

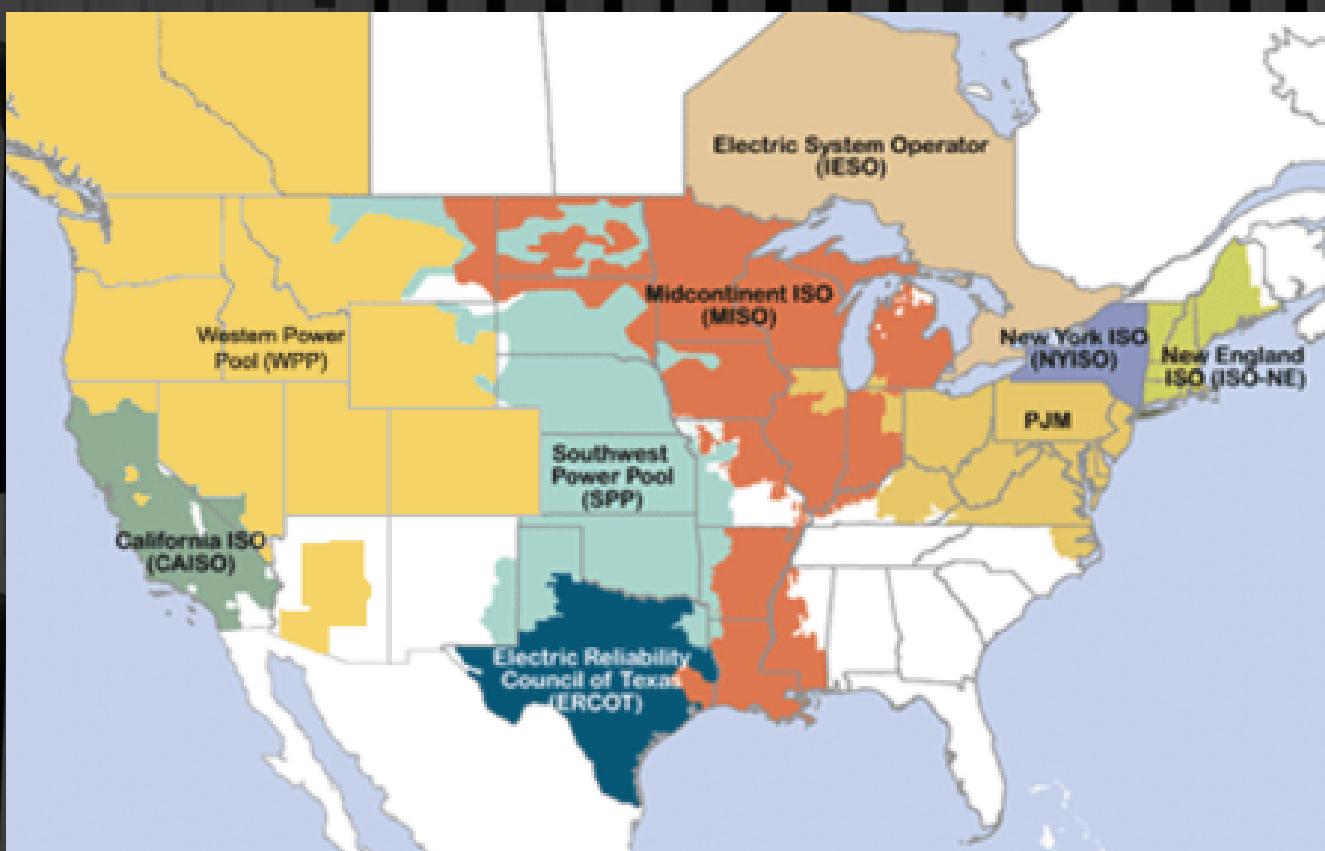


ANALISIS DATA KONSUMSI ENERGI PER HARI

MARCELLA AURELIA YATIJAN - 71477

PJM INTERCONNECTION

COMPANY HISTORY



PJM Interconnection LLC (PJM) adalah organisasi transmisi regional (RTO) di Amerika Serikat. PJM adalah bagian dari jaringan Interkoneksi Timur yang mengoperasikan sistem transmisi listrik yang melayani seluruh atau sebagian Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, Virginia Barat, dan District of Columbia. PJM merupakan operator jaringan listrik terbesar di Amerika Serikat, melayani 65 juta pelanggan dari Chicago hingga New Jersey.

FORECASTING

MENGETAHUI TREN ENERGI
CONSUMPTION

01.

EFICIENSI BIAYA
OPERASIONAL

02.

STRATEGI KAPASITAS
DAN PASOKAN YANG
ADAPTIF DAN
FLEKSIBEL.

03.

