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Renew Home Comments on Request for Information

Additional submitted attachment is included below.

Renew Home

July 2, 2024

California Energy Commission
Docket No. 24-FDAS-02

Submitted Electronically

RE: Comments Responding to the California Energy Commission's Request for Information

Renew Home values the opportunity to provide comments on the California Energy Commission's (CEC) Request for Information (RFI) and Feedback Expanding Flexible Demand in California through Statewide MIDAS Data Delivery: A Comparison of Signaling Options docketed on May 29, 2024.

Our comments focus primarily on the customer experience of the broadcast-based signaling solution. Renew Home is an integrated technology provider for utility demand response programs and also provides third-party demand response through OhmConnect, Inc. OhmConnect provides Demand Response (DR) services to residential retail electric customers in California pursuant to Electric Rules 24 (Pacific Gas and Electric Company (PG&E) and Southern California Edison Company (SCE) and 32 (San Diego Gas & Electric Company (SDG&E)). OhmConnect's cost-free software service notifies households of impending DR events and rewards customers for their automated energy reductions using in-home smart devices. OhmConnect is registered to participate as a DRP in the wholesale electricity market operated by the California Independent System Operator Corporation (CAISO).

Our comments are organized in response to the questions listed in the RFI. Renew Home looks forward to helping the CEC develop thoughtful solutions to implement flexible demand appliance standards.

Respectfully submitted,

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Introduction

In 2019, Senate Bill 49 (SB 49, Skinner, Chapter 697, Statutes of 2019) was enacted, granting the California Energy Commission ("CEC") the power to establish flexible demand appliance standards that equip electric appliances with the capabilities to schedule, shift, or curtail operation with customer authorization. The CEC's Market Informed Demand Automation Server ("MIDAS") will host the time-varying rates of large utilities and Community Choice Aggregators and serve as the hub for the information necessary to notify consumers and devices of high cost hours or GHG signals. The goal is to use MIDAS time-dependent rate data and other signals to lower greenhouse gas emissions and utility bills for all California customers and communities, while supporting electricity grid reliability. The CEC is evaluating communications options for cost-effectively delivering information from MIDAS to appliances to facilitate load shifting. The results of this evaluation are contained within the consultant report titled "Expanding Flexible Demand through Public Broadcast of Greenhouse Gas Emissions and Electricity Prices" (the "Report").

The Report noted that the CEC is exploring alternative methods to Wi-Fi for sending MIDAS signals, because not all residents and businesses have internet access and the range of local Wi-Fi networks may not reach all appliances.[1] Broadcast radio was identified as the most cost effective solution compared to WiFi and cellular.[2] The Report was primarily tasked with assessing the feasibility of other technologies, but was not scoped with detailing or assessing the customer experience. Given the Report's focus on feasibility of the technologies, our comments focus primarily on the customer experience of the broadcast-based signaling solution. As outlined below, our overarching concern is that the use of broadcast radio signals may lead to a poor user experience, with the unintended result that many customers may opt-out of events or disable the feature altogether.

Responses to the RFI questions are provided on the following pages.

[1] Report p. 7.
[2] Report p. 2.

Responses to Framing Questions

Renew Home provides answers to the CEC's questions as posed in the request for information below:

1. In regard to communication standards, what reliable alternative communication technologies exist to communicate directly to or with appliances?

No comment.

2. Do you see any opportunities for CEC to mitigate the challenges associated with a 24/7/365 signal that have historically limited broadband/Wi-Fi as a preferred communication pathway?

No comment.

3. Given the report's conclusion that broadcast delivery of MIDAS data is more cost- effective than point-to-point delivery for the volume of appliances envisioned under FDAS, what are the main concerns with a statewide FDAS signaling system that relies on a broadcast, and what cost-effective solutions might mitigate these concerns?

The primary concerns with a statewide FDAS signaling system that relies on broadcast, such as FM radio, include the need to build FM radios into all appliances and the slow turnover of appliance stock. An assumed ten year lifespan for domestic appliances will result in a very slow rollout. On the other hand, the internet and Wi-Fi are becoming more ubiquitous and many appliances are already Wi-Fi enabled. While broadcast radio has some advantages, such as broad reach, it is unclear if the pros can overcome the cons, especially given the need to customize, adjust, and personalize the user experience (UX). Security is also a significant concern; broadcast radio solutions lack the ability to guarantee security without significant effort to make the signal not spoofable. This issue does not affect the Wi-Fi option, as it is harder to conduct a broad regional attack through Wi-Fi.

Additionally, a broadcast-only approach may not be optimal for households with solar or storage systems, as it does not provide personalized incentives to maximize their benefits. A hybrid approach, combining broadcast for basic signals, and Wi-Fi for a more detailed, personalized, and secure experience, could be more effective in keeping consumers engaged with MIDAS for the long-term.

4. How should the CEC prioritize broadcast options presented in Chapter 3 (FM, AM, Cellular) and why? Are there more appropriate and cost-effective broadcast options not listed here?

No comment.

5. What message content options (e.g. GHG, price, or some combination)

do you suggest being sent using the default FDAS Rate Identification Numbers (RIN) discussed in Chapter 2, and why?

Default FDAS RINs should consider the extent to which GHG or price signals align with local time-of-use or real time pricing high cost hours so as not to inadvertently cause increases in customer bills.

6. Voluntary utility and third-party programs for load flexibility (shifting) have typically had very low participation from end users. What alternate Load Flexibility program(s) would you recommend that maximize participation while being ubiquitous, cost-effective, equitable, and technically feasible without requiring or precluding participation from third parties?

