BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Enhance the Role of Demand Response in Meeting the State's Resource Planning Needs and Operational Requirements.	Rulemaking 13-09-011

CLEAN COALITION'S COMMENTS ON ORDER INSTITUTING RULEMAKING TO ENHANCE THE ROLE OF DEMAND RESPONSE IN MEETING THE STATE'S RESOURCE PLANNING NEEDS AND OPERATION REQUIREMENTS

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I. Introduction

The Clean Coalition is a California-based nonprofit organization whose mission is to accelerate the transition to local energy systems through innovative policies and programs that deliver cost-effective renewable energy, strengthen local economies, foster environmental sustainability, and provide energy resilience. To achieve this mission, the Clean Coalition promotes proven best practices, including the expansion of Wholesale Distributed Generation (WDG) connected to the distribution grid and serving local load. The Clean Coalition drives policy innovation to remove barriers to the procurement and interconnection of WDG projects, integrated with Intelligent Grid (IG) solutions such as demand response, energy storage, and advanced inverters. The Clean Coalition is active in numerous proceedings before the California Public Utilities Commission, the California Energy Commission, and other state and federal agencies throughout the United States. The Clean Coalition also designs and implements WDG and IG programs for utilities and state and local governments.

II. Summary of Recommendations

The Clean Coalition commends the Commission for initiating this rulemaking and looks forward to continuing the dialogue on Demand Response (DR) as a vital resource for meeting system reliability needs. We have organized our recommendations as follows:

- *Comments on the purpose and scope of the proceeding.* The Clean Coalition recommends that the Commission clarify the purpose and scope of the proceeding as follows.

- Specify that a purpose of the Rulemaking is to determine how to maximize the role of demand response as a tool for integrating high levels of renewable energy and distributed generation to meet California renewable energy and greenhouse gas goals.
- Add to the scope of the proceeding an evaluation of the extent to which "demand-side" demand response programs, including dynamic time of use rate programs, should be designed for and counted as contributing towards reliability needs.

- *Objectives of the proposed pilot programs.* The Clean Coalition supports the proposed objectives for the pilots and recommends inclusion of the following objectives to the proposed pilot programs.
  - Show how demand response can mitigate the early evening ramp in certain months of the year by shifting loads that do not depend on hot weather (in contrast with the peak shaving programs that focus on air conditioning cycling). This should include commercial, industrial, electric vehicles, and if necessary, residential loads.
  - Address the specific integration needs of high levels of distributed generation. In addition to requiring high levels of responsiveness that can be provided by automation, integrating high levels of distributed generation benefits from locational dispatch capabilities at the substation and feeder line level.

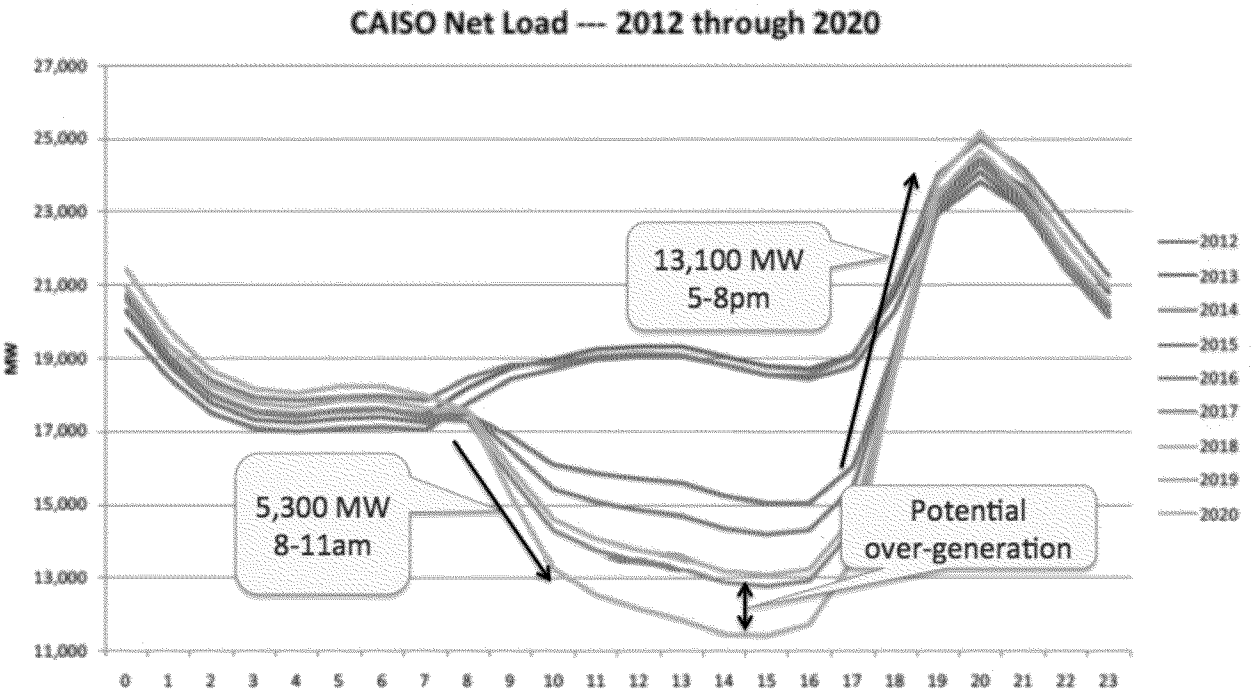
III. Comments on purpose and scope of proceeding