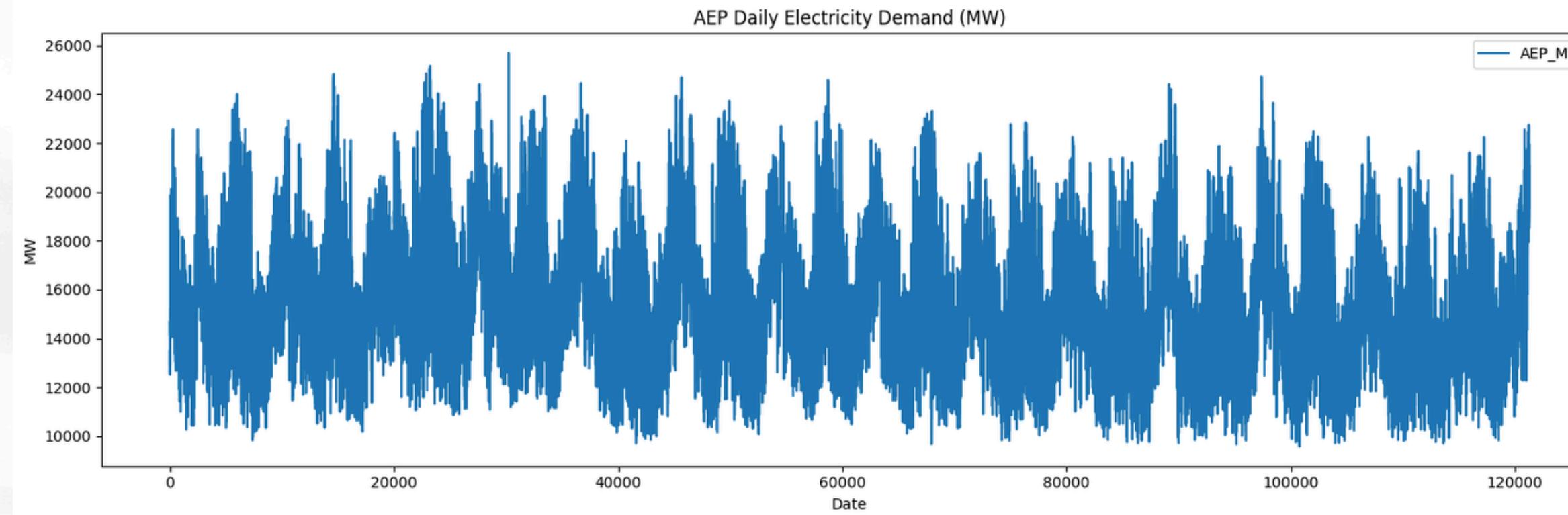
WAKTU IDEAL UNTUK
MAINTENANCE

AEP DAILY ELECTRICITY DEMAND (MW)

Periode: [2004–2018]

	Datetime	AEP_MW
0	2004-12-31 01:00:00	13478.0
1	2004-12-31 02:00:00	12865.0
2	2004-12-31 03:00:00	12577.0

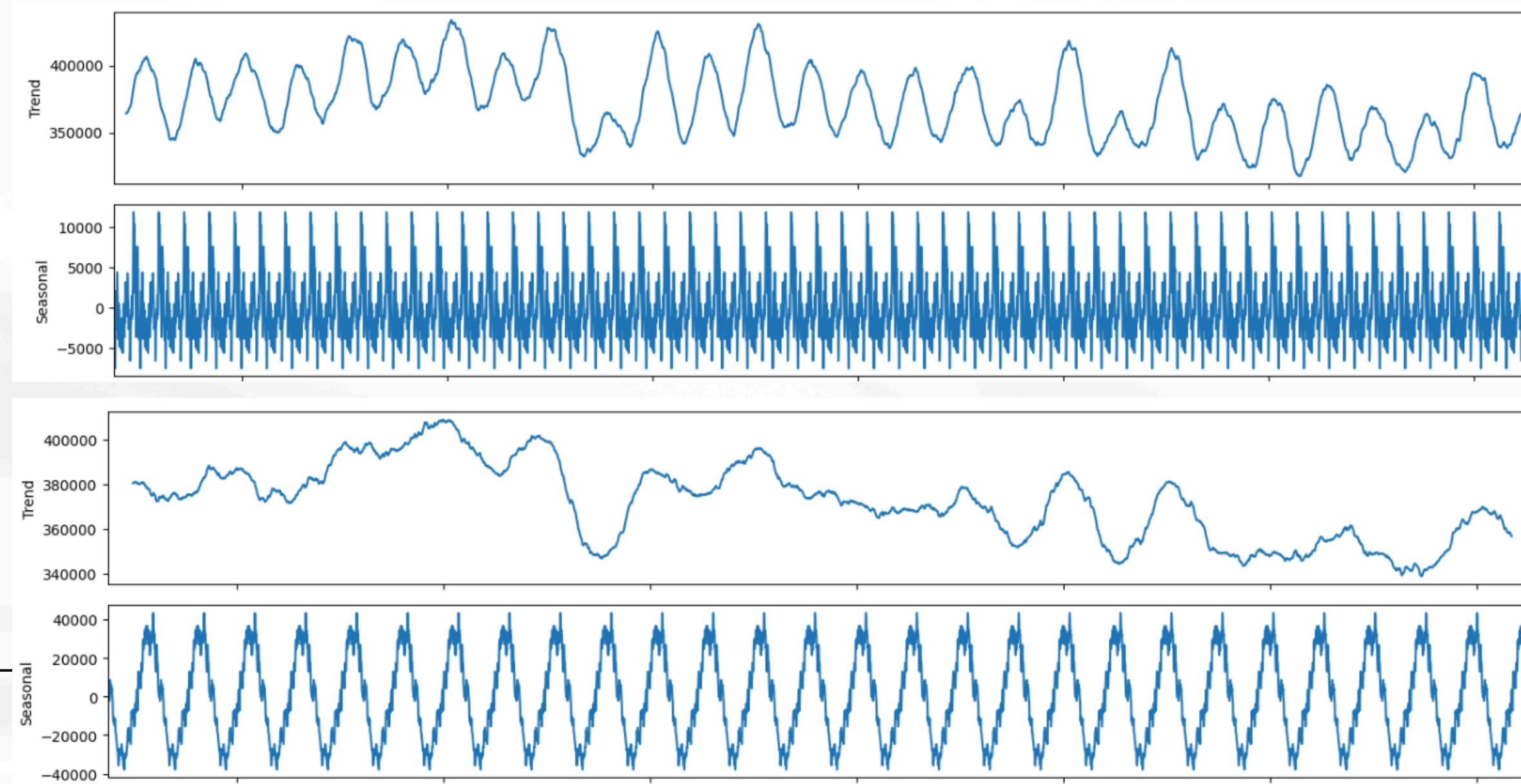
	Datetime	AEP_MW
121270	2018-01-01 22:00:00	20820.0
121271	2018-01-01 23:00:00	20415.0
121272	2018-01-02 00:00:00	19993.0



