

TABLE OF CONTENTS

	Page
I. Table of Contents	
II. Introduction	1-2
III. Energy and Demand Forecast (10 year historical and forecast)	3
IV. Energy Sales and Purchase	3
V. Daily Load Profile and Load Duration Curve	4
VI. DU's Current Supply and Demand	6-7
VII. Existing Contracts & Existing GenCos due diligence report	7
IX. Distribution Impact Study	8
X. Schedule of Power Supply Procurement	9
XI. Timeline of the CSP	9

INTRODUCTION

The Peninsula Electric Cooperative, Inc. or PENELCO, is one of the top performing Electric Distribution Utilities in the Philippines. It is officially incorporated and registered on 10 April 1990 with the National Electrification Administration (NEA) under Presidential Decree 269. The cooperative holds the power distribution franchise for the province of Bataan with eleven (11) municipalities, one (1) city as well as the four(4) barangays outside the province of Bataan, namely, Brgy. Batiawan in Zambales and Brgys. Sto. Rosario, Bodega and Dampe in Pampanga. PENELCO's 50-year franchise for these markets, awarded in 2002, gives the electric cooperative control of the energy distribution services for an area of approximately 1,373 square kilometers and a population of more or less 760,650 as per 2015 census.

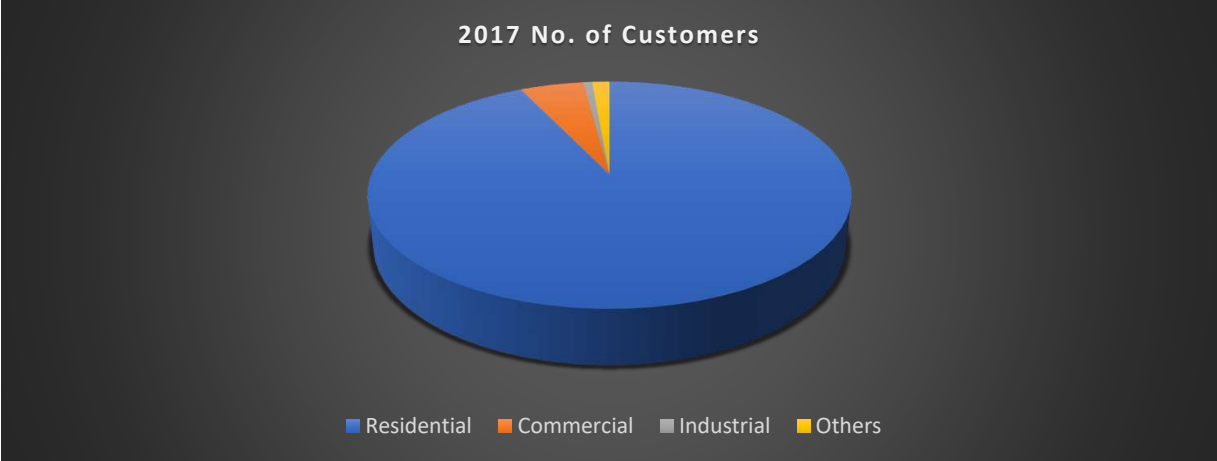
The total household connection as of December 2017 is 190,403 member-consumers. Employee to Consumer Ratio of PENELCO is 1:608.

With the adept utilization of its resources, PENELCO is financially stable with a total Asset of Php3.1 billion for the year ending 2017 and it is the only electric cooperative that has positive accumulated net margin since inception.



