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24-IEPR-03 Form Energy Comments on IEPR Commissioner Workshop on Draft Forecast Results

File attached

Additional submitted attachment is included below.

December 26, 2024

Docket Unit - **Docket No. 24-IEPR-03**
California Energy Commission (CEC)
715 P Street
Sacramento, California 95814

Submitted via: e-commenting page

Re: Comments on the IEPR Commissioner Workshop on Draft Forecast Results

Form Energy appreciates the opportunity to comment on the December 12, 2024 IEPR Commissioner Workshop on Draft Forecast Results. The IEPR study plays a critical role in informing California's reliability needs, both in the context of near-term resource adequacy procurement and long-term resource planning. We appreciate the study's careful consideration of numerous factors impacting the state's energy demand, including large industrial loads, electrification, and long-term climate change impacts. However, we observe that the study does not robustly assess the impacts of weather variability on electricity demand, which is one of the most important factors influencing the state's grid reliability. We urge the CEC to more accurately capture weather-driven dynamics via the below-described improvements to the IEPR study.

The CEC Should publish hourly load forecasts for different weather years to capture impacts of year-to-year weather variability

Hourly electricity demand profiles can vary dramatically across years due to year-to-year variation in weather. For instance, some weather years may exhibit more prolonged demand surges than others, due to differences in underlying weather events like heat waves and cold snaps. This variability in hourly demand shape can profoundly influence reliability needs and optimal portfolio investments decisions, as discussed in a 2023 CEC report[1]. Despite the

[1] See *Assessing the Value of Long-Duration Energy Storage in California* at p. 29, available at https://www.energy.ca.gov/sites/default/files/2024-01/CEC-500-2024-003.pdf

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importance of modeling many weather years, the CEC IEPR study only publishes a single hourly demand profile for one unspecified weather year.[2]

Users of CEC IEPR data need access to hourly demand profiles for a variety of weather years in order to accurately assess California's year-round reliability needs. We recommend that the CEC follow the load forecasting methodology implemented in the 2022-23 CPUC IRP. As described in Section 6.2.1 of the 2022-23 CPUC IRP Inputs & Assumptions document[3], the CPUC IRP developed 8760-hour load profiles to represent weather conditions across 23 different historical weather years (1998-2020). These 23 load profiles were constructed for each of the forecasted years in the planning model (2024-2039).

The CEC should adopt a similar methodology and publish several hourly load profiles, corresponding to different weather years, for each forecast year. Slide 26 of the presentation on Hourly Electricity Demand[4] suggests that multiple weather year scenarios were indeed modeled in the IEPR study. However, the details of the different weather scenarios and their hourly demand outputs are not reported in any of the draft results.

The CEC should use historical weather data, rather than synthetic weather data, to simulate electricity demand

Slide 5 of the presentation on Hourly Electricity Demand[5] states that the demand profiles in the IEPR study can be simulated using either synthetic or historical weather data. However, the IEPR draft results do not provide any detail regarding which underlying weather dataset was actually used to generate demand forecasts. The CEC should use historical weather data to develop demand profiles, rather than synthetic data, for two reasons.

First, historical data will capture the full spectrum of realistic weather observed across many years, including both typical weather and outlier events. In contrast, synthetic datasets have a tendency to overlook outlier events, as they are designed to aggregate weather patterns that are most frequently observed in a dataset. By failing to capture outlier weather events, such as multi-day heat waves, synthetic data can understate the impacts of weather volatility on system demand and reliability needs, leaving the state's planning process susceptible to overlooking significant reliability risks.

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[2] See "DRAFT CED 2024 Hourly Forecast - CAISO - Planning_Scenario" spreadsheet posted at https://www.energy.ca.gov/event/workshop/2024-12/iepr-commissioner-workshop-draft-forecast-results

[3] See pages 119-120 here: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2023-irp-cycle-events-and-materials/inputs-assumptions-2022-2023_final_document_10052023.pdf

[4] See slide 26: https://efiling.energy.ca.gov/GetDocument.aspx?tn=260597

[5] See slide 5: https://efiling.energy.ca.gov/GetDocument.aspx?tn=260597

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Second, load forecasts based on historical data enable modeling of weather-correlated grid dynamics. Users of IEPR hourly demand profiles will want to model demand alongside other weather-correlated grid variables, like renewable generation and fuel prices.[6] If historical weather data is used to develop IEPR demand profiles, then modelers can easily pair these profiles with other weather-correlated data inputs from the same historical weather year. However, if synthetic weather data is used to generate demand profiles, then modelers will not have visibility into the underlying weather conditions which were simulated, and cannot model weather-correlated grid dynamics.

The CEC IEPR study should thus simulate electricity demand using historical weather data collected from a wide range of years. The study should clearly state which underlying weather conditions were used to develop each demand profile.

Thank you again for the opportunity to comment on the IEPR Commissioner Workshop on Draft Forecast Results, and for all your work to deliberately and effectively advance California's energy transition. Please do not hesitate to reach out with any questions or follow up items.

Sincerely,

Kailash Raman
Senior Analyst, Strategy & Market Development Analytics
Form Energy
kraman@formenergy.com

Mark Thompson
Senior Director, State Affairs
Form Energy
mthompson@formenergy.com

[6] Modeling weather-correlated variables is critical for capturing simultaneous impacts of weather on grid operations (e.g. a winter event that results in both increased demand and reduced solar generation). The importance of modeling weather-correlated dynamics is discussed further in the following 2023 ESIG report on page 23, under the heading "Coincident and Physically Consistent Across Weather Variables": https://www.esig.energy/wp-content/uploads/2023/10/ESIG-Weather-Datasets-summary-report-2023.pdf