AEP DAILY ELECTRICITY DEMAND (MW)

DAILY

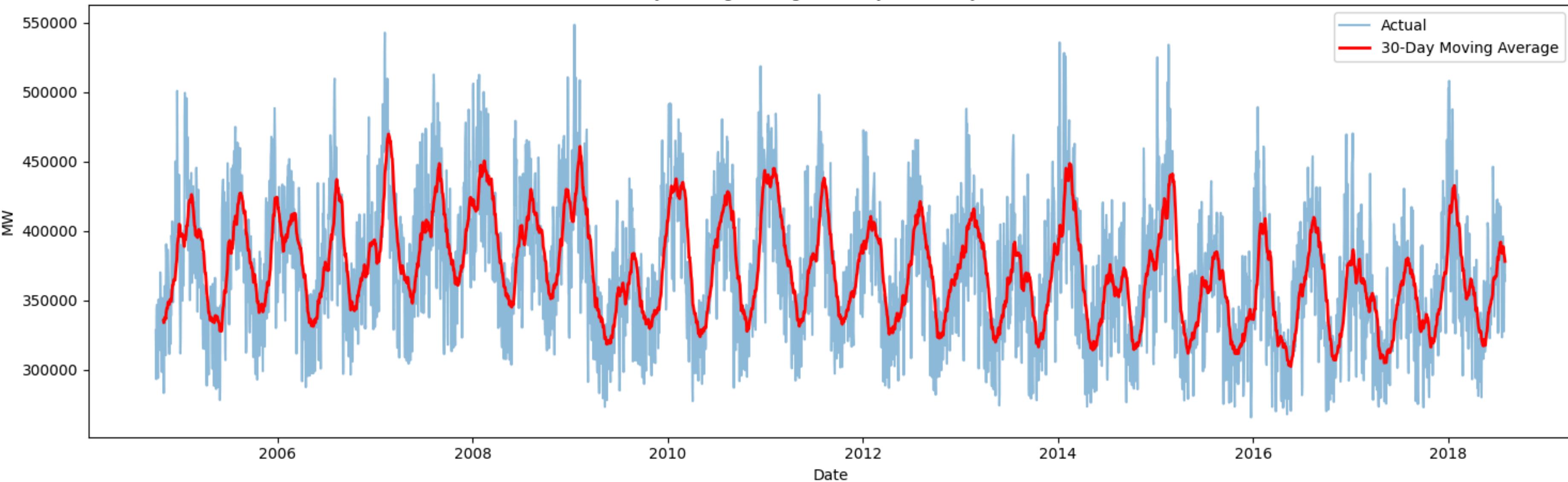
	AEP_MW		AEP_MW
Datetime		Datetime	
2018-07-30	368834.0	2018-07-29	327792.0
2018-07-31	364327.0	2018-07-30	368834.0
2018-08-01	363628.0	2018-07-31	364327.0
2018-08-02	376504.0	2018-08-01	363628.0
2018-08-03	14809.0	2018-08-02	376504.0



