

$$P_n = P_o(1 + i)^n \dots\dots\dots (3)$$

Where :

P_n = Population in base year (1st year)

P_o = Population in year n

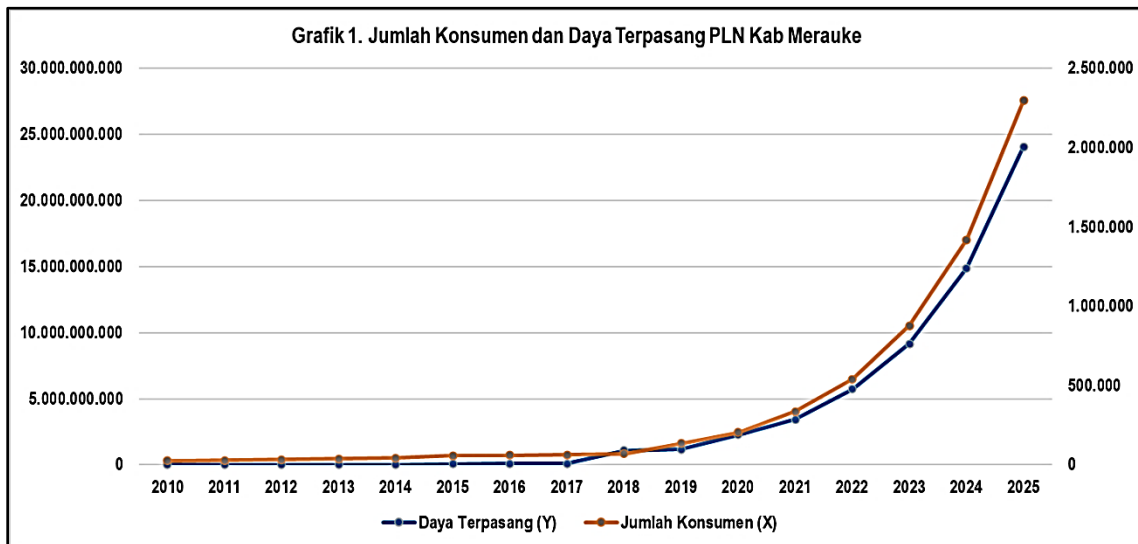
i = Percentage of growth per year

n = Number of years

Table 1. Number of Consumers and Installed Power of PLN Merauke Regency

Year	Amount	Power
	Consumer	Installed
	(X)	(Y)
2010	26.283	23.134
2011	28,319	24,093
2012	33,533	24,242
2013	38,942	25,429
2014	43,334	25,420
2015	56,897	80,246,915
2016	59,119	86,458,952
2017	63.607	96,859,750
2018	69.984	1,085,141,450
2019	133,591	1,182,001,200
2020	203.575	2,267,142,650
2021	337,166	3,449,143,850
2022	540.741	5,716,286,500
2023	877,907	9,165,430,350
2024	1,418,648	14,881,716,850
2025	2,296,555	24,047,147,200

Source: Processed Data (2019)



From the table of forecasting results above, it can be seen that there will be an increase in the number of consumers and installed power every year where the increase tends to increase from 2020. The results of forecasting the number of consumers for the year 2019-2025 that have been carried out combined with the amount of installed power show the amount of installed power is lower than the number of consumers so that progressive investment is needed to anticipate these conditions.

