DOCKETED	
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Document Title:	Research to Support a Climate-Resilient Transition to a Clean Electric System_Jensen_McLean Comments
Description:	Comments from Richard Jensen and C. Damon McLean pertaining to March 5th Staff Workshop: Research to Support a Climate-Resilient Transition to a Clean Electric System Request for Comments on Forthcoming Solicitation
Filer:	Alexandra Kovalick
Organization:	California Energy Commission
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Richard Jensen, C. Damon McLean

3/11/21

Notes from 3/5/21 ERDD Workshop

Subject:

Climate projections: wind fields and ground-level solar irradiance…

SAO comment:

We use hourly wind and solar profiles to produce simulated energy production from renewable facilities in plexos. Future extreme weather events or changes to current expected patterns would assist us in modelling the effects of climate change.

Subject:

Grids of CA and WECC at various levels of resolution…

SAO comment:

Wondering what these "grids" are mapping and if they would be useful to SAO. Are they for mapping potential renewable energy generator locations?

Subject:

This is a supply side study. Should it expand to demand side?

SAO comment:

It would be of interest to SAO to know if demand side resources could be used to assist in grid resiliency and what type of demand side resources could contribute. This is a challenging area for forward modeling efforts and research efforts trained here could be especially valuable.

Subject:

What can fill gaps in case of a multi-day event? Storage contribution is insufficient.

SAO comment:

What types of storage are being considered and in what quantity?

Observations on the Workshop

The workshop appears to have accomplished its objective of introducing the ideas driving the planned research to the public; ERDD staff were effective in guiding participants understanding of issues relative (or not) to scope. This research clearly sits at an early stage and it seems that continued participation by PMU staff will likely be effective in yielding useful inputs to future modeling efforts like those needed for SB 100.

To continue PMU Staff engagement, it will likely be worth the effort to review the submitted comments and the workshop transcript through a modeling lens and provide feedback to ERDD staff. Remaining engaged through GFO process will increase the likelihood of PMU staff obtaining useful modeling input / data products.

RE Effort 1: Assessing and improving the climate resilience of an electricity system in transition

Staff in the PMU agree that forward looking modeling efforts beyond the conventional ten year horizon would benefit from a coordinated effort to produce model inputs, and supporting analytics, of a sufficiently granular (in both time and geography) nature. Detailed annual hourly (8,760 / 8,784 data points) time series are often the most useful sort of data object for inclusion in production cost modeling. When not feasible, data objects representing a daily shape (24 data points) for each month, or season serve as a reasonable alternative.

Importantly, any forward-looking modeling effort (beyond the ten year horizon) must translate the inputs of the common near term horizon modeling framework to a future horizon framework that represents the relevant projections. Care must be taken to "mind the gap" between the two time horizons and assess plausible/implied transition realities between the two horizons.

The ability to assess the climate resilience of the electricity system at the three requested states will benefit from the development of probability distributions of key parameters, accompanied by robust sampling capabilities.

Effort 2: Resiliency of solar, wind, and hydropower generation in a changing climate

Much of this second effort appears narrowly focused upon a few renewable / zero carbon resource types. This assessment risks coming short of a balanced perspective if geothermal, as well as nascent energy storage and carbon management technologies are omitted. For PMU modelling efforts, it is necessary to have a complete suite of renewable / zero carbon generation technologies to balance supply with forecasted demand.