MOVING AVERAGE

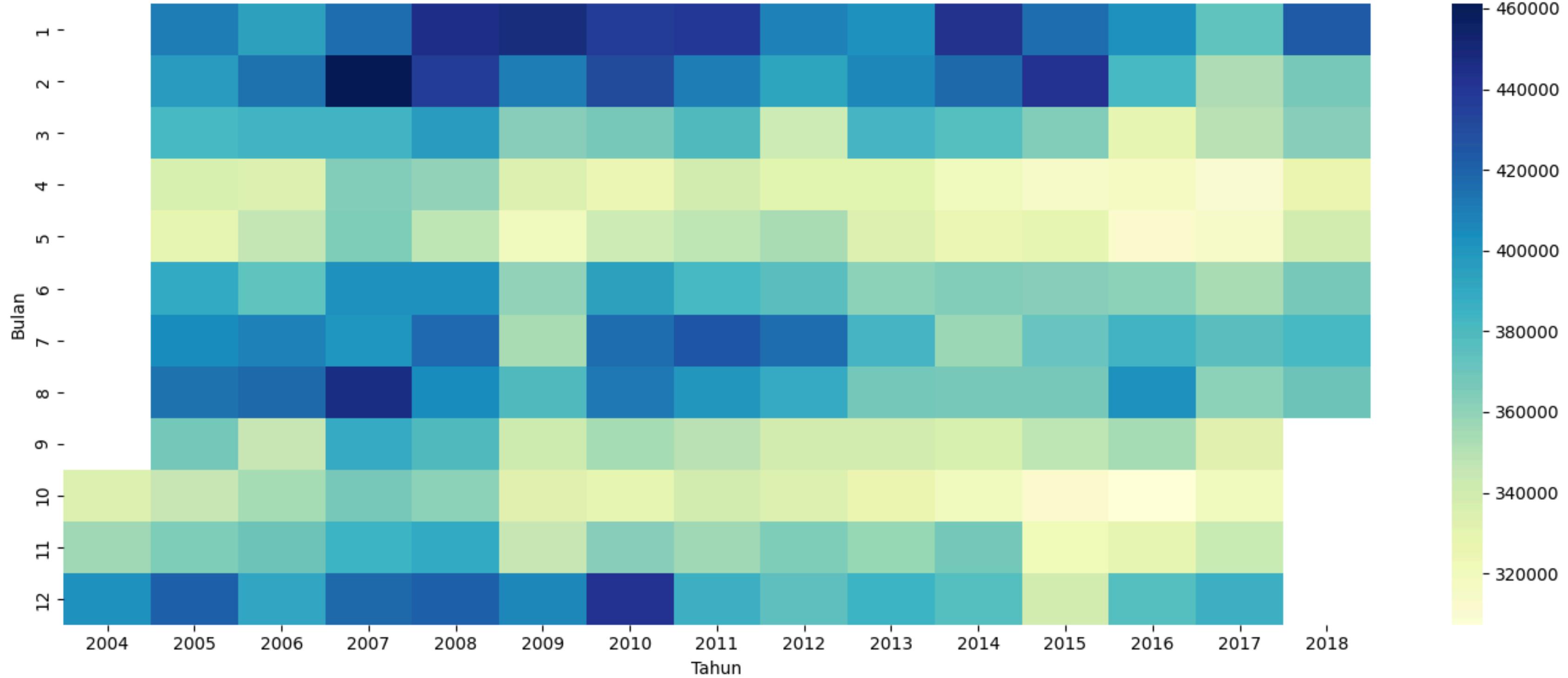
30 DAY

30-Day Moving Average of Daily Electricity Demand

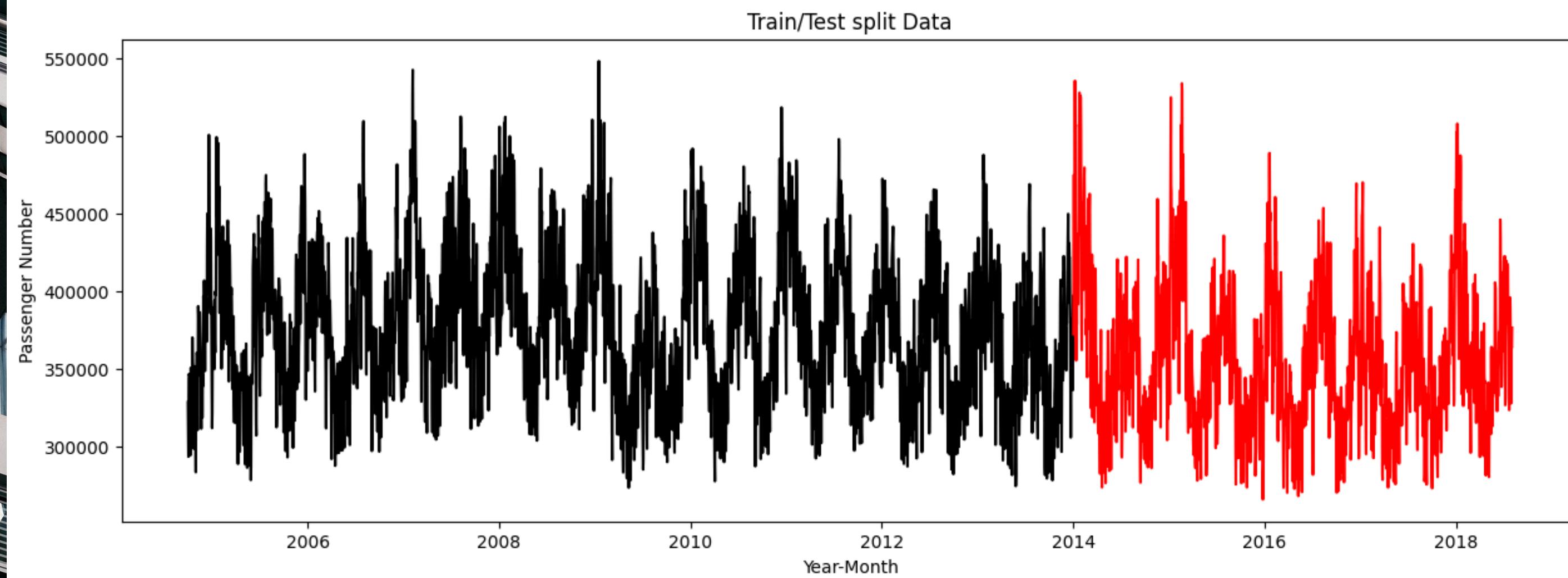


HEATMAP

Heatmap Konsumsi Listrik (MW) per Bulan dan Tahun