a. Integrating high levels of renewable generation

The Clean Coalition supports the "ultimate goal" of the Order to Institute Rulemaking – "to enhance the role of demand response programs in meeting the state's long-term clean energy goals while maintaining system and local reliability." The Clean Coalition

recommends that the Commission specify that a purpose of the Rulemaking is to determine how to maximize the role of demand response as a tool for integrating high levels of renewable generation to meet California renewable energy and greenhouse gas emissions goals. The recent Integrated Energy Policy Report (IEPR) draft released by the California Energy Commission (CEC) emphasizes the important role of demand response for integrating renewable energy.[1]

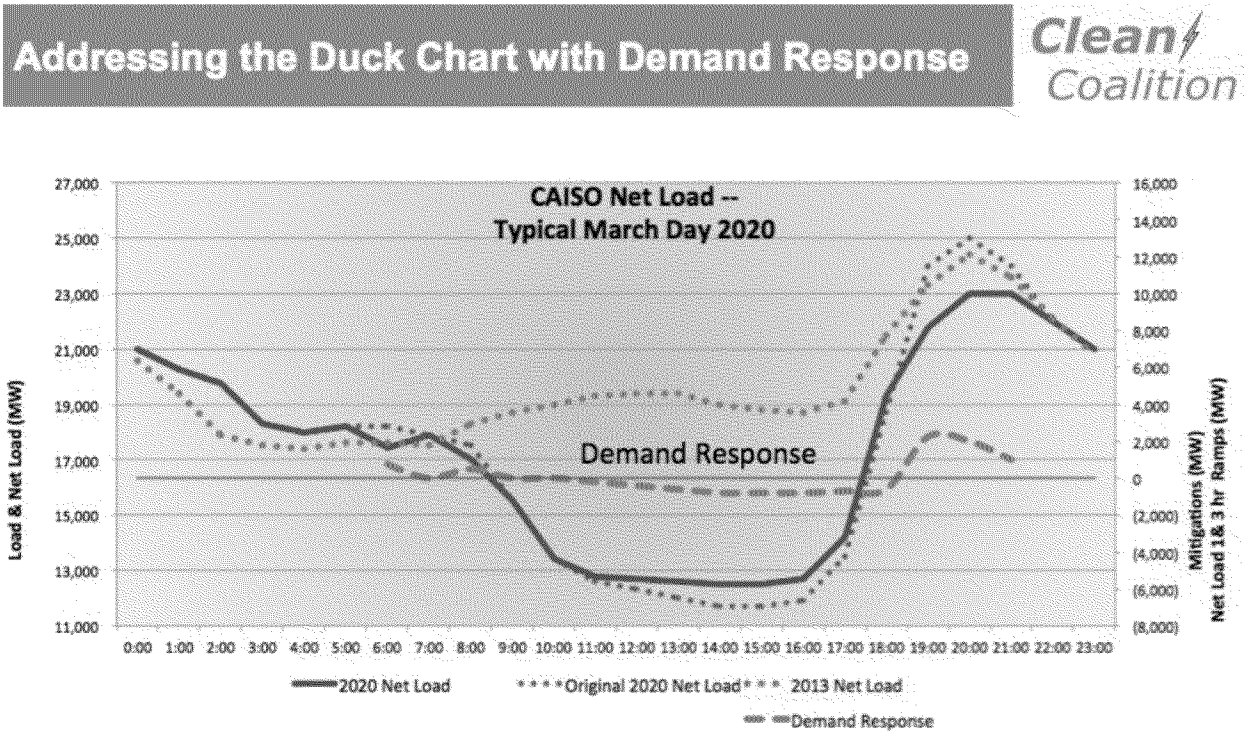
Accordingly, this Rulemaking should address how using demand response for load shaping can mitigate the ramping needs indicated by the California Independent System Operator (CAISO) "Duck Chart" (below) as California reaches its 2020 Renewable Portfolio Standard goal.



