DOCKETED	
Docket Number:	19-OIR-01
Project Title:	Load Management Rulemaking
TN #:	238166
Document Title:	Joint Comments - Enabling jobs & innovation through smarter load management
Description:	Joint Comments from: Community Energy Labs, Dynamic Grid, Extensible Energy and Packetized Energy
Filer:	System
Organization:	Community Energy Labs, Dynamic Grid, Extensible Energy and Packetized Energy
Submitter Role:	Public
Submission Date:	6/9/2021 2:07:59 PM
Docketed Date:	6/9/2021

Comment Received From: Tanya Barham
Submitted On: 6/9/2021
Docket Number: 19-OIR-01

Enabling jobs & innovation through smarter load management

Additional submitted attachment is included below.

Submitted: June 9, 2021

California Energy Commission
1516 Ninth Street, MS-29 Sacramento, CA
95814-5512

Docket No. 19-OIR-01, "Load Management Rulemaking"
Re: Comments of Grid Edge Collaborators on Potential Amendments to the Load Management Standards

Dear Commissioners:

We are writing this letter to provide feedback to the California Energy Commission (CEC) on how to most effectively use CEC resources to support the ability of innovative small businesses to contribute to the energy transition in California.

For background, we are a group of energy startups, each working on innovative solutions with the potential for enormous benefit to the US electricity industry. Collectively our technologies will make it easier and more cost effective to electrify buildings, shift loads away from periods of shortages on the grid and toward times when renewable energy is plentiful, and make it easier for customers to benefit from smart meter data. At scale, the flexible coordination of operational electrical end loads we propose has potential to provide 1393 PJ of energy efficiency and ~200 GW of flexible capacity to the grid, resulting in $15 billion per year in benefits to U.S. ratepayers.

Each of our businesses has benefited from California Energy Commission research and development programs in various ways, such as licensing technology developed in laboratories and at universities, collaborating with load serving entities on research and development, and innovating programs to create jobs and cost savings on energy for Californians. Based on this experience we see a number of important ways that the proposed rulemaking can be more effectively used to support the work of innovative energy providers and small businesses like ours in bringing cost-effective and equitable innovation to market. We strongly support the Draft Staff Analysis of the Potential Amendments to the Load Management Standards and very much appreciate the opportunity to file comments regarding the subject.

Decrease Complexity in Energy and Grid Value for Innovative Demand Side Solutions
Outages in states like California and Texas show the shortcomings of current state-of-the-art demand response and time-of-use pricing approaches in the face of grid resiliency, variable generation, and unpredictable weather patterns. In contrast, the DOE-funded Pacific Northwest Demonstration and California Energy Commission's Retail Automated Transactive Energy System (CEC-500-2020-038) show that more granular, dynamic, transactive price signals are an innovative means to reduce deployment fragmentation for utilities and aggregators alike while solving a variety of transmission, distribution and market constraints.

The CEC's 2020 Load Management Rulemaking proposes to explore solving the 'duck curve' in this manner by requiring utilities use the resources ratepayers have funded for AMI, distribution system planning, sensing, asset management and other increased business intelligence to structure, build and send real-time, machine- readable rates to technologies and providers capable of autonomously, securely and privately managing energy on customers' behalf for their benefit as well as for LSEs and the grid.

The value that regionally appropriate ranges of grid services could provide for renewable integration, capacity, greenhouse gas reduction and infrastructure preservation could be most efficiently delivered through a single time-varying rate. That rate can "stack" these values from the LSE and grid side while affording innovators and technologists like us the means to efficiently manage customer side energy flexibility via a single API and variable to optimize (price). Doing so reduces the cost to implement such strategies and thereby makes demand side flexibility more scalable, reliable and cost effective.

Removing barriers to demand-side cost effectiveness

The current situation requires aggregators and building owners bear the brunt of understanding the complex interplay between grid, carbon and energy values and how these relate to customer behavior and operations. Currently an aggregator intent on helping distributed customers mitigate cost, carbon and demand charges must monitor and optimize: tariffs from an increasing number of LSEs, flex alerts, demand response programs, market signals, carbon signals and customer preferences. Much like barter worked before markets, interpreting and optimizing each of these value streams - as currently implemented - is difficult to accomplish at scale. Another devil in the details is the operational costs and inefficiencies inherent in aggregators having to manage each input's inconsistently deployed interfaces and protocols.