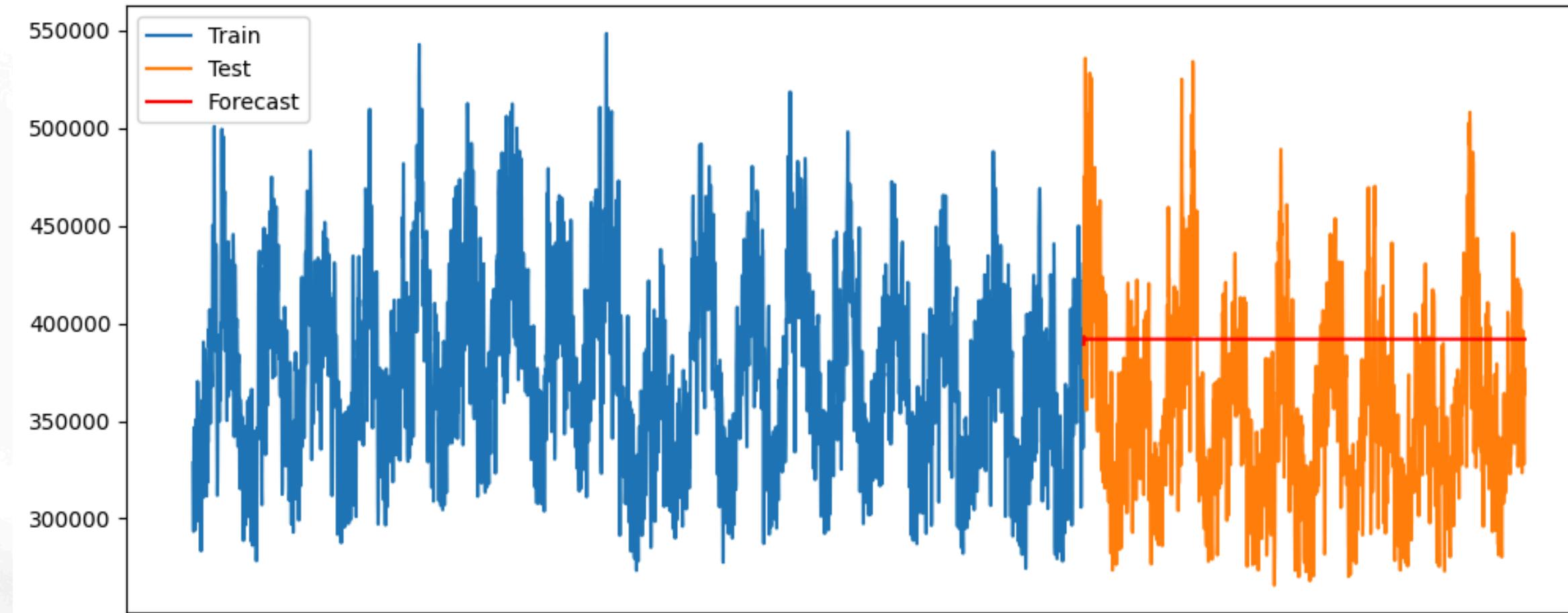


DATA SPLIT



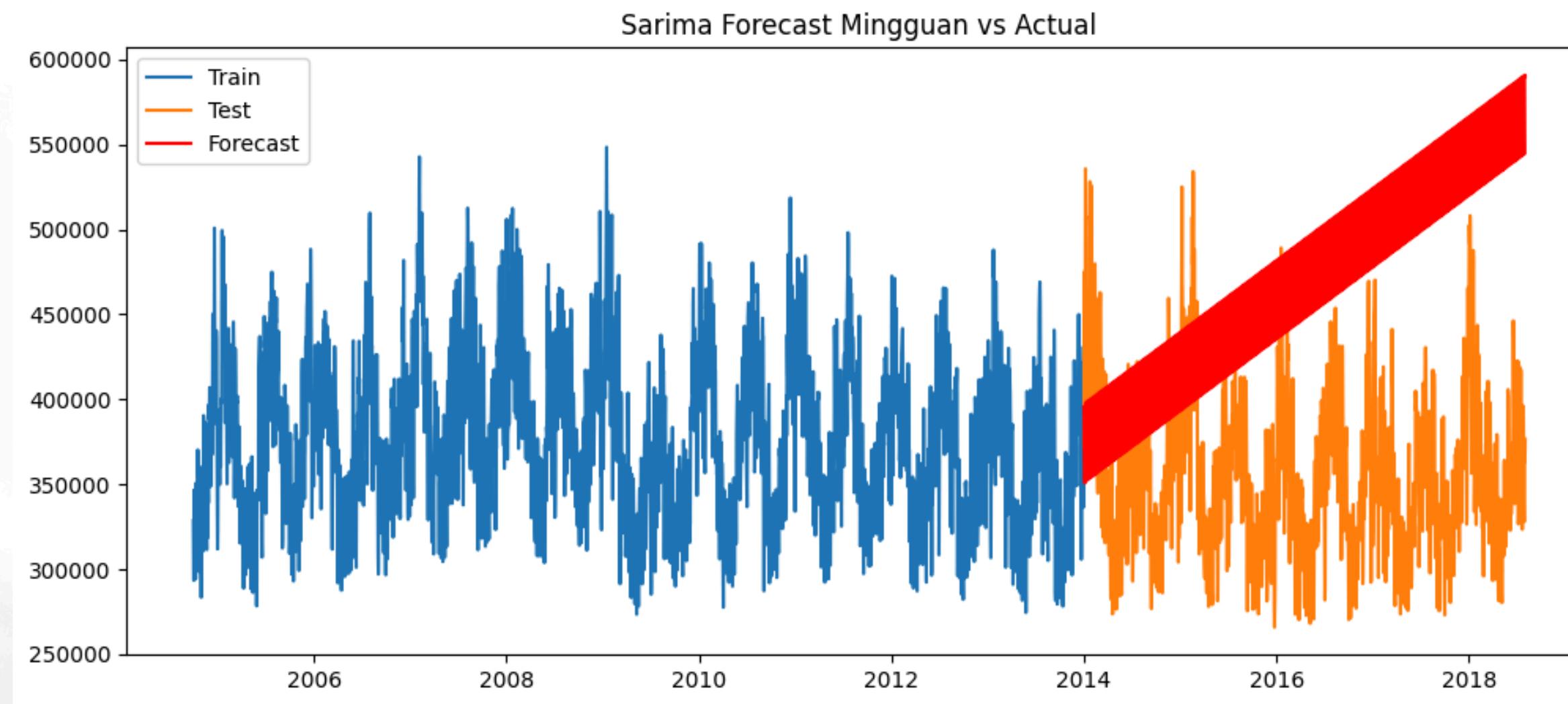
ARIMA

ARIMA Forecast vs Actual



% RMSE: 16.22%
RMSE: 57958.62

