200	180
KSPC40	KSPC		03/11	02/21	40	350,400	Base	Grid-Connected	IPP	Active	Coal	100	80
KSPC24	KSPC		07/11	02/21	24	Actual. LF	Mid-merit	Grid-Connected	IPP	Active	Coal	100	80
PCPC	PCPC		02/17	02/31	35	Actual. LF	Base/Mid-merit	Grid-Connected	IPP	Active	Coal	125	100
Energreen	Energreen		05/16	05/31	18.9	78,000	Mid-merit/Peaking	Grid-Connected	IPP	Active	Diesel	23	19.4

In anticipation of the privatization of NPC/PSALM's generating assets, the former sole supplier of electricity in Visayas Grid, and their continuous reduction of contract capacity in their Transition Supply Agreement, CENECO entered into its first contract with an IPP KSPC for a capacity of 40 MW. KSPC Plant started its commercial operation in February of 2011 at the time Wholesale Electricity Spot Market (WESM) in Visayas has just begun in December 26, 2010. Further reduction of NPC/PSALM's contract capacity prompted another contract at 24 MW additional capacity from KSPC and an initial 10 MW capacity from GCGI with additional provision of 10 MW at the beginning of 2nd contract year in December 26, 2012. FDCUI's 20 MW was transitory while waiting for PCPC's 35 MW delivery on June 26, 2016. To further secure the high growth rate of CENECO's load requirement, it entered into contract with Energreen a capacity of 18.9 MW for peaking and reserve which delivered 12.6 MW on May 26, 2016 and completed 18.9 MW last May of 2017. CENECO has reached the highest and unprecedented monthly energy consumption of 78 Million kWh and demand of 152MW last billing period of April 2018. CENECO base load level is at 74MW, mid-merit load level of 51 MW at 55% load factor and peak load of 25 MW at 25% load factor.

VI. DISTRIBUTION IMPACT STUDY

CENECO evaluated the capacity requirement of substations, sub transmission lines and distribution transformers and determined the year that the loading criteria of equipment are violated. The demand and location of new and future customers were also anticipated, especially bulk or spot loads.

Reclamation, Lopez, Burgos, Mt. View, Talisay, Alijis, Gonzaga, and Panaogao substations already reached the 70% loading limit. Projects that will address these overloading are included in CENECO CAPEX 2014-2019 application. There will be upgrading of Burgos, Talisay, and Panaogao substations. New substations (Cyber Center, Capitol) will also be constructed to accommodate spot loads. Construction of new NGCP-Silay 69 kV line will also address the sub transmission overload problem.

CENECO calculated and evaluated the available short circuit currents in the distribution system using Synergi Electric software. Then, CENECO also assessed the short circuit duties of the protective devices against maximum faults and their adequacy to sense minimum faults. All devices have adequate protection.

Assessed of distribution poles shows that there are rotten poles that need replacement. The evaluation of sub transmission poles shows that there are poles that need to be replaced as well and others need to be relocated. There are areas where distribution lines need rehabilitation because of DPWH road widening projects.

CENECO calculated the voltages at the load points of the Medium Voltage (MV) Feeders for the base year and forecasted years and evaluated the power quality of distribution system. For purposes of Distribution Planning, power quality assessment shall include the under/over voltages and unbalance voltages in primary distribution feeders. Upgrading of conductors and placement of capacitors were implemented in areas with low voltages.

According to Electric Cooperatives Distribution Utility Planning Manual, "In the interim the reliability criterion for sub transmission system is single outage contingency or (N-1) redundancy and for the distribution system, the maximum System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) are set at maximum 20 customer-interruptions per customer-year and 45 hours per customer-year, respectively. CENECO is compliant in this regard.

The system loss of CENECO is also below the cap limit set by ERC.

VII. SCHEDULE OF POWER SUPPLY PROCUREMENT

Base / mid-merit / peaking	For CSP		Proposed contract period		Proposed schedule (MM/YYYY)						
	Demand (MW)	Energy (MWh)	Start Month and Year	End Month and Year	Publication of Invitation to Bid	Pre-bid Conference	Submission and Opening of Bids	Bid Evaluation	Awarding	PSA Signing	Joint Application to ERC
Base	20.00	175,200	02/26/2021	02/25/2030	3/23/2020	4/15/2020	5/4/2020	5/5/2020	6/8/2020	8/4/2020	8/9/2020
Mini-Hydro											
Base Plant	20.00										
Mid-merit	30.00	183,960	02/26/2022	02/25/2031	3/23/2020	4/15/2020	5/4/2020	5/5/2020	6/8/2020	8/4/2020	8/9/2020
Base	25.00	219,000	02/26/2025	02/25/2034	3/23/2020	4/15/2020	5/4/2020	5/5/2020	6/8/2020	8/4/2020	8/9/2020
Mid-merit											
Base											
Mid-merit											
Base											
Mid-merit											
Base											
Base											
Mid-merit											
Base											
Mid-merit											
Base											
Mid-merit											
Base											
Mid-merit											

