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NRDC Comments on Load Management Rulemaking Scope

Additional submitted attachment is included below.

Comments of the Natural Resources Defense Council (NRDC)
on the Load Management Rulemaking Scoping Memo and Workshop

Docket Number 19-OIR-01

January 24, 2020

Submitted by: Pierre Delforge – NRDC

The Natural Resources Defense Council (NRDC) appreciates the opportunity to comment on the load management rulemaking scoping memo and workshop. NRDC is a non-profit membership organization with more than 95,000 California members who have an interest in receiving affordable energy services while reducing the environmental impact of California's energy consumption to avoid the worst impacts of the climate crisis.

I. Introduction

California has set ambitious goals to reduce greenhouse gas emissions across all economic sectors and achieve carbon neutrality by 2045. Load management is a critical tool to achieve this goal by helping integrate both existing electric loads such as air conditioning, refrigeration, and pumping, as well as new electric loads from transportation and building electrification.

By increasing the efficient use of the grid, load management can put downward pressure on electric rates, helping make clean energy more affordable and accessible for everyone, as well as directly reduce electric bills by enabling customer access to lower-cost electricity at times when grid marginal costs are low.

NRDC therefore fully supports the goal of the 2020 Load Management Rulemaking proceeding to "form the foundation for a statewide system that automates the creation of hourly and sub-hourly costs or signals that can be used by end-use automation to provide

real-time demand flexibility on the grid."

II. Rates

NRDC supports CEC's proposed foundation for the design of load management tariffs including rate design standards, machine-readable format standards, communication standards, and labels.

In addition, NRDC recommends CEC considers the following:

a. Utilities should be required to offer optional time-varying rates that create a robust value proposition for load management, while ensuring that most customers have lower bills on such rates vs. default rates, and offering bill protection to low-income customers

Load management rate design principles should create an economic incentive sufficient to foster innovation and market development for price-response automation technologies, while nudging customers to adopt these technologies. This implies a high differentiation between peak and off-peak prices, such as a 3:1 ratio. Off-peak prices need to be substantially lower than the lowest prices on non-load management rates, so that automation technologies that shift load from peak to off-peak prices can deliver bill reductions compared to default rates. The possibility of such bill savings is the very incentive that will facilitate rapid market development of load-management technologies.

Another load management rate design principle should be to more closely align retail electricity rates with the hourly marginal costs of providing the electricity. Aligning with marginal costs helps decarbonization for two reasons: 1) Renewable energy has no fuel costs and therefore has typically the lowest marginal cost. Aligning rates with hourly marginal costs would incentivize load shifting to the times when energy is the cleanest; 2) S. Borenstein and J. Bushnell argue that California electricity prices are higher than the societal marginal cost of providing that electricity, resulting in discouraging the use of electricity vs.

fossil fuels even when electricity has lower societal marginal costs.[1] Aligning the retail pricing of electricity with marginal cost would provide a greater incentive for customers to switch to cleaner electric appliances.

Load management rate design principles must also consider the needs of low-income customers. Even with load management rates designed to reduce customer bills for the vast majority of customers, there could be cases where bills could increase. For example, customers whose homes are not efficient enough to benefit from pre-cooling, customers who may not be able to afford or have the ability to adopt price-responsive appliances such as renters, or customers for whom peak-coincident appliances such as air conditioning and cooking may offset the bill reduction benefits of load management. Given that low-income customers are particularly vulnerable to bill increases, it will be critical to ensure that rate design protects low-income customers from bill increases.

b. Load management appliances standards should be designed for implementation by default (i.e. "opt-out") to enable rapid mass adoption, rather than "opt-in" that typically sees much slower adoption

Pr. Borenstein mentioned at the workshop that studies show that opt-out load management can achieve upward of 90 percent participation whereas opt-in only achieves around 20 percent. This makes it clear that in order to realize the benefits of load management, standards must aim to make load management the default, and not rely on opt-in strategies that have high customer acquisition costs, low participation rates and do not appear to be scalable in the residential and small-commercial sectors with current technology.

It is therefore important to design load management appliance standards so that they can be implemented by default, i.e. configured at the factory and shipped with load management settings enabled, so that they are in effect without requiring customer action, while allowing

[1] S. Borenstein, J. Bushnell, "Do Two Electricity Pricing Wrongs Make a Right? Cost Recovery, Externalities, and Efficiency", September 2018. https://ei.haas.berkeley.edu/research/papers/WP294.pdf

customer opt-out. For example, load-management enabled water heaters could ship preset to operate in load management mode with default time-of-use rates, so that customers can benefit from lower bills with no compromise in service quality and without any action at installation. The installer or the customer could further refine settings, update the pre-loaded time-of-use rates, or opt-out, but do not need to do so.

Time-of-use load control is an important step and may be sufficient for small loads that do not justify the added complexity of direct load control, until technology is available to support mass direct load control to residential devices. Direct load control can provide further circuit-level and system-level benefits, particularly for large loads such as large commercial buildings and process loads, or for customers who want to opt-in to increased load management benefits, but those benefits should not come at the expense of enabling rapid mass adoption of simple time-of-use load management on smaller residential and small-commercial loads such as HVAC, water heating, refrigerators, and pool pumps. Time-of-use load control can provide important system-level grid benefits if adopted at scale, and load management standards should make it a priority to realize this potential.

III. Automation: NRDC recommends CEC adopts a standard for a universal port at the device such as CTA-2045

The adoption of load management by home and small-commercial devices has been hampered by the lack of the standard physical connection or port at the device. Instead, there has been a patchwork of proprietary connectivity solutions, many of them not designed to ensure the persistence of load management over the life of the appliance.

For example, Wi-Fi connectivity is likely to be lost when the router box is replaced, the Wi-Fi password changed, tenants or owner turn over, and at least one of these events is very likely to happen over the life of the appliance, leading to a loss of connectivity unless the customer reconnects the appliance, which many won't. Proprietary interfaces in the cloud may work for short-lived internet-of-things devices but are subject to corporate strategy changes as illustrated with Google's discontinuation of "Works with Nest". These examples

illustrate the need for a connectivity standard at the device, designed to last, such as USB for computers, OBDII for cars, etc.

A universal port would provide the certainty that manufacturers and utilities need to invest in large-scale integration of load management capabilities and programs. Changes in remote connectivity, such as moving from Wi-Fi to cellular, AMI, LoRa, or other future remote communications protocols, can be managed by replacing a low-cost module or dongle that plugs into the universal port with no impact to the longer-life device. This does not preclude manufacturers from providing a connected experience through their own cloud services, it just ensures flexibility in the communication method, essentially future proofing the appliance through its 10- to 20-year life, and lowering the cost and risks associated with future, yet-to be-defined grid initiatives using these assets.

CTA-2045 is an example of such a standard that is gaining traction and was recently mandated by Washington State (HB 1444) for all electric water heaters starting Jan. 1, 2021. It is complementary with OpenADR for many applications.

We encourage the Commission to include universal port requirements in its load management standards.

NRDC appreciates the opportunity to provide comments on the scope of the load management rulemaking.

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