POWER SUPPLY PROCUREMENT PLAN

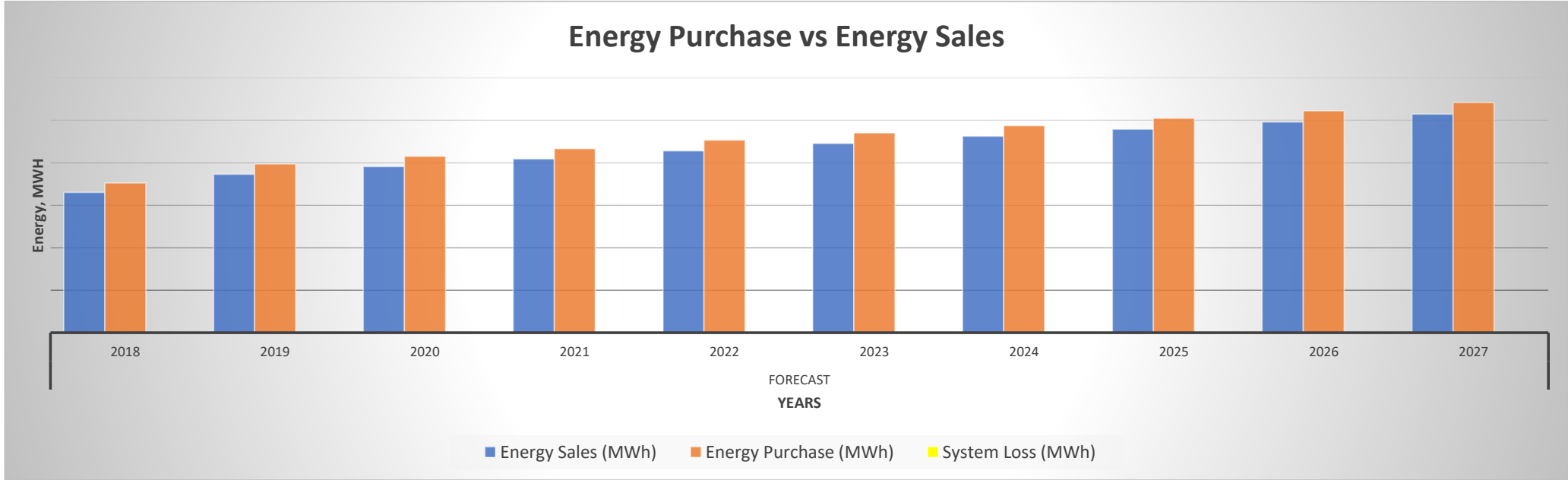
Number of Customer Connections in Franchise	ACTUAL	FORECAST									
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	169,559.00	172,728.00	176,345.00	179,630.00	182,637.00	185,410.00	187,981.00	190,379.00	192,624.00	194,735.00	196,727.00
Commercial	9,236.00	9,343.00	9,513.00	9,667.00	9,809.00	9,939.00	10,061.00	10,174.00	10,280.00	10,380.00	10,474.00
Industrial	1,264.00	1,302.00	1,345.00	1,385.00	1,420.00	1,454.00	1,485.00	1,513.00	1,540.00	1,566.00	1,590.00
Others	2,525.00	2,557.00	2,598.00	2,637.00	2,673.00	2,707.00	2,738.00	2,767.00	2,796.00	2,822.00	2,848.00
Contestable Customers served by RES	-	128,209.42	126,767.77	126,767.77	126,767.77	133,106.16	133,106.16	133,106.16	133,106.16	133,106.16	139,761.47
Total (Captive Customers)	182,584.00	185,930.00	189,801.00	193,319.00	196,539.00	199,510.00	202,265.00	204,833.00	207,240.00	209,503.00	211,639.00



ENERGY SALES AND PURCHASE

ENERGY SALES AND PURCHASE	HISTORICAL									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Energy Sales (MWh)	241,847.83	260,286.53	283,006.92	281,669.11	314,511.68	358,326.00	379,171.63	457,543.91	557,282.88	606,707.94
Energy Purchase (MWh)	269,795.21	288,982.64	312,540.93	309,683.51	343,012.30	388,742.10	411,200.66	490,637.03	595,723.89	648,392.93
System Loss (MWh)	10.09%	9.68%	9.21%	8.80%	8.06%	7.82%	7.79%	6.74%	6.45%	6.43%

ENERGY SALES AND PURCHASE	FORECAST									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Energy Sales (MWh)	661,039.33	746,087.97	782,235.12	817,674.73	856,750.20	891,112.03	925,073.30	958,711.06	992,093.77	1,029,719.66
Energy Purchase (MWh)	705,025.67	794,124.32	830,918.38	866,814.17	906,412.26	940,874.61	974,776.89	1,009,307.09	1,044,451.57	1,084,063.16
System Loss (MWh)	6.24%	6.05%	5.86%	5.67%	5.48%	5.29%	5.10%	5.01%	5.01%	5.01%



For 2017, PENELCO sells on the average around 50 million kilowatt-hour per month, with residential, low voltage and higher voltage sales contributing 46 percent (46%), 24 percent (24%) and 30 percent (30%), respectively. The generated energy sales earned the cooperative revenue of 3.3 billion pesos.