10-Year Monthly Data (Excluding Contestable Customers)

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)
2019	**154**	**60**	**927,814**	**138**	**912,407**	**16**	**15,407**		
Jan	135	60	73,824	130	72,950	5	874		
Feb	138	61	73,192	133	72,492	5	700		
Mar	145	66	70,685	138	69,518	7	1,168		
Apr	154	64	81,173	138	79,538	16	1,636		
May	154	78	83,064	138	81,045	16	2,018		
Jun	149	65	80,038	138	78,678	11	1,360		
Jul	142	63	75,430	137	74,285	5	1,145		
Aug	143	60	77,295	137	76,234	5	1,061		
Sep	143	64	76,471	138	75,437	5	1,034		
Oct	151	67	79,643	138	77,977	13	1,667		
Nov	145	73	79,305	138	77,984	7	1,322		
Dec	144	69	77,693	138	76,269	6	1,424		
2020	**161**	**62**	**969,440**	**138**	**935,013**	**23**	**34,427**		
Jan	141	63	77,136	130	74,968	11	2,168		
Feb	145	64	76,475	134	74,637	11	1,839		
Mar	152	69	73,856	138	71,226	14	2,630		
Apr	161	67	84,815	138	81,392	23	3,423		
May	161	81	86,790	138	82,627	23	4,164		
Jun	155	68	83,629	138	80,567	18	3,062		
Jul	149	66	78,815	138	76,172	11	2,642		
Aug	149	62	80,763	138	78,238	11	2,526		
Sep	149	67	79,902	138	77,489	12	2,413		
Oct	158	70	83,216	138	79,691	20	3,525		
Nov	151	77	82,863	138	79,917	13	2,946		
Dec	151	72	81,178	138	78,090	13	3,088		
2021	**147**	**57**	**882,175**	**132**	**705,940**	**49**	**176,236**	**20**	**145,440**
Jan	129	57	70,192	129	70,163	-	29	-	-
Feb	132	58	69,591	132	69,568	-	24	-	-
Mar	138	63	67,208	98	51,626	40	15,582	20	13,440
Apr	147	61	77,180	98	58,056	49	19,124	20	14,880
May	147	74	78,978	98	58,707	49	20,271	20	14,400
Jun	141	61	76,101	98	58,292	44	17,809	20	14,880
Jul	135	60	71,720	98	55,355	37	16,365	20	14,400
Aug	136	57	73,493	98	56,826	38	16,667	20	14,880
Sep	136	61	72,710	98	56,420	38	16,289	20	14,880
Oct	144	64	75,726	98	56,982	46	18,743	20	14,400
Nov	138	70	75,404	98	57,738	40	17,666	20	14,880
Dec	137	66	73,871	98	56,206	39	17,665	20	14,400
2022	**153**	**59**	**919,548**	**98**	**567,200**	**79**	**352,348**	**50**	**327,912**
Jan	134	60	73,166	98	55,441	36	17,725	20	14,880
Feb	137	60	72,540	98	55,107	39	17,432	20	14,880
Mar	144	65	70,055	74	42,157	70	27,899	50	27,552
Apr	153	63	80,450	74	46,502	79	33,948	50	30,504
May	153	77	82,324	74	45,270	79	37,054	50	29,520
Jun	147	64	79,325	74	46,778	74	32,547	50	30,504
Jul	141	62	74,758	74	45,236	67	29,523	50	29,520
Aug	141	59	76,607	74	46,705	67	29,902	50	30,504
Sep	142	63	75,790	74	46,742	68	29,048	50	30,504
Oct	150	67	78,934	74	45,270	76	33,664	50	29,520

10-Year Monthly Data (Excluding Contestable Customers)