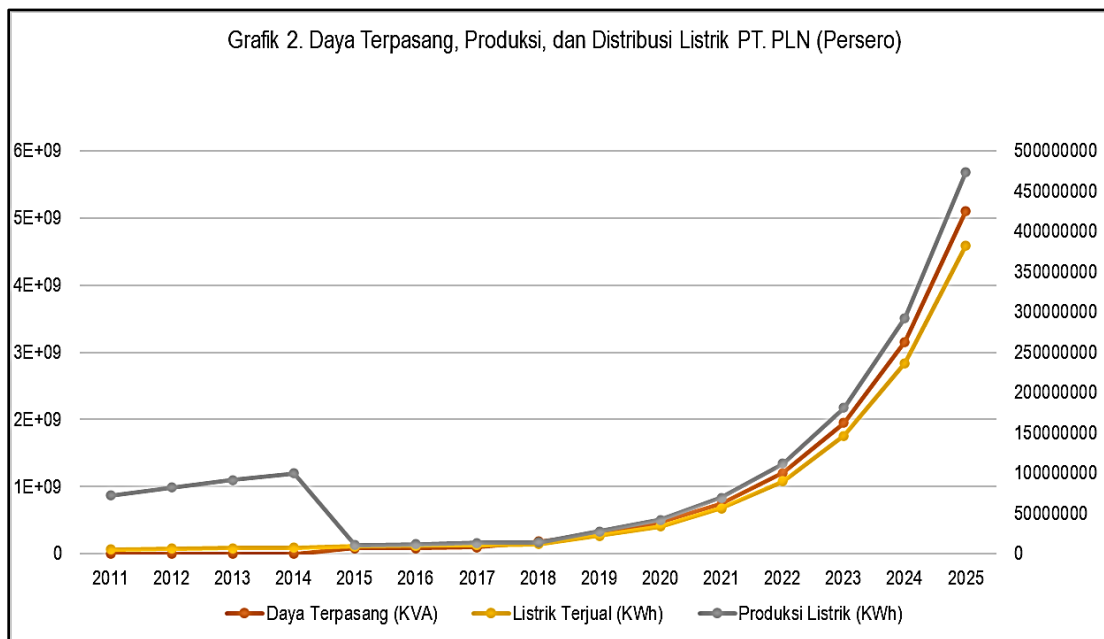
Table 2. Installed Power, Production and Distribution of Electricity

PT. PLN (Persero) 2011-2018

Year	Installed Power (KVA)	Electricity Production (KWh)	Electricity Sold (KWh)	Self Use (KWh)	Loss/Loss (KWh)	Customer
2011	24093	72333855	64,724,046	-	7,609,809	-
2012	24242	82200899	74,516,167	-	7,684,732	-
2013	25420	91468159	84,332,049	-	7,136,110	-
2014	25420	99829053	91.343.583	-	8,485,470	-
2015	80,246,915	10,918,568	108,615,202	-	-	56,897
2016	86,458,952	11,684,770	123.575.016	-	-	59,119
2017	96,859,750	13,320,581	127,286,992	-	-	63.607
2018	183,318,702	14,336,026	139,984,578	-	-	69.984
2019	280,178,452	27,656,607	267,271,570	-	-	133,591
2020	463.497,154	41,992,633	407.256.148	-	-	203.575
2021	743,675.606	69,649,240	674,527,718	-	-	337,166

2022	1,207,172,760	111,641,873	1,081,783,866	-	-	540.741
2023	1,950,848,366	181.291.113	1,756,311,584	-	-	877,907
2024	3.158.021.126	292.932.986	2,838,095,450	-	-	1,418,648
2025	5,108,869,492	474,224,099	4,594,407,034	-	-	2,296,555

Source: Processed Data (2019)



From the results of the graph shown above, it can be seen that there was an excess of electricity production from 2011 to 2015, which subsequently increased the installed power and electricity sold along with the installed data.

4. Conclusions and suggestions

Based on the forecasting analysis of the number of consumers and installed power, it shows that there will be an increase in the number of consumers and the necessity to provide energy production and installed power for energy needs in Merauke Regency.

The results of the forecasting of the Electricity Consumption Sector (KWh) Per Year show that the dominant number of electricity customers is from business customers and household customers showing the lowest position, this is the need for appropriate electricity planning to become a business city.

The PT PLN (Persero) Merauke Branch would be able to pay attention to the increase in the amount of electric power installed in the future and pay attention to load characteristics in order to optimize the operation of the electrical system, because only by understanding the characteristics of the load can an optimal electrical system operation be expected in the future. in the future, by making investment plans to increase electricity capacity with priority in the business sector

For future research, it is suggested that the formulation of the research model involves various other variables such as the development of an area that causes an increase in the use of electrical energy in the area and research on the model of developing electricity with coal, solar power and hydropower.

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