[1] "California policy must focus on scaling up development of demand response (DR) products that have the characteristics required to avoid new generation capacity and transmission. Existing DR programs in Southern California have seriously underperformed. However, the various recent developments in Southern Californiathe San Onofre Generating Station (San Onofre) retirement, appro aching once-through cooling requirements, and the increasing need for flexibility to integrate intermittent renewable resources— as well as the longterm challenge of responding to the impacts of climate change, dictate that DR play a much larger and substantial ly different role in electricity supply and reliability enhancement than today. Further, timecertainty is required for mobilizing fast response DR at relevant scale: slippage in DR market development will necessitate development of more generation and/ or trans mission than would otherwise be required. Given the long lead time required to develop generation and transmission, the need to prove DR is urgent." Draft IEPR, pg. 50.

Source: California Independent System Operator (annotations added)

The Clean Coalition has developed a model to illustrate how a combination of intelligent grid solutions, including demand response, can reduce CAISO system ramping needs without new combustion resources.[2] The graphic below shows that demand response programs can incentivize customers to shift power consumption away from high net demand periods (flattening the head and neck of the duck) and towards low net demand periods (lifting the belly of the duck), as shown by the blue dashed line, which represents demand response in megawatts reflected on the scale to the right. The dotted red line represents the original 2020 net load from the CAISO graphic above, and the solid red line represents the modified 2020 net load curve. For comparison, the dotted orange line represents the 2013 net load curve from the CAISO graphic above.



Source: Clean Coalition (2013)

[2] See full discussion on "Flattening the Duck" and the integration of renewables developed by the Clean Coalition at: http://www.clean-coalition.org/resources/integrating-high-penetrations-of-renewables/

Since the issues raised by the Duck Chart are approaching rapidly, we urge the Commission to prioritize determining how to maximize the use of demand response to address system ramping needs, consistent with the Loading Order, rather than waiting for the CAISO to determine how demand response can provide flexible capacity by acting like a dispatchable combustion resource through its Flexible Resource Adequacy Criteria and Must Offer Obligations (FRACMOO) initiative. Addressing this issue solely on an individual CAISO product-by-product basis will not result in optimal use of demand response to meet system needs. For example, dynamic pricing programs may make a significant impact on net load shape regardless of whether such programs should currently be eligible to participate in CAISO markets.

Further, this proceeding should ensure that demand response programs are designed to avoid reliance on dirty back-up generators. This is essential for ensuring that the demand response programs contribute to the achievement of California's greenhouse gas emissions mandates and air quality standards.

b. Integrating high levels of distributed generation

The Clean Coalition recommends that the Commission specify that a purpose of the Rulemaking is to determine how demand response can integrate high levels of distributed generation. The recent California Air Resources Board (CARB) scoping plan notes the importance of meeting distributed generation goals, stating "if California meets its range of existing policy goals such as 12,000 MW of renewable distributed generation by 2020…it could reduce emissions by 2030 to levels squarely in line with achieving the 80 percent reduction goal by 2050."[3]

[3] Climate Change Scoping Plan First Update, October 2013, pgs 77-78.

As the Clean Coalition has learned from experience working with utilities to design distributed generation and intelligent grid (DG+IG) demonstration projects,[4] only demand response products with a high level of locational dispatchability and responsiveness can be used to integrate high levels of distributed generation. Therefore, it is critical for this proceeding to develop policies and authorize pilot programs that address these specific reliability needs.

c. *Accounting for the full value of "demand-side" demand response for meeting reliability needs*

The Clean Coalition also supports the OIR's emphasis on developing CAISO markets for demand response, learning from the success of PJM and creating competition from aggregators for utility programs. However, the Clean Coalition is concerned that the OIR's definition of "supply-side" demand response as "reliable and flexible demand response that meets system resource planning and operational requirements" implies that "demand-side" programs will not be counted towards system reliability planning needs. This approach, regardless of whether the Commission decides to "bifurcate" demand response programs based on these definitions, is likely to result in the undervaluing the ability of such resources to meet system needs.

