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Public Advocates Office Comments on the California Energy Commission Docket No 21-IEPR-03 Electricity and Natural Gas Demand F

Additional submitted attachment is included below.

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August 19, 2021

California Energy Commission
Docket Office
Re: Docket No. 21-IEPR-03
1516 Ninth Street
Sacramento, CA 95814-5512
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Subject: **Public Advocates Office Comments on the California Energy Commission Docket No. 21-IEPR-03: Electricity and Natural Gas Demand Forecast**

INTRODUCTION

The Public Advocates Office at the California Public Utilities Commission (Cal Advocates) hereby submits comments on the California Energy Commission's (CEC) Integrated Energy Policy Report (IEPR) Docket No. 21-IEPR-03 for Electricity and Natural Gas Demand Forecast. These comments expand upon the oral comments that Cal Advocates offered at the August 5, 2021 IEPR workshop, *2021 California Energy Demand Forecast – Inputs and Assumptions* ("the workshop"). Cal Advocates urges the CEC to:

- Prioritize explication of California's extreme heat risk in the demand forecast process;
- Develop hourly load forecasts for the IEPR weather variants; and
- Publish a technical report outlining any changes made to the IEPR forecasting methodology.

BACKGROUND

Session 1 of the workshop covered the common cases inputs and assumptions that underpin the IEPR load demand forecast process. Cal Advocates is an active participant in resource planning activities at the California Public Utilities Commission (CPUC), including the Resource Adequacy (RA) and Integrated Resource Plan (IRP) proceedings. The IEPR California Energy Demand forecast is a critical input for determining these proceedings, which collectively determine the level of electricity generation capacity that must be procured by load-serving entities in California.

Just over one year ago today, California's grid experienced rolling outages for the first time in nearly 20 years, in the midst of a west-wide heatwave. The CEC, CPUC, and California Independent System Operator (CAISO) later determined this heatwave to be a 1-in-30 year

event, or a 1-in-20 year weather event when accounting for climate change trends.[1] This event was followed by a 1-in-70 year weather event, or a 1-in-40 year weather event when accounting for climate change trends.[2]

Significant heat events have continued to occur this summer. In late June of this year, a notable "heat dome" event impacted the Pacific Northwest and Northern California, pushing temperatures well above average temperatures. Cal Advocates' analysis indicates that this heatwave produced a maximum temperature for Portland, Oregon, that exceeded four standard deviations above the mean of the maximum daily June temperature distribution from 1998 through 2020.

These and other extreme weather events—including "connected" and "compound" events where multiple factors exacerbate the impacts of already-challenging conditions[3]—are increasing in severity, breadth, and frequency,[4,5] and are increasingly directly attributable[6] to anthropogenic climate change. These extreme weather events directly impact ratepayers through strained generation supply, elevated prices, and a heightened risk of loss-of-load events. This latter risk is particularly important, given the role of air conditioning loads in mitigating adverse health outcomes during extreme heat events. Understanding the risks of extreme weather events is therefore crucial for proper energy resource planning.

RECOMMENDATIONS

A. THE CEC SHOULD PRIORITIZE EXPLICATION OF CALIFORNIA'S EXTREME HEAT RISK AS A TOP PRIORITY IN THE DEMAND FORECAST PROCESS

[1] CEC, CPUC, and CAISO, *Final Root Cause Analysis: Mid-August 2020 Extreme Heat Wave*, January 13, 2021, p. 40. Available at http://www.caiso.com/Documents/Final-Root-Cause-Analysis-Mid-August-2020-Extreme-Heat-Wave.pdf.

[2] Id.

[3] Raymond, C., Horton, R. M., Zscheischler, J., Martius, O., AghaKouchak, A., Balch, J., Bowen, S. G., Camargo, S. J., Hess, J., Kornhuber, K., Oppenheimer, M., Ruane, A. C., Wahl, T., & White, K. (2020). *Understanding and managing connected extreme events*. Nature Climate Change, 10(7), 611–621. Available at https://doi.org/10.1038/s41558-020-0790-4.

[4] Fischer, E. M., Sippel, S., & Knutti, R. (2021). *Increasing probability of record-shattering climate extremes*. Nature Climate Change, 11(8), 689–695. https://doi.org/10.1038/s41558-021-01092-9.

