



# Energy

REQUEST FOR PROPOSAL

RFP #: TS – F1.H2

TITLE: PJM Electric Load Forecasting

CLOSING DATE AND TIME: SEPTEMBER 13, 2024 @ 5:00 PM

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## Background and Purpose

By responding to this Request for Proposal (RFP), the Proposer agrees that s/he has read and understood all documents within this RFP package.

## Submission Details

Responders to this RFP should supply:

- A business report up to 5 pages (not including cover page or table of contents), including any supporting plots and tables.
- The commented code (in a separate file) used to produce the results.
- Both files should be uploaded to Moodle by September 13, 2024 @ 5:00 PM.

The report should address **all points described in the “Objective” section** below.

## Objective

PJM is a regional transmission organization (RTO) that provides resources for the market of wholesale electricity in all or parts of 13 states and the District of Columbia (source: PJM.com). PJM, henceforth referred to as the client, would like to contract your services in understanding metered load Megawatts for the AEP Appalachian Power transmission zone. For this analysis, the client would like the data to be rolled up to total daily MW and **averaged** by month. The training data should be from August 2018-July 2022; the validation data set should be from August 2022-July 2023; and the test data should be from August 2023-July 2024. The report should include the following:

- Creation of easy to read and interpret visualizations of the following (ALL graphs MUST be of report ready quality):
  - Visual of the **training** data set overlaid with the trend (be sure to indicate what type of decomposition was used).
  - Time Plot of the predicted values and actual values for ONLY the **validation** data set.
- Creation of the best ESM model.
- If the best ESM is a seasonal model, the client's analysts are open to either additive or multiplicative ESM's (be sure to specify this information IF a seasonal model is selected).
- The client uses Mean Absolute Percentage Error (MAPE) in calculating the accuracy of its forecasts. Report this measure for the forecasted electric load in the validation data. The client is open to other measurements in addition to the MAPE as long as they are clearly stated and supported.

## Data Provided

The data is downloaded from Data Miner, which is PJM's enhanced data management tool. The data set provides the hourly energy load in Megawatts (MW) in the AEPAPT Region from August 1, 2018 to July 31, 2024. Columns in this data set are:

Datetime\_beginning\_utc – do not use this time information (Universal time)

Datetime\_beginning\_ept – this is the date and the hour for which the energy load occurred

Nerc\_region – This is the NERC (North American Electric Reliability Corporation) region (which for this analysis is in the RFC region)

Mkt\_region – The market region for this report is West

Zone – The transmission zone for this report is AEP

Load\_area – This load area is AEPAPT

Mw – Megawatts per hour of energy (metered)

Is\_verified – Boolean (True/False) indicating if results were verified