Electrical Load Forecasting using “**ARIMA**” (Seasonal) method

1. In this program forecasting is done for 2976 sample data points which is for one month i.e. for January 2024 using the data of subsequent previous years viz. 2021 , 2022 , 2023 (all for January only).
2. Here the forecast horizon is about 2976 data points .

**MATLAB Code for Forecasting**

data = xlsread('ForJanOnly.xlsx');

combined\_data = mean(data, 2);

forecast\_horizon =2976 ;

Mdl = arima('Constant',0,'D',1,'Seasonality',89, 'MALags', 2976:105) ;

try

EstMdl = estimate(Mdl, combined\_data);

catch ME

disp(ME.message);

error('Unable to estimate the SARIMA model. Please adjust the model parameters.');

end

[New\_Var, ~] = forecast(EstMdl, forecast\_horizon, 'Y0', combined\_data);

figure;

plot(1:length(combined\_data), combined\_data, 'b', 'LineWidth', 2);

hold on;

plot(length(combined\_data)+(1:forecast\_horizon), New\_Var, 'r', 'LineWidth', 2);

hold off;

legend('Original Combined Signal', 'Forecasted Signal');

xlabel('Time');

ylabel('Value');

title('Original Combined Signal vs Forecasted Signal');

grid on

figure

error=New\_Var-Only2024Jan

subplot(2,1,1); plot(Only2024Jan); hold on ; plot(New\_Var);

legend("actual","forecasted");

subplot(2,1,2);plot(error);

mae=mean(abs(error));

mape=mean(abs(error./Only2024Jan)\*100);

Result:



