

**DOCKETED**

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**Form Energy Comments on IEPR Commissioner Workshop on the  
California Planning Library**

*Additional submitted attachment is included below.*



May 18, 2022

California Energy Commission  
Docket Unit, MS-4  
Docket No. 22-IEPR-02  
715 P Street  
Sacramento, CA 95814

**Subject: Form Energy, Inc. Comments on the IEPR Commissioner Workshop on the California Planning Library, Docket #22-IEPR-02**

Form Energy, Inc. (“Form Energy”) appreciates the opportunity to comment on the California Energy Commission’s (CEC) proposed scope and timeline for the implementation of the California Planning Library (CPL). Form Energy supports the CEC’s ongoing efforts to develop and maintain datasets and analytical tools to inform energy system policies, regulations, and investments. We believe that the CPL will serve as an invaluable tool for effective reliability planning in California’s increasingly decarbonized grid and are especially pleased to note the CEC’s focus on land use analysis and on assessing grid reliability under a variety of weather conditions and future scenarios. In order to ensure that this effort addresses some of the most critical gaps in current data availability, we recommend that a number of key items be explicitly included in the scope of the CPL.

First, the CEC should commit to developing more diverse hourly demand forecasts that reflect at least 1-in-5, 1-in-10, and 1-in-20 weather years. Second, we encourage the CEC to work with the California Public Utilities Commission (CPUC) to review and improve renewable generation profiles to accurately capture typical and atypical weather impacts on generation. Third, we recommend that the CEC include forecasts of fuel costs for generating facilities as part of the CPL.

**About Form Energy**

Form Energy is developing a new class of multi-day energy storage systems. Our goal is to enable a fully renewable electric grid that’s reliable and cost-effective year-round, even in the face of multi-day weather events. Our first commercial product is a rechargeable, iron-air battery capable of delivering electricity at rated capacity for 100 hours at system costs competitive with conventional power plants and at less than 1/10th the cost of lithium-ion systems. With over 250 employees, Form Energy has offices in the San Francisco Bay Area; Somerville, MA; and the

Greater Pittsburgh area. We have secured over \$350M in funding from impact-oriented investors.

**Recommendation #1: The CEC should commit to developing diverse hourly demand forecasts that reflect at least 1-in-5, 1-in-10, and 1-in-20 weather years**

Historically, state energy agencies have conducted resource planning and capacity expansion modeling using hourly demand forecasts based on 1-in-2 weather years, supplemented with production reserve margins, to achieve a 0.1 loss of load expectation standard. This approach assumes that deviations from “average” conditions, as represented by the 1-in-2 year demand forecasts, can be accounted for with a simple percentage margin. In today’s grid, atypical weather magnifies reliability risks because the availability of generation is increasingly weather-dependent. Moreover, climate change is increasing both the prevalence and severity of extreme weather events.

At this point, both energy system analyses and real-world events show that average conditions no longer drive reliability risks and resource needs. The CPUC has acknowledged that, in order to model system resource needs under diverse conditions, they need access to hourly demand forecasts for a wider range of weather years. While we believe that the CEC is aware of this issue and intends to rectify it as part of the 2022 Integrated Energy Policy Report (IEPR) Update, we urge the CEC to explicitly include 1-in-5, 1-in-10, and 1-in-20 hourly demand forecasts among the Phase I data deliverables.

**Recommendation #2: The CEC should collaborate with the CPUC to review and improve renewable generation profiles to accurately capture typical and atypical weather impacts on generation**

Form Energy’s analysis of the CPUC’s renewable generation datasets has identified significant discrepancies between the renewable energy profiles used in RESOLVE and other public sources of renewable energy profiles, including SERVM and EIA datasets. We are concerned that discrepancies in generation shapes and capacity factors may have an outsized impact on optimal resource portfolios in scenarios with high levels of renewables.

As part of the 2022 IEPR Update, we recommend that the CEC collaborate with the CPUC to audit and refresh the renewable energy profiles used in agency capacity expansion modeling. Key goals should include 1) developing realistic 8,760 generation capacity factors and shapes over typical and atypical years; 2) assessing how those shapes might change over time due to climate change (to inform decisions about what profiles should constitute typical and atypical profiles in future years); and 3) aligning the generation profiles used in capacity expansion modeling and production cost modeling. Generation profiles for hydroelectric power should be included in this effort, given the sensitivity of hydroelectric availability to drought conditions. We additionally recommend that the CEC work to pair 8,760 generation profiles for typical and atypical years with corresponding 8,760 load profiles, since weather-driven correlations are likely and could shed light on emerging reliability risks.

**Recommendation #3: The CEC should include generating fuel price forecasts in the CPL**

Form Energy is pleased by the consideration, as part of the CPL effort, of a variety of electrification and decarbonization scenarios. Given the sensitivity of key modeling results to assumptions around future fuel costs for generating facilities, we recommend that the CEC explicitly include generating fuel price forecasts, including for atypical weather years in which extreme weather events might drive price volatility, among the Phase I data deliverables.

**Conclusion**

Form Energy greatly appreciates the CEC's CPL effort and this opportunity to provide public comment on critical datasets. We look forward to continuing to collaborate with CEC staff on these important issues.

Respectfully,

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