In the recent non-conventional alternatives (NCA) proposal presented by CAISO as part of its transmission planning process (TPP), CAISO noted that "demand side" resources should be accounted for in reliability plans, but the proposal gave no guidance on how

[4] Through the Distributed Generation + Intelligent Grid (DG+IG) Initiative, the Clean Coalition is working with forward-thinking utilities to develop five DG+IG demonstration projects. Each demonstration project will prove that local renewables connected to the distribution grid can provide at least 25% of the total electric energy consumed within the distribution grid, while maintaining or improving grid reliability. These demonstration projects, which will highlight the technical and financial feasibility of high penetrations of DG, serve as models for modernizing America's electrical system in the most intelligent manner possible. For more information, see http://www.clean-coalition.org/unleashing-clean/dgig-initiative/.

to evaluate these resources properly.[5] This proceeding should address this issue explicitly.

We recommend that the Commission add to the scope of the proceeding an evaluation of the extent to which these programs, including dynamic time of use rate programs, should be counted towards reliability needs. For example, the Commission may elect to use statistical analyses of existing time of use programs or authorize additional pilot programs to determine the extent to which the capacity of a dynamic pricing program should be discounted when applied towards reliability needs.

To integrate high levels of renewable energy and distributed generation without relying on additional combustion resources, California should develop both utility demand response programs and CAISO markets for demand response. Time of use pricing programs can efficiently address the CAISO Duck Chart ramping issues discussed in Section III (a) above. Demand response products with high levels of responsiveness and locational dispatchability will be important for integrating high levels of distributed generation.

IV. Clean Coalition Discussion of Questions posed to Parties

Response to Question #2: Do you support the objectives of the staff proposed pilots? Please provide alternative suggestions for Utility pilots in 2015 if you do not.

The Clean Coalition supports the proposed objectives for the proposed pilots and recommends the following additional objectives. First, the Clean Coalition recommends that the pilots be designed with the objective of determining how demand response can be used for load shaping to mitigate the concerns raised by the CAISO "Duck Chart" as California reaches its 2020 Renewable Portfolio Standard goal, as described in in Section III (a) above. We propose that the Commission design a pilot program (or expand one of the proposed pilot programs) to show how demand

[5] Consideration of alternatives to transmission or conventional generation to address local needs in the Transmission Planning Process, September 2013. http://www.caiso.com/Documents/Paper-Non-ConventionalAlternatives-2013-2014TransmissionPlanningProcess.pdf

