Re Workshop on the California Energy Demand Forecast, Part II

Additional submitted attachment is included below.

California Energy Commission   December 21, 2023
Docket: 23-IEPR-03
Electricity and Gas Demand Forecast

Re: Workshop on the California Energy Demand Forecast, Part II

The Center for Energy Efficiency and Renewable Technologies (CEERT) appreciates the opportunity to submit comments on the Workshop on the California Energy Demand Forecasts, ("workshop") held December 19, 2023.

CEERT found the presentation by Lumen Energy Strategies to be very informative about the development of climate-adjusted data on temperature, dew point and cloud cover. These data sets will not only be important for forecasting future energy demand but also should prove to be valuable in better modeling of the performance of both thermal power sources and weather-dependent power generation. Climate-adjusted weather data could assist in better modeling of the frequency of forced outages as well as in managing transmission and distribution system asset aging.

CEERT understands that the relationship between weather variables and the demand for electricity is complex, particularly when applied at an hourly time scale. CEERT encourages the Energy Commission to continue to support research into the downscaling of climate models to the California environment and to incorporate the results of this work into future forecasts of energy demand and consumption.

Extreme heat has been a primary driver of electricity demand and reliability needs for decades. The impacts of climate change on heating and cooling loads was well documented by the Lumen team. Understanding longer term trends in temperature through the mid-century will be essential to California's work on resource and transmission planning.

Many energy planning processes require hourly (8,760 hours per year) data sets. Downscaling climate models allows for temperature trends to be forecasted at a more granular geographical level. CEERT is impressed that Lumen has, through its de-trending analysis, developed 204 weather variants (8,760 profiles) that can be used in reliability modeling. Multiple weather variants will allow resource planners to better observe the impact of daily and seasonal variance in weather over time and its impact on electric system reliability.

It will be important that the CEC make a de-trended temperature library available to others including the CPUC for use in its integrated resource planning process and to the CAISO for transmission planning. For instance, more accurate weather data can help in making dynamic and ambient rating adjustments to transmission facilities which can increase resource deliverability.

The weather data sets developed by Lumen Energy Strategies should help improve the stochastic modeling use in California for integrated resource planning and procurement. Stochastic modeling can account for uncertainty and variability and leads to more robust and resilient resource and transmission planning processes.   Improved weather data sets that can be used in stochastic modeling can improve decisions about resource retention and procurement as well as operations over a wide range of possible scenarios.   It can help the Commission in forecasting the frequency and duration of novel weather events such as the September 2002 heat storm.

A simpler, deterministic stack approach to forecasting can be useful for short-term planning and day-to-day operations when future conditions can be predicted relatively accurately. For example, deterministic modeling can be used to forecast week-ahead weather patterns that will become increasingly important in scheduling resources as winter loads increase.

However, for long-term planning decisions a deterministic stack approach is less appropriate because it will be pegged to historical events without an understanding of the probability of repeated occurrence or future variants. In order to meet stringent, agreed-upon reliability requirements, stochastic reliability modeling, coupled with a rich data set of weather variables, will provide a more comprehensive assessment of future risks and needs.

In sum, CEERT commends the California Energy Commission for its efforts to continuously improve energy demand forecasts. Improving the accuracy of energy forecasting will help California decision makers maintain the important balance between electric system reliability and the affordability of electric service.

Sincerely

V. John White   Ed Smeloff
Executive Director   Consultant to CEERT