PENELCO purchases its power requirements from GNPowder Mariveles Coal Plant,Ltd. Co. (58MW), San Miguel Energy Corporation (10MW) and the Wholesale Electricity Spot Market (WESM).

10 Year Monthly Data

Year	Forecast			Contracted and For PSA Approval Demand and Energy		Contracted 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	88.76	51.60	52,496.01	68.00		20.76			
Feb	90.42	44.08	51,689.55	68.00		22.42			
Mar	99.19	48.22	51,442.63	68.00		31.19			
Apr	105.14	60.30	62,298.05	68.00		37.14			
May	109.47	59.88	63,947.94	68.00		41.47			
Jun	108.75	57.86	64,730.66	68.00		40.75			
Jul	105.38	57.28	59,950.57	68.00		37.38			
Aug	106.19	29.28	60,962.96	68.00		38.19			
Sep	105.78	35.21	61,417.93	68.00		37.78			
Oct	99.82	53.37	58,536.38	68.00		31.82			
Nov	105.58	44.39	60,131.85	68.00		37.58			
Dec	101.18	51.97	57,421.15	68.00		33.18			
2019									
Jan	94.37	54.76	59,130.27	103.00		(8.63)			
Feb	96.14	46.78	58,221.89	103.00		(6.86)			
Mar	105.46	51.17	57,943.77	103.00		2.46			
Apr	111.79	63.99	70,171.06	103.00		8.79			
May	116.40	63.54	72,029.45	103.00		13.40			
Jun	115.63	61.41	72,911.09	103.00		12.63			
Jul	112.05	60.79	67,526.91	103.00		9.05			
Aug	112.91	31.08	68,667.25	103.00		9.91			
Sep	112.47	37.37	69,179.71	103.00		9.47			
Oct	106.13	56.64	65,934.00	103.00		3.13			
Nov	112.26	47.10	67,731.09	103.00		9.26			
Dec	107.58	55.15	64,677.83	103.00		4.58			
2020									
Jan	99.66	57.89	61,869.95	108.00		(8.34)			
Feb	101.52	49.46	60,919.48	108.00		(6.48)			
Mar	111.37	54.10	60,628.47	108.00		3.37			
Apr	118.06	67.65	73,422.29	108.00		10.06			
May	122.92	67.17	75,366.78	108.00		14.92			
Jun	122.10	64.92	76,289.27	108.00		14.10			
Jul	118.32	64.26	70,655.62	108.00		10.32			
Aug	119.24	32.85	71,848.80	108.00		11.24			
Sep	118.77	39.51	72,385.00	108.00		10.77			
Oct	112.08	59.88	68,988.91	108.00		4.08			
Nov	118.55	49.80	70,869.27	108.00		10.55			
Dec	113.60	58.30	67,674.54	108.00		5.60			
2021									
Jan	104.65	60.98	64,542.74	113.00		(8.35)			
Feb	106.61	52.10	63,551.21	113.00		(6.39)			
Mar	116.95	56.98	63,247.63	113.00		3.95			
Apr	123.97	71.26	76,594.14	113.00		10.97			
May	129.08	70.76	78,622.64	113.00		16.08			
Jun	128.22	68.38	79,584.97	113.00		15.22			
Jul	124.26	67.69	73,707.96	113.00		11.26			