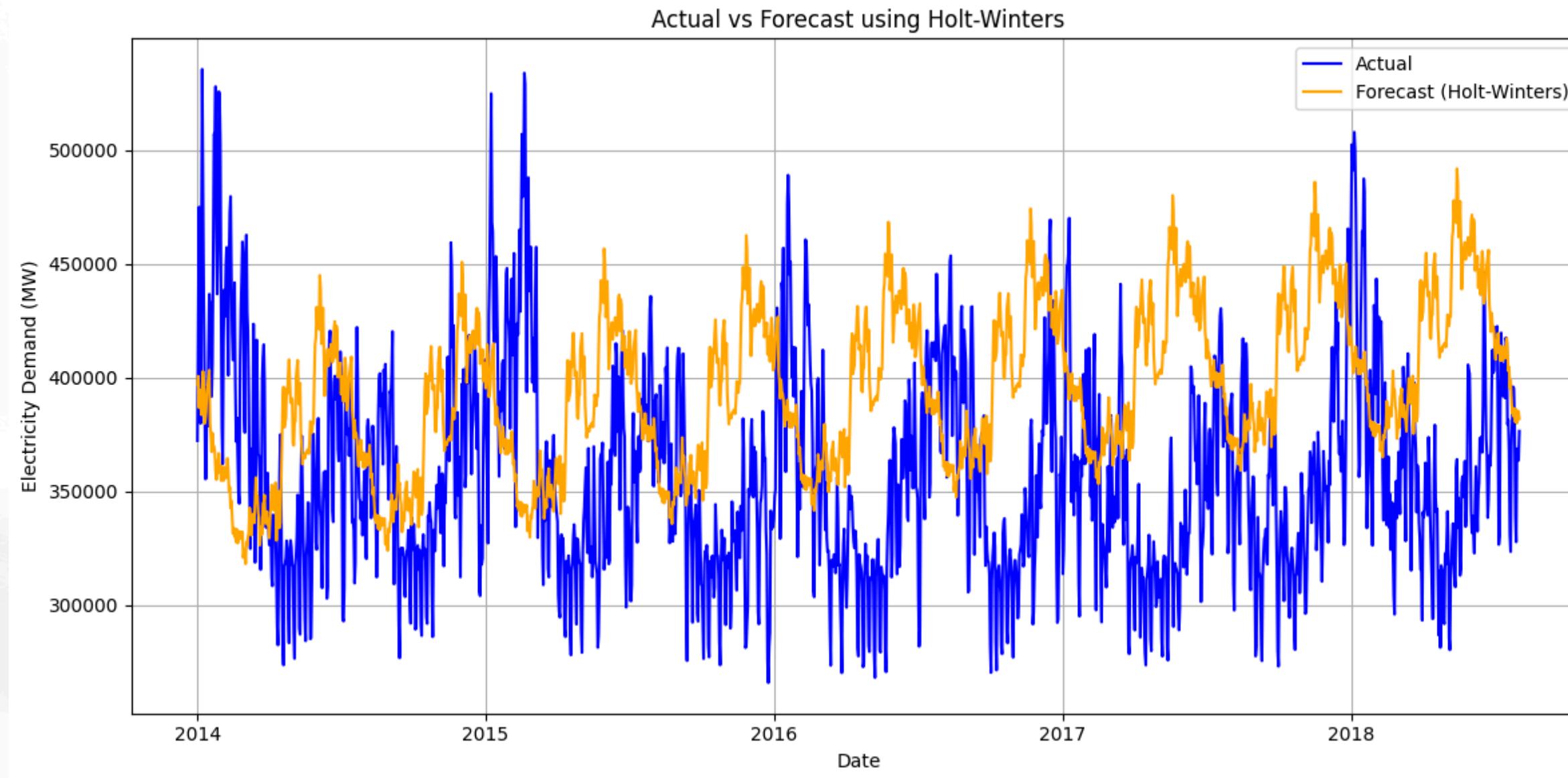
SARIMA



% RMSE: 25.29%
RMSE: 90337.20

EXPONENTIAL SMOOTHING

Holt-Winters Exponential Smoothing adalah metode pemulusan yang mempertimbangkan komponen trend dan musiman.