One Price, One Format

Just as barter lost favor as currency, markets and exchange rates became a more or less universal way to communicate both the value of a shoe and an electron, we applaud the commission for investigating a more scalable means to unlock many streams of grid flexibility values. A single price that encapsulates all potential value streams from the seller's perspective (carbon mitigation, distribution capacity, energy) sends a single, easy to interpret and optimize price for customers to translate based on their values. As opposed to multiple rates, tariffs, signals, APIs, standards - all of which must be managed and maintained by each aggregator - a single repository for time-varying rates implemented through MIDAS has the potential to increase scalability, decrease implementation costs and support equitable innovation in the service of the following grid priorities:

Distribution Capacity Constraints. Congestion from load growth, building and transportation electrification, and back-feed from Distributed Energy Resources (DER) strain utility distribution infrastructure. A single price could include time-varying local distribution capacity value (determined through utility distribution planning, analysis and strategic asset management) as part of the stack - lessening capacity violations and infrastructure wear and tear by reducing peak loads from end uses and aggregations at site level for applications such as microgrids,

building or transportation electrification. Ultimately this saves utility customers on distribution upgrades and demand charges.

Managing loads to correspond with local distribution congestion characteristics also supports resiliency by reducing the chance of short-term supply disruptions due to overloading utility distribution circuits. For example, while most residential transformers serve between 10 and 50kVA of load, a single plug-in EV with a 240V (Level 2) charging system consumes approximately 7kVa. Asking utilities to include this value as part of the stack in a unitary price signal would reflect local loading constraints and encourage better coordination of community assets to reduce demand spikes. On the flip side of the reliability spectrum, engaging battery and thermal storage and flexible on-site building loads to increase on-site renewable self-consumption has shown building flexibility improvements 10% greater than traditional demand response. A time-varying local congestion price tied to substation capacity could activate this latent flexibility in buildings - encouraging buildings built to net zero standards to better manage their load profile and reduce solar backfeed.

Seasonal Peak Management. Predictable daily and seasonal electricity usage peaks increasingly do not align with our changing electrical generation mix - creating critical demand periods where grid operators must run carbon-intensive generation or curtail customers and renewables. Electrification and impending baseload generating plant retirements exacerbate the problem. Similar to existing time of use tariffs, including daily and seasonal time-varying components to a price stack stimulates a predictable seasonal daily load shift response — rewarding customers who manage vehicle charging, heating and cooling, and other load patterns to align with system generating capacity.

Dynamic Load Shaping for 24/7 Renewable Integration. In summer, the California Independent System Operator (CAISO) curtails enough solar to power millions of homes even as increasing HVAC loads could be soaking up that excess by pre-cooling. That waste hurts the economics of renewable energy. To better integrate renewables and manage resource adequacy, a more granular pricing signal will encourage dynamic adjustment of daily loads based on renewable resource fluctuations. A signal where shortages and surplus of renewable energy and/or carbon pricing is included encourages autonomous management of building load shape to ramp, shed, or shift over shorter time scales.

We can all agree that the entire state will face these and many use cases like these as the energy sector rapidly transitions to carbon free generation and all electric transportation and buildings. Having a standard, scalable and flexible model to communicate price and value to aggregators and customers as the landscape rapidly evolves will hasten a more orderly transition. Innovative solutions like those staff propose mean our companies and many like ours could spend far more of our intellectual capital, time and innovations on quickly, cheaply and effectively automating and optimizing energy flexibility for these use cases. We could focus the bulk of our efforts on optimizing a single, dynamic pricing signal with an open and reliable interface. Instead we waste precious time struggling with balkanized communication,

semantics, protocols, tariffs and interfaces that drive up the cost of innovative demand side flexibility - keeping it out of reach as a mass market solution for real-time grid flexibility.

Conclusion

We again thank the Commission for the opportunity to provide comments, enthusiastically support the development of an RIN Access Tool and MIDAS database and API as a first step. We hope that staff and the Commission find the above descriptions of ways that this innovation could help us more efficiently provide grid, energy and customer value helpful.

The energy transition requires the kinds of innovations and business practices that startups like ours are bringing to market every day. We believe concepts like those proposed by staff can make the CEC an even more effective partner in equitably accelerating this transformation for the State of California.

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