POWER SUPPLY PROCUREMENT PLAN

Aug	125.21	34.61	74,952.67	113.00		12.21			
Sep	124.72	41.62	75,512.04	113.00		11.72			
Oct	117.70	63.07	71,969.24	113.00		4.70			
Nov	124.49	52.45	73,930.83	113.00		11.49			
Dec	119.30	61.41	70,598.09	113.00		6.30			
2022									
Jan	109.39	64.03	67,491.20	118.00		(8.61)			
Feb	111.44	54.70	66,454.38	118.00		(6.56)			
Mar	122.25	59.83	66,136.93	118.00		4.25			
Apr	129.58	74.82	80,093.14	118.00		11.58			
May	134.92	74.29	82,214.30	118.00		16.92			
Jun	134.03	71.79	83,220.60	118.00		16.03			
Jul	129.88	71.07	77,075.11	118.00		11.88			
Aug	130.88	36.33	78,376.69	118.00		12.88			
Sep	130.37	43.69	78,961.61	118.00		12.37			
Oct	123.02	66.22	75,256.96	118.00		5.02			
Nov	130.13	55.07	77,308.17	118.00		12.13			
Dec	124.70	64.48	73,823.17	118.00		6.70			
2023									
Jan	113.90	67.02	70,057.26	123.00		(9.10)			
Feb	116.03	57.25	68,981.01	123.00		(6.97)			
Mar	127.28	62.63	68,651.50	123.00		4.28			
Apr	134.92	78.31	83,138.33	123.00		11.92			
May	140.48	77.77	85,340.14	123.00		17.48			
Jun	139.55	75.15	86,384.70	123.00		16.55			
Jul	135.23	74.39	80,005.55	123.00		12.23			
Aug	136.27	38.03	81,356.62	123.00		13.27			
Sep	135.74	45.74	81,963.78	123.00		12.74			
Oct	128.09	69.32	78,118.28	123.00		5.09			
Nov	135.49	57.65	80,247.47	123.00		12.49			
Dec	129.84	67.49	76,629.97	123.00		6.84			
2024									
Jan	118.20	69.97	72,581.61	128.00		(9.80)			
Feb	120.41	59.77	71,466.59	128.00		(7.59)			
Mar	132.09	65.38	71,125.20	128.00		4.09			
Apr	140.02	81.75	86,134.03	128.00		12.02			
May	145.78	81.18	88,415.18	128.00		17.78			
Jun	144.82	78.45	89,497.38	128.00		16.82			
Jul	140.33	77.66	82,888.37	128.00		12.33			
Aug	141.41	39.70	84,288.12	128.00		13.41			
Sep	140.86	47.75	84,917.16	128.00		12.86			
Oct	132.93	72.36	80,933.09	128.00		4.93			
Nov	140.60	60.18	83,139.01	128.00		12.60			
Dec	134.74	70.46	79,391.16	128.00		6.74			
2025									
Jan	122.31	72.86	75,152.72	133.00		(10.69)			
Feb	124.60	62.24	73,998.20	133.00		(8.40)			
Mar	136.68	68.08	73,644.72	133.00		3.68			
Apr	144.89	85.14	89,185.22	133.00		11.89			
May	150.86	84.54	91,547.17	133.00		17.86			
Jun	149.86	81.70	92,667.70	133.00		16.86			
Jul	145.22	80.87	85,824.58	133.00		12.22			
Aug	146.34	41.34	87,273.91	133.00		13.34			
Sep	145.76	49.72	87,925.23	133.00		12.76			
Oct	137.55	75.36	83,800.04	133.00		4.55			
Nov	145.50	62.67	86,084.10	133.00		12.50			