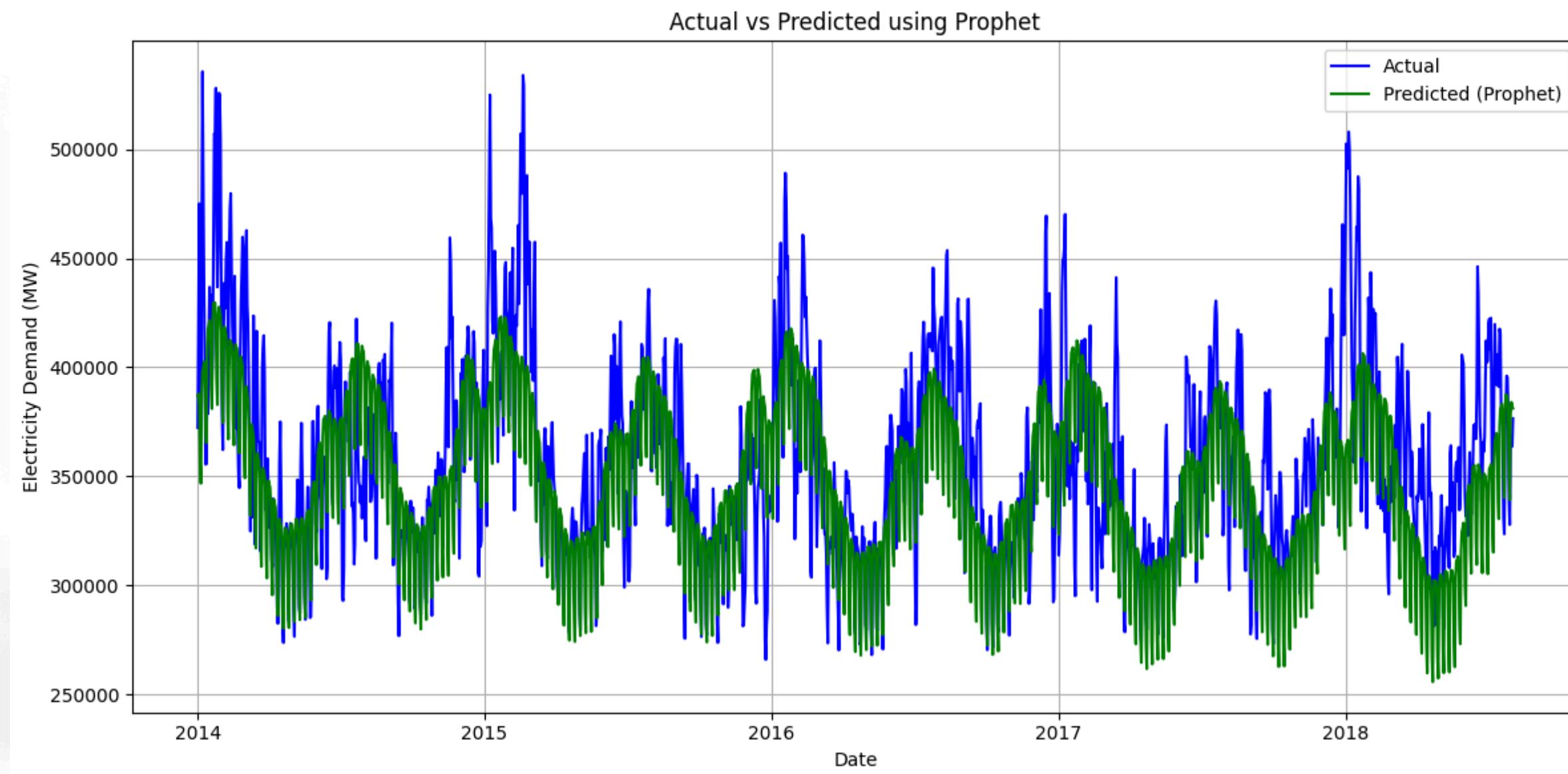


% RMSE: 20.33%

RMSE: 72636.48

PROPHET

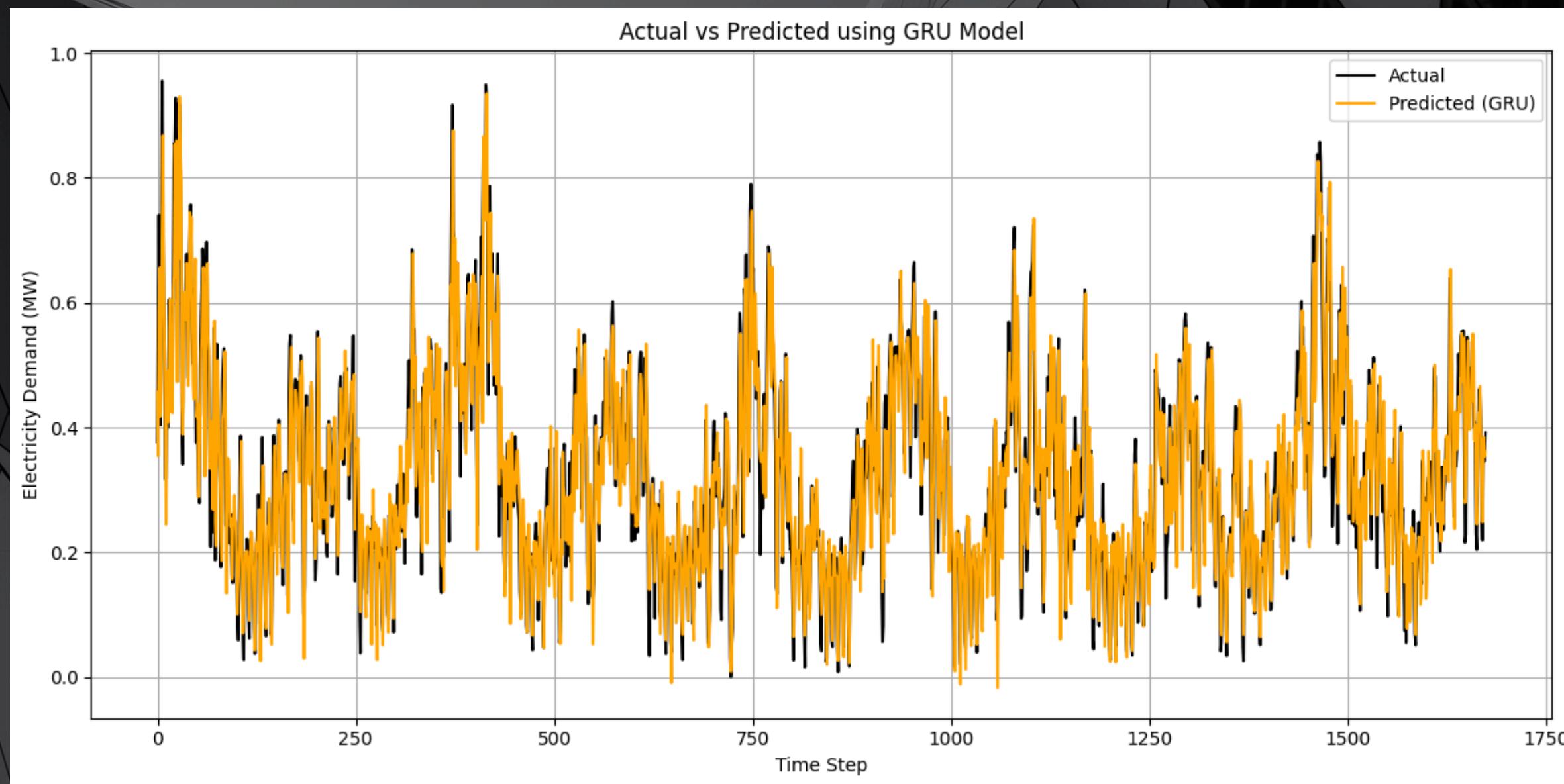
Kuat untuk dataset dengan tren dan musiman, khususnya data harian



