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The Center for Energy Efficiency and Renewable Technologies, Renewable Northwest, Natural Resources Defense Council, and Western Grid Group appreciate the opportunity to comment on the Draft Flexible Capacity Needs Assessment for 2018. Our organizations each have an interest in policy solutions for an efficient, low carbon Western grid. Flexible capacity and ramping capability are critical needs as the CAISO footprint continues to move towards being a low carbon grid. The Flexible Needs Assessment feeds directly into the California Public Utilities Commission (CPUC)'s Resource Adequacy proceeding (R.11-10-023), where the decision of which resources will be compensated to meet these needs will be determined.

In evaluating the flexibility and ramping needs, it is important to acknowledge how the needs are currently being met in comparison to which resources "qualify" to meet the need. For example, in the month of March 2017, on average, the net load ramp was met by roughly about 40% imports or approximately 3800MW[1]. The rest was met by physical resources, mostly gas at around 45% of the ramp or approximately 4200MW. Further, on days with significant curtailment, the generation utilized to meet the ramps shifts to lower levels of gas resources and higher levels of imports. On days with greater than 4000MWh of curtailment, imports make up on average 4850MW of the ramp, while gas resources only contribute 3300MW[2].

For comparison, the recently released CPUC 2015 Resource Adequacy Report[3] indicates that over 90% of resource adequacy during the Spring months was contracted to be filled by "physical resources", while approximately 2000MW of imports were contracted. This report does not explicitly designate the

[1] Net load ramp analysis was based on the CAISO "Daily Renewables output data" hourly generation data for the month of March 2017. Total generation was used to approximate total load for each day. Variable renewable energy was subtracted from total generation to approximate net load. The largest 3-hour ramp was then determined based on the the hourly net load profile. Changes in generation for each resource type during the 3-hour ramp to estimate resource contributions.

[2] Curtailment levels were determined based on the daily "Wind and Solar Real-time Dispatch Curtailment Report" for each day in the month of March 2017.

[3] The 2025 Resource Adequacy Report, Energy Division, California Energy Commission, January 2017

quantity of resources that qualify to meet the flexible resource adequacy requirement, but *at most* the amount of imports contracted to provide flexible capacity is 2000MW.

It is challenging, if not impossible, to fully assess how resources contracted to provide flexible capacity are actually meeting the flexibility needs of the grid, due to a lack of data availability. However, it does appear clear that, assuming the 2017 resource mix is similar to the 2015 resource mix, a significant portion of the ramp is met by resources that do not "officially qualify" as a flexible resource by the definition utilized or are simply not contracted to do so. It also appears that the resources being compensated to be available are not necessarily those being utilized to meet the ramp.

While this observation does not impact the system needs assessment for flexible resources, it does indicate that requirements to qualify as flexible capacity may need to be more closely examined. Understanding how resources procured under bilateral contracts to meet system needs in changing market conditions may help improve the efficacy of the flexible resource requirements and inform rational procurement. Again, without access to market data even a year after the fact, it is impossible to determine why the bilateral resource adequacy market and wholesale energy market do not match up. However, it could be speculated that some resources being utilized are scheduled into the day-ahead market and that strict participation in the real time market is limiting. It could also be speculated that more resources are "showing up" in the wholesale market and those contracted through the bilateral resource adequacy market were outbid.

We look forward to working with the CAISO and CPUC on understanding the impacts of certain aspects of the flexible resource adequacy requirement in an effort to best align CAISO and CPUC policy and improve the availability of non-market sensitive information.

Thank you,

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