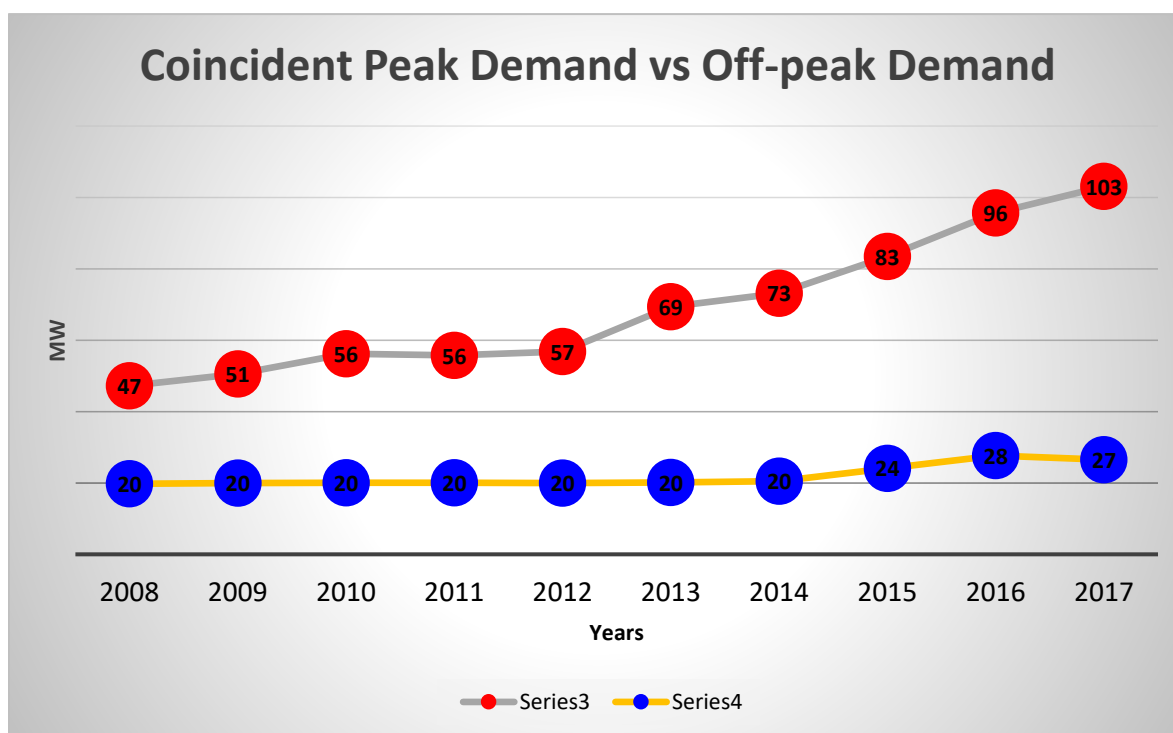
POWER SUPPLY PROCUREMENT PLAN

Dec	139.43	73.37	82,203.49	133.00		6.43			
2026									
Jan	126.25	75.70	77,769.57	138.00		(11.75)			
Feb	128.61	64.67	76,574.85	138.00		(9.39)			
Mar	141.09	70.74	76,209.05	138.00		3.09			
Apr	149.56	88.46	92,290.68	138.00		11.56			
May	155.72	87.84	94,734.88	138.00		17.72			
Jun	154.69	84.89	95,894.43	138.00		16.69			
Jul	149.90	84.03	88,813.03	138.00		11.90			
Aug	151.05	42.96	90,312.83	138.00		13.05			
Sep	150.46	51.66	90,986.83	138.00		12.46			
Oct	141.99	78.30	86,718.00	138.00		3.99			
Nov	150.19	65.12	89,081.58	138.00		12.19			
Dec	143.92	76.24	85,065.85	138.00		5.92			
2027									
Jan	130.04	78.50	80,719.04	143.00		(12.96)			
Feb	132.47	67.06	79,479.00	143.00		(10.53)			
Mar	145.32	73.35	79,099.34	143.00		2.32			
Apr	154.05	91.72	95,790.87	143.00		11.05			
May	160.39	91.08	98,327.77	143.00		17.39			
Jun	159.33	88.02	99,531.30	143.00		16.33			
Jul	154.40	87.13	92,181.33	143.00		11.40			
Aug	155.59	44.54	93,738.01	143.00		12.59			
Sep	154.98	53.57	94,437.57	143.00		11.98			
Oct	146.25	81.19	90,006.84	143.00		3.25			
Nov	154.70	67.52	92,460.06	143.00		11.70			
Dec	148.24	79.05	88,292.03	143.00		5.24			

DEMAND

Demand	HISTORICAL									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Coincident Peak Demand (MW)	47	51	56	56	57	69	73	83	96	103
Off Peak Demand (MW)	20	20	20	20	20	20	20	24	28	27