RMSE: 34681.86

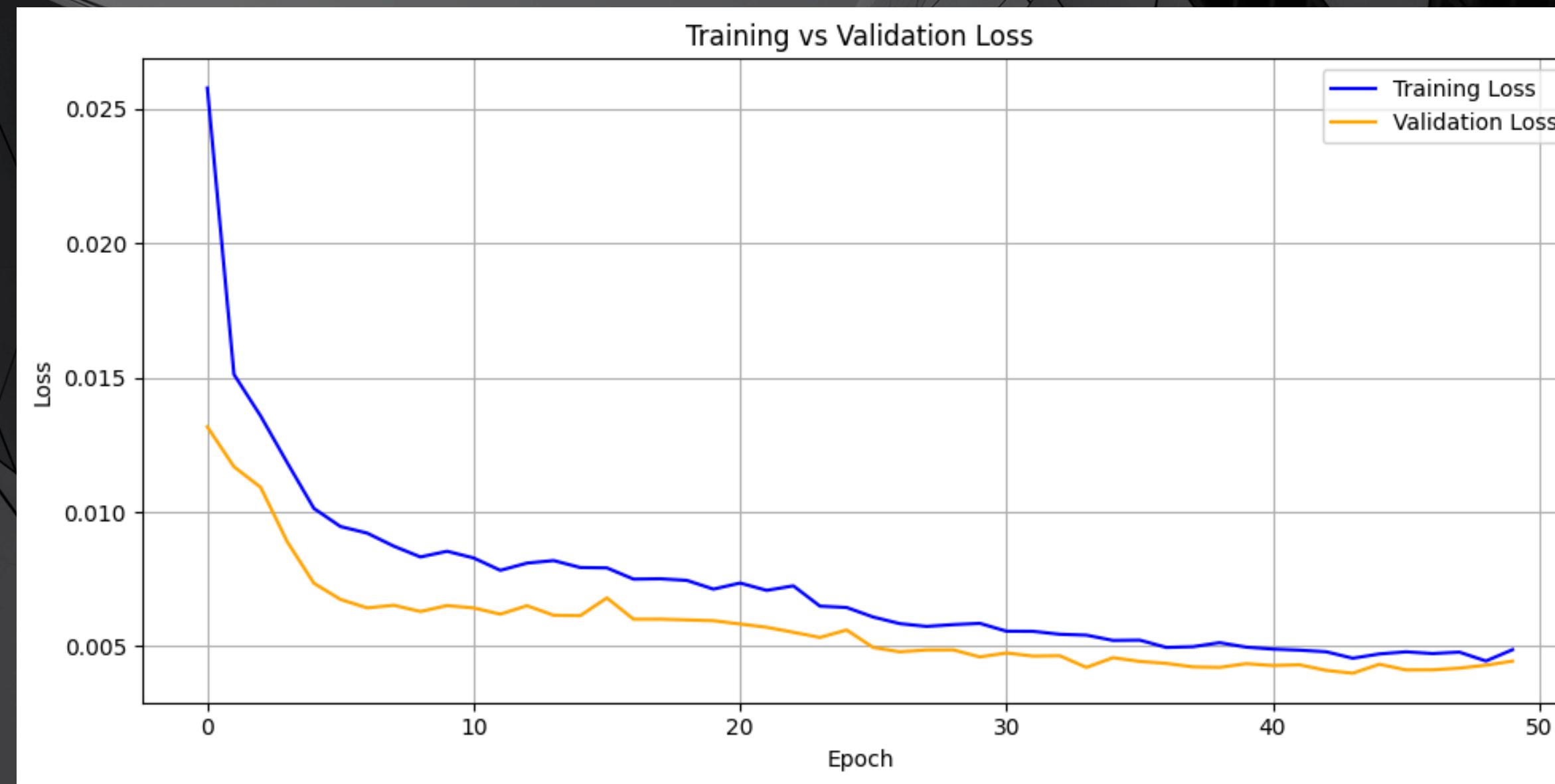
%RMSE: 9.71%

GRU (GATED RECURRENT UNIT)



GRU RMSE : 18538.30
GRU % RMSE : 5.19%

GRU (GATED RECURRENT UNIT)



MODEL TIDAK OVERFITTING

GRU (GATED RECURRENT UNIT)

Layer (type)	Output Shape	Param #
gru_17 (GRU)	(None, 30, 64)	12,864
dropout_6 (Dropout)	(None, 30, 64)	0
gru_18 (GRU)	(None, 32)	9,408
dropout_7 (Dropout)	(None, 32)	0
dense_12 (Dense)	(None, 1)	33

SUMMARY

Metode	RMSE	%RMSE
Arima	57958.62	16.22%
Sarima	90337.20	25.29%
ES	72636.48	20.33%
Prophet	34681.86	9.71%
GRU	18538.30	5.19%

PJT INTERCONNECTION