[5] IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [MassonDelmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press. https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Citation.pdf, B.2.2, p. SPM-19.

[6] Swain, D. L., Singh, D., Touma, D., & Diffenbaugh, N. S. (2020). Attributing Extreme Events to Climate Change: A New Frontier in a Warming World. One Earth, 2(6), 522–527. https://doi.org/10.1016/j.oneear.2020.05.011.

The CEC's IEPR forecast is a foundational input into the CPUC's RA and IRP programs and must account for the impacts of extreme weather events. Therefore, Cal Advocates urges the CEC to prioritize explicating the state's extreme heat risk in the current IEPR forecasting process. This should include the following:

- The definition of an "extreme heat" weather variant, with clarification of the temperature assumptions, spatial extent, and probability (i.e., 1-in-x) of the representative extreme heat event;
- Uncertainty ranges around any climate trends that are applied to the forecast;
- An extreme weather scenario or scenarios, to be included in the proposed "long term energy demand" scenario analysis; and
- Quantitative analyses of the probabilities of extreme weather events that could affect the entire state simultaneously and the entire western United States simultaneously, if not otherwise captured by the "extreme heat" weather variant.

These IEPR outputs would be particularly beneficial for the CPUC's work in defining RA requirements and IRP procurement needs. Without these improved IEPR forecasting products, the RA and IRP programs must rely on the limited data presented in the CEC's 2021 "extreme heat" stack analyses.[7] Such stack analyses are relatively simplistic, rely upon unclear assumptions, and do not describe the probability that such extreme electricity demand may recur. Improved IEPR forecasting products that delineate the probabilities and load impacts of extreme heat would significantly improve resource planning at the CPUC.

Commissioners Gunda, McAllister, and Monahan echoed these concerns during the workshop. CEC staff's analysis, which notes that, "[a]dding the events of Summer 2020 to the historical record may have little impact on the 1-in-2 determination, but could influence more extreme 1-in-x peak weather variants,"[8] further affirms the need for the IEPR to explicate the probabilities and load impacts of future extreme heat events.

B. THE CEC SHOULD DEVELOP HIGHER LOAD 1-IN-X HOURLY DEMAND FORECASTS BEYOND THE CURRENT 1-IN-2 FORECAST

In addition, Cal Advocates recommends that the CEC produce hourly forecasts for the higher percentile IEPR forecasts (e.g. 1-in-5, 1-in-10, and 1-in-20). Hourly forecasts would assist parties by identifying the hours and magnitudes of higher load–higher air conditioning loads in particular. If the CEC lacks the resources to forecast all three of the higher-percentile forecasts, the inclusion of at least one such hourly forecast (e.g., the 1-in-5) could provide parties with a sufficient basis to impute hourly forecasts for the 1-in-10 and 1-in-20 forecasts.

C. THE CEC SHOULD PUBLISH A TECHNICAL REPORT OUTLINING ANY CHANGES MADE TO THE IEPR FORECASTING METHODOLOGY

[7] CEC, *2021 Summer Readiness – July Update,* Presented at the IEPR Joint Agency Workshop on Summer 2021 Electric and Natural Gas Reliability, July 8, 2021. CEC, *California Energy Commission Preliminary 2022 Summer Supply Stack Analysis*. August 11, 2021.

[8] Nicholas Fugate, Historic Weather Trends. August 5, 2021 Workshop – Demand Forecast Inputs and Assumptions, slide 8 (PDF p. 47).

Finally, Cal Advocates recommends that the CEC publish a technical report in the upcoming IEPR market materials that explains any and all changes to the forecasting methodology, including changes that are responsive to the recommendations made herein, and includes comparisons to the prior IEPR methodology. Detailed technical reports of this sort would ensure that the IEPR methodology remains transparent, clear, and replicable for resource planning stakeholders.

CONCLUSION

For the above reasons, Cal Advocates recommends that the CEC prioritize forecasting extreme weather event risks, develop additional hourly forecasts, and publish a technical report outlining IEPR methodological changes. Please contact Kyle Navis at kyle.navis@cpuc.ca.gov or (415) 703-2840 with any questions regarding these comments.

/s/ Julie Halligan

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