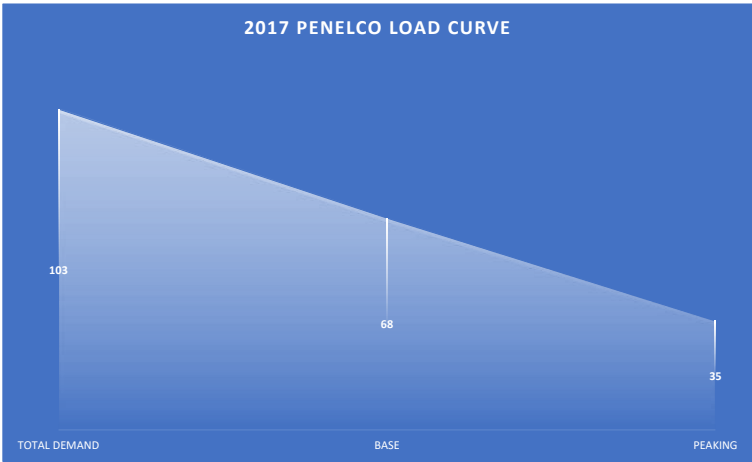
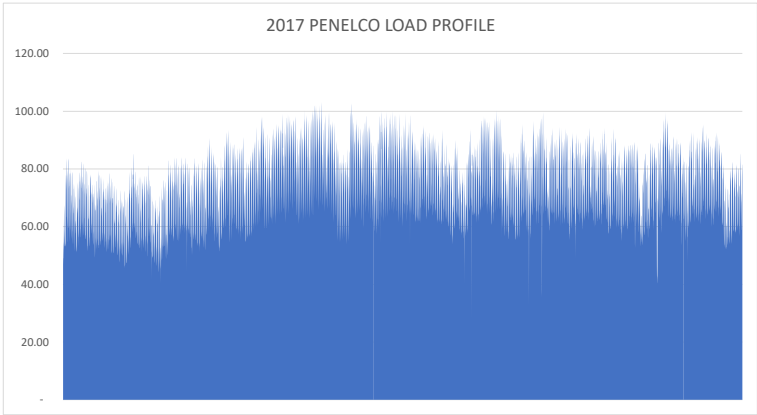
Demand	FORECAST									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Coincident Peak Demand (MW)	98	112	119	125	132	139	145	151	158	164
Off Peak Demand (MW)	29	31	33	35	36	38	40	41	43	45



Historical data indicates that the peak demand of the system happens during night time, ranging between 9:00PM to 11:00PM. The off-peak demand, however, occurs during 8:00AM to 10:00AM. The load continuously grows, sometimes going beyond the forecasted values, due to the connection of new establishments and expansion of industrial plants like Bataan2020 and Hermosa Ecozone. The forecasting method used for peak demand is the Quadratic Logarithmic Trending (b is zero), while the method used for Off-Peak is the Quadratic Logarithmic Trending (b and c are zero). The forecasted data passes the standard validity and accuracy tests.

Note: The demand used for DDP was based on 2017 data, while in PSPP, the demand used was based on 2018 actual data.