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)
Nov	144	73	78,599	74	46,777	70	31,822	50	30,504
Dec	143	68	77,001	74	45,215	69	31,786	50	29,520
2023	**159**	**62**	**956,709**	**74**	**549,599**	**85**	**407,110**	**50**	**359,160**
Jan	139	62	76,123	74	46,383	65	29,739	50	30,504
Feb	143	63	75,471	74	46,525	69	28,946	50	30,504
Mar	150	68	72,887	74	42,166	76	30,721	50	27,552
Apr	159	66	83,701	74	46,519	85	37,182	50	30,504
May	159	80	85,651	74	45,270	85	40,381	50	29,520
Jun	153	67	82,531	74	46,779	80	35,752	50	30,504
Jul	147	65	77,779	74	45,240	73	32,539	50	29,520
Aug	147	62	79,702	74	46,707	73	32,995	50	30,504
Sep	147	66	78,853	74	46,747	74	32,106	50	30,504
Oct	156	69	82,124	74	45,270	82	36,854	50	29,520
Nov	149	76	81,775	74	46,778	75	34,997	50	30,504
Dec	149	71	80,112	74	45,215	75	34,897	50	29,520
2024	**165**	**64**	**993,572**	**74**	**535,282**	**101**	**458,290**	**50**	**359,160**
Jan	145	65	79,056	74	46,400	71	32,656	50	30,504
Feb	148	65	78,379	74	46,536	74	31,843	50	30,504
Mar	156	71	75,695	74	42,174	82	33,521	50	27,552
Apr	165	68	86,926	74	46,535	91	40,391	50	30,504
May	165	83	88,951	74	45,270	91	43,681	50	29,520
Jun	159	69	85,711	74	46,779	85	38,932	50	30,504
Jul	152	67	80,776	74	45,244	78	35,532	50	29,520
Aug	153	64	82,773	74	46,709	79	36,064	50	30,504
Sep	153	68	81,891	74	46,751	79	35,140	50	30,504
Oct	162	72	85,288	74	45,270	88	40,018	50	29,520
Nov	155	78	84,926	74	46,779	81	38,148	50	30,504
Dec	155	74	83,199	54	30,835	101	52,364	50	29,520
2025	**171**	**66**	**1,030,081**	**54**	**374,539**	**117**	**655,541**	**75**	**578,160**
Jan	150	67	81,961	54	31,536	96	50,424	75	49,104
Feb	154	68	81,259	54	31,664	100	49,595	75	49,104
Mar	161	73	78,476	54	28,741	107	49,735	75	44,352
Apr	171	71	90,121	54	31,669	117	58,451	75	49,104
May	171	86	92,219	54	30,870	117	61,349	75	47,520
Jun	165	72	88,860	54	31,899	111	56,961	75	49,104
Jul	158	70	83,745	54	30,848	104	52,896	75	47,520
Aug	158	66	85,815	54	31,832	104	53,983	75	49,104
Sep	159	71	84,900	54	31,876	105	53,024	75	49,104
Oct	168	75	88,422	54	30,870	114	57,552	75	47,520
Nov	161	81	88,047	54	31,899	107	56,148	75	49,104
Dec	160	77	86,256	54	30,835	106	55,421	75	47,520
2026	**177**	**69**	**1,066,196**	**54**	**374,589**	**123**	**691,607**	**75**	**578,160**
Jan	155	69	84,834	54	31,551	101	53,283	75	49,104
Feb	159	70	84,108	54	31,672	105	52,437	75	49,104
Mar	167	76	81,228	54	28,747	113	52,481	75	44,352
Apr	177	73	93,280	54	31,681	123	61,599	75	49,104
May	177	89	95,453	54	30,870	123	64,583	75	47,520
Jun	171	74	91,976	54	31,899	117	60,077	75	49,104
Jul	163	72	86,681	54	30,852	110	55,829	75	47,520
Aug	164	69	88,824	54	31,834	110	56,990	75	49,104

10-Year Monthly Data (Excluding Contestable Customers)

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)
Sep	164	73	87,877	54	31,880	110	55,996	75	49,104
Oct	174	77	91,522	54	30,870	120	60,652	75	47,520
Nov	166	84	91,134	54	31,899	113	59,235	75	49,104
Dec	166	79	89,280	54	30,835	112	58,445	75	47,520
2027	**183**	**71**	**1,101,895**	**54**	**374,636**	**129**	**727,259**	**75**	**578,160**
Jan	161	72	87,675	54	31,565	107	56,110	75	49,104
Feb	164	72	86,924	54	31,678	111	55,246	75	49,104
Mar	172	78	83,947	54	28,751	119	55,197	75	44,352
Apr	183	76	96,403	54	31,692	129	64,712	75	49,104
May	183	92	98,649	54	30,870	129	67,779	75	47,520
Jun	177	77	95,055	54	31,899	123	63,156	75	49,104
Jul	169	75	89,583	54	30,855	115	58,727	75	47,520
Aug	169	71	91,798	54	31,836	115	59,962	75	49,104
Sep	170	76	90,819	54	31,885	116	58,934	75	49,104
Oct	179	80	94,586	54	30,870	126	63,716	75	47,520
Nov	172	87	94,185	54	31,899	118	62,286	75	49,104
Dec	171	82	92,270	54	30,835	117	61,435	75	47,520
2028	**189**	**73**	**1,137,163**	**54**	**374,675**	**135**	**762,488**	**75**	**578,160**
Jan	166	74	90,481	54	31576	112	58,905	75	49,104
Feb	170	75	89,706	54	31685	116	58,022	75	49,104
Mar	178	81	86,634	54	28755	124	57,879	75	44,352
Apr	189	78	99,489	54	31701	135	67,788	75	49,104
May	189	95	101,806	54	30870	135	70,936	75	47,520
Jun	182	79	98,098	54	31899	128	66,199	75	49,104
Jul	174	77	92,450	54	30858	120	61,592	75	47,520
Aug	175	73	94,736	54	31838	121	62,898	75	49,104
Sep	175	78	93,726	54	31888	121	61,838	75	49,104
Oct	185	82	97,614	54	30870	131	66,744	75	47,520
Nov	178	90	97,200	54	31899	124	65,301	75	49,104
Dec	177	85	95,223	54	30835	123	64,388	75	47,520