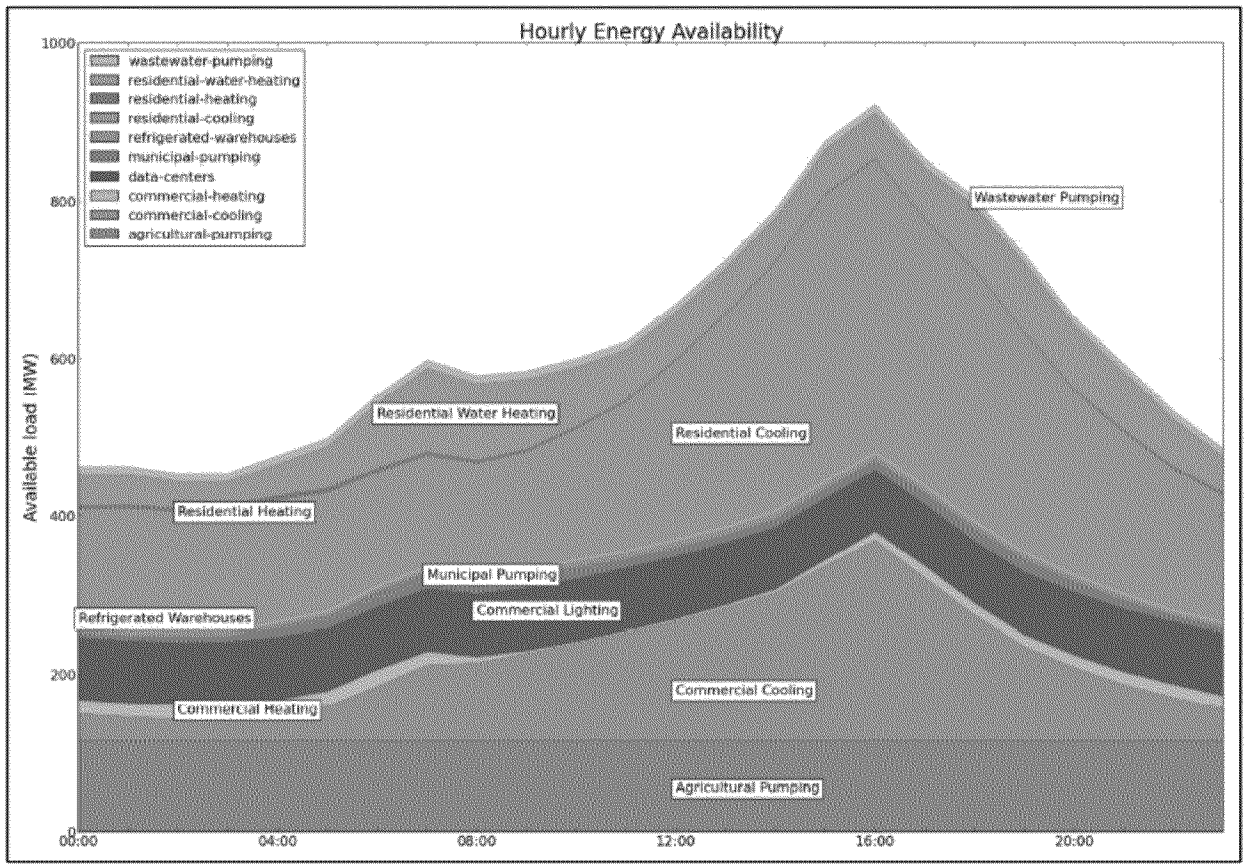
response can mitigate the early evening ramp in certain months of the year by shifting loads that do not depend on hot weather (in contrast with the peak shaving programs that focus on air conditioning cycling). The Lawrence Berkeley National Laboratory and the National Renewable Energy Laboratory will soon publish a report with data on the projected 2020 availability of loads, by type, that will be available to respond to grid services needs on an hour-by-hour basis in the Western Interconnection.[6] The Commission can use this report as a starting point for developing commercial, industrial, and if necessary, residential pilot programs to estimate the costs and test and improve the effectiveness of demand response programs designed to mitigate the ramping needs shown by the CAISO Duck Chart. [7]

Table ES-1: Product Characteristics

Products		Physical Requirements			
Product Type	General Description	How fast to respond	Length of response	Time to fully respond	How often called
Regulation	Response to random unscheduled deviations in scheduled net load (bidirectional)	30 seconds	Energy neutral in 15 minutes	5 minutes	Continuous within specified bid period
Flexibility	Additional load-following reserve for large un-forecasted wind/solar ramps (bidirectional)	5 minutes	1 hour	20 minutes	Continuous within specified bid period
Contingency	Rapid and immediate response to a loss in supply	1 minute	≤ 30 minutes	≤ 10 minutes	≤ Once per day
Energy	Shed or shift energy consumption over time	5 minutes	≥ 1 hour	10 minutes	1-2 times per day with 4-8 hour notification
Capacity	Ability to serve as an alternative to generation	Top 20 hours coincident with balancing authority area system peak			

[6] "Grid Integration of Aggregated Demand Response, Part 1: Load Availability Profiles and Constraints for the Western Interconnection." Daniel J. Olsen, Nance Matson, Michael D. Sohn, Cody Rose, Junqiao Dudley, Sasank Goli, and Sila Kiliccote (Lawrence Berkeley National Laboratory) Marissa Hummon, David Palchak, Paul Denholm, and Jennie Jorgenson (National Renewable Energy Laboratory), September 2013 (working draft).

[7] Please note the LBNL/NREL report as the source of these charts. First chart is from PDF page 11 and second one is from Appendix E, PDF page 86. It shows the Hourly Energy Availability of loads in the Western Interconnection in 2020.



Second, we recommend inclusion as an objective of the pilots the integration of high levels of distributed generation for the reasons set forth in Section III (b) above. Incorporation of this objective into the Southern California local area is ideal since the Southern California local area has significant transmission constraints. Further, the Southern California Edison Living Pilot has the aim of showcasing the ability of local preferred resources to meet local system needs.

Accordingly, we recommend a new pilot (or expansion of a proposed pilot) to address the specific integration needs of high levels of distributed generation. In addition to requiring high levels of responsiveness that can be provided by automation, integrating high levels of distributed generation requires locational dispatch capabilities at the substation and feeder line level. This pilot should take a distributed energy resources

approach to integrating high levels of distributed generation, including other clean local resources, such as energy storage.

Respectfully submitted,

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