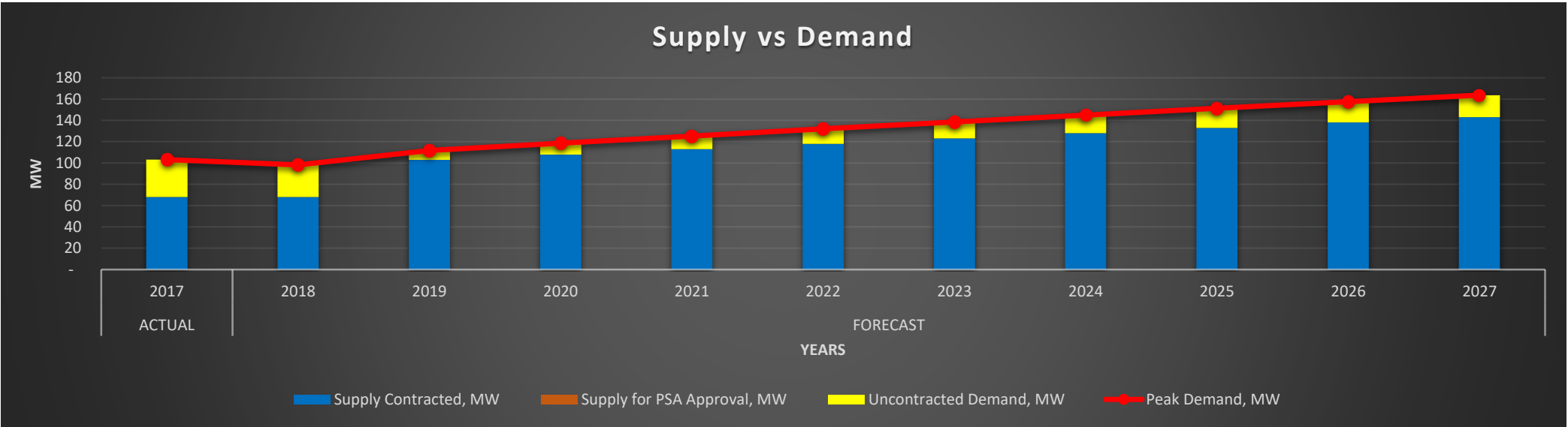
2017 PENELCO LOAD PROFILE



PENELCO has an existing contract with San Miguel Energy Corporation (SMEC) for base load of 10MW and also with GN Power Mariveles Coal Plant (GMCP) which is considered as intermediate load. Moreover, PENELCO is a direct participant of Wholesale Electricity Spot Market (WESM).

MIXSUPPLY VS DEMAND AND THE OPTIMAL SUPPLY

Supply Demand	ACTUAL	FORECAST									
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Peak Demand, MW	103	98	112	119	125	132	139	145	151	158	164
Supply Contracted, MW	68	68	103	108	113	118	123	128	133	138	143
GNPower Mariveles Coal Plant Ltd	58	58	58	58	58	58	58	58	58	58	58
San Miguel Energy Corporation	10	10									
SMC Consolidated Power Corp.			20	20	20	20	20	20	20	20	20
GNPower Dinginin			25	30	35	40	45	50	55	60	65
Supply for PSA Approval, MW	-	-	-	-	-	-	-	-	-	-	-
Uncontracted Demand, MW	35	30	9	11	12	14	16	17	18	20	21



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)
GMCP			Feb. 26, 2014	Feb. 25, 2029	58		Intermediate			With decision-PA	Coal	600	
SMEC			Dec. 26, 2013	COD of SCPC	10		Base			Approved w/Modification	Coal	600	
SCPC			Mar. 26, 2017	Mar. 25, 2027	20		Base			Pending Decision	Coal	600	
GNPD			2019	2034	25		Base			With decision-PA	Coal	1200	

Energy requirement for the year 2017 was acquired from three (3) power suppliers namely GN Power Mariveles Coal Plant (GMCP), San Miguel Energy Corporation (SMEC) and Wholesale Electricity Spot Market (WESM) which supplied 62%, 13% and 25% of the total energy, respectively. All of the suppliers mentioned are in compliance with the Power Supply Agreement between the Cooperative and the supplier. PENELCO used the 2018 actual data as the base year and the Cubic & Logarithmic Trending (b & c are zero) model in forecasting.

NOTE: On the time when DDP was being completed, Supply Contracted used for SMEC Sual was 20 MW, unfortunately, we are still awaiting for the Final Approval of the Energy Regulatory Commission (ERC) for the implementation of the 20MW capacity. Thus, for the PSPP, 10MW was still the actual capacity being delivered by SMEC. For the exact delivery date for SMC Consolidated Power, we will depend on the final approval by ERC. And for GNPower Dinginin (GNPD), the plant is still on its construction stage and is expected to be completed by the end of this year, 2019.

DISTRIBUTION IMPACT STUDY

The substation projects are in line with the forecasted and actual demand of the existing substation in each respective towns. This is to cater the further load growth of the province. Alongside are the subtransmission line projects that aim for continuous rehabilitation and construction to accommodate the incoming load of new substations, and to further improve the reliability of the system. The design of substations, subtransmission and distribution lines are in compliance with the Philippine Grid Code, Philippine Distribution Code and Philippine Electrical Code, following the required design, clearances, relay coordination and others.

SCHEDULE OF CSP

[illegible]