Low participation in third-party load flexibility programs can be attributed to the difficulties consumers face during enrollment. Consumers that want to participate in an opt-in program are challenged by a multi-step process with daunting privacy language that deters them from completing enrollment. This is the well documented experience of third-party demand response providers in California with the click-through data authorization process. These challenges can be overcome through a simpler consent and sign-up flow for third-parties, in which participation in a program occurs during the set-up process of an FDAS enabled device.

7. Assuming a statewide broadcast signal were to be deployed, would a default appliance setting that automatically initiates response to MIDAS signals at installation allow for ease in initiating flexibility of the appliance? What issues or concerns would you anticipate with such plug-and-play functionality?

A default appliance setting that automatically initiates response to MIDAS signals at installation could simplify the initial setup and encourage participation. However, several concerns need to be addressed:

Default schedules for appliances: The appliance owner must be informed of the default schedule for their appliance. Additionally, the default schedule will likely require adjustment over time to accommodate changing grid needs. The ability to opt-out of a default schedule on a one time or on-going basis must be easily accessible by the consumer.

Equity: A default schedule has further equity implications. Disadvantaged communities may face a different type of burden under default schedules. A household already experiencing challenges may be further inconvenienced by being relegated to a delayed start of a washing machine, electric dryer, or dishwasher. The opt-out process should be simple and easy to identify during typical appliance operation.

Location-Based Pricing: While the Report suggested that location can be inferred from the triangulation of radio signals, it was not clear the level of accuracy for consumers that may be located near the borders of utility or CCA service territories.

User Experience: Default settings for appliances that affect comfort or convenience can lead to poor user experiences, causing many customers to disable the feature or opt-out of an event. It is unclear whether a customer would be able to opt-out without a Wi-Fi or bluetooth connection. Customization and personalization are essential to balance responsiveness and user satisfaction to maximize the benefits to both the customer and the grid.

Non-Compliant Appliance Demand: Customers may not want to cede control of their appliance to a MIDAS signal or FDAS-specified default schedule. If there's a simple way to turn off this functionality, households should be indifferent to an appliance with responsive capability. If customers cannot easily opt out or are wary of an appliance with FDAS functionality, there is likely to be significant demand for non-compliant appliances that don't allow a radio signal or default schedule to control them.

Lost opportunity: If the default setting for a price responsive appliance is not very ambitious, then customers and the grid may not benefit from the embedded functionality. Alternatively, the report does not detail the alignment of a default schedule responding to GHG signals compared to the TOU rate of a customer.

Synchronization: The report discussed the potential challenge of "Synchronized demand shifts" which would be caused by all appliances responding to the same signal at the same time.[3] The potential solution is vague: "Diversify the algorithms and signal criteria across different appliances and manufacturers to help prevent simultaneous mass responses and smooth out demand spikes." The synchronization issue would likely be resolved by sending the signal before and after high priced periods to prevent inadvertent bill increases.

8. The report proposes a hybrid communication architecture that incorporates both plug-and-play MIDAS response and third-party program enabling technology, represented by the Plug-and-Play Port scenario, as the most cost-effective solution to enable demand flexibility for an appliance. What do you think are some pros/cons of this approach?

A hybrid communication architecture that incorporates both a plug-and-play MIDAS response and third-party program enabling technology via the Plug-and-Play Port scenario is not a realistic solution to

[3] p. 42

enabling third-party services because it requires the consumer or an appliance repair person to install a separate communication module obtained from the chosen automation service provider. With appliance manufacturers already including Wi-Fi capabilities in their products to connect to smartphone apps, it is more realistic to envision a hybrid communication architecture featuring plug-and-play MIDAS response and third-party Wi-Fi.

9. The consultant report suggests that a gateway architecture cannot support plug- and-play flexibility. Is this accurate from your perspective? If not, describe how a gateway solution could enable both intrabuilding load optimization and plug-and- play flexibility for appliances without sacrificing cybersecurity.

No comment.

10. Are there equity issues related to a MIDAS plug-and-play architecture that remain unaddressed by the report?

Please see the equity related answer to question seven above.

11. Provide a summary of your support for and/or rejection of any of the recommendations and conclusions offered in the report, along with a brief description of why for each.

A hybrid communication architecture that combines a plug-and-play MIDAS response with third-party program enabling technology via the Plug-and-Play Port scenario is impractical for third-party services. This approach necessitates that consumers or appliance repair technicians install a separate communication module from a chosen automation service provider. Given that appliance manufacturers are already integrating Wi-Fi capabilities into their products, it is more feasible to envision a hybrid communication architecture that includes both plug-and-play MIDAS response and third-party Wi-Fi functionality.

Wi-Fi enabled appliances will become more ubiquitous as time goes on. Nearly all consumers will be able to make use of these internet connected appliances. In 2023, 91% of households in California have broadband, and only 3% of those are through a smartphone only.[4] Signals dispatched via Wi-Fi enable a better user experience for the vast majority of consumers that won't need to rely on the radio signal.

The proposed broadcast option described in the Report does not detail a quality user experience that allows for personalization or customization to fit different consumer needs. The user experience

[4] 2023 Statewide Digital Equity Survey at https://arnicusc.org/2023-statewide-digital-equity-survey/

offered through Wi-Fi capability is superior to a broadcast only solution. It enables appliance manufacturers and other third-parties to design applications that provide value-added experiences for consumers. Smart home management systems are already incorporating household Wi-Fi connected appliances, and voice assistants could further enhance user engagement and convenience. Third-parties and appliance manufacturers could provide real-time feedback on energy savings and environmental impact to maximize responsive appliance usage. Appliances receiving MIDAS over Wi-Fi and integrating with smart home applications are the best chance for long-term success of consumer response to MIDAS signals.

12. *How do you foresee electricity price, GHG, and grid signals being used in an appliance, e.g., an electric storage water heater's logic command and controls, whether through broadcast or internet connections?*

No comment.