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**Joint Comments on Flexible Demand Appliance Standards**

*Additional submitted attachment is included below.*



Pacific Gas and  
Electric Company®



February 3, 2021

Mr. Nicolaus Struven  
Flexible Demand Standards Unit, Appliances Office  
California Energy Commission  
1516 Ninth Street, MS-25 Sacramento, CA 95814

Docket Number: 20-FDAS-01

**Topic: California Investor-Owned Utility Codes and Standards Enhancement Team Joint  
Comments on Flexible Demand Appliance Standards**

Dear Mr. Struven,

This letter comprises comments from Pacific Gas and Electric Company (PG&E), San Diego Gas and Electric (SDG&E), and Southern California Edison (SCE) in response to the California Energy Commission's (Energy Commission) request for information regarding flexible demand appliance standards.

The signatories of this letter, collectively referred to herein as the California Investor-Owned Utilities (California IOUs), represent some of the largest utility companies in the Western U.S., serving over 32 million customers. We recognize that flexible demand appliance standards could help support California's renewable energy goals, reduce greenhouse gas (GHG) emissions, and improve grid reliability, and we have a responsibility to our customers to advocate for standards that accurately reflect the climate and conditions of our respective service areas, so as to maximize these positive effects.

**Flexible demand appliance standards are a complex topic that will affect many stakeholders. The California IOUs support the efforts of the Energy Commission to develop flexible demand appliance standards, but we recommended a measured approach coupled with robust outreach to ensure the best path forward for California.**

Although load management standards, customer programs, and other initiatives will also be needed, the California IOUs believe that flexible demand appliance standards will play an important role to help achieve California's goal of a fully renewable electricity supply. We commend the Energy Commission for tackling this important topic and recommend a measured approach that allows enough time for standards options to be fully vetted. These proposed standards could have a significant impact on manufacturers, utility programs, and utility transmission and distribution planning teams. Standards should consider the impacts on these and other stakeholders. The standard development timeline should allow adequate time to develop the technical capabilities in products and to account for impacts to stakeholders across the California grid. To avoid creating stranded assets, flexible demand appliance standards should be compatible with past efforts across the state, such as demand management building codes.

## Flexible Demand Appliance Standards Evaluation Framework

### **1. The California IOU's recommend additional detail to the prioritization criteria by which to evaluate potential flexible demand appliance standards.**

As noted in the Energy Commission staff report, the Energy Commission plans to consider criteria such as technical feasibility, cost effectiveness, cybersecurity, reliability, consumer consent, and ease of use to evaluate flexible demand appliance standard proposals.

Adding detail to these evaluation criteria for any proposed standard, the California IOUs recommend a high-level prioritization framework that examines:

1. Overall impact (grid benefits)
2. Feasibility factors, including technical feasibility and product readiness, cost to consumers and the utility, and equity and access considerations.

To evaluate the overall impact, the California IOUs recommend prioritizing load shift potential and considering load shed potential as an important secondary criterion. Daily load shifting will help maximize the benefits of demand flexible technologies to consumers and the grid compared to just using the technology for reliability demand response (DR) events that happen a few times a year. Therefore, the IOUs recommend prioritizing the load shifting potential and functionality when evaluating these standards. Increased penetration of appliances with high load shift potential will support the integration of low-carbon electricity resources into the California grid by helping balance supply with demand on a day-to-day basis. After the load shifting potential, appliance load shed potential is an important secondary criterion to consider. Appliances with high load shed potential can increase grid reliability via their responsiveness during peak usage days and emergency events. Both types of flexible load potential provide grid benefits that the Energy Commission should aim to maximize.

Regarding feasibility factors, the California IOUs recommend prioritizing products with high technical feasibility. Additionally, the Energy Commission should consider the cost impacts of a product standard to consumers and utility operations and should also consider whether the potential standards may have negative equity impacts. In terms of technical feasibility, we recommend prioritizing products that are already sold with integrated, grid-responsive, demand management controls, OpenADR-certified products, products that can connect via one or more connection protocols (e.g., internet, radio, cellular, etc.), and products that have existing standards for flexible load such as industry standards or ENERGY STAR specifications. For cost impacts, we recommend considering the levelized cost of the flexible demand resource and the cost impact to utility operations. Equity impacts should include considerations of “net benefits” to customers. In other words, the costs incurred by the consumer due to the standard should be compared to the benefits they receive. For example, standards that increase the costs of common household appliances (such as white goods) could negatively impact lower-income consumers if there is no pathway for those consumers to adequately benefit from the standards. Some standards options may have higher costs, so it is important to ensure that those costs don't disproportionately impact lower-income consumers.

### **2. The California IOUs recommend that the Energy Commission consider the following when evaluating flexible appliance demand standard options.**

The California IOUs recommend additional considerations for flexible demand appliance standards. Due to the new nature of these standards and the low market availability of some products with integrated demand flexibility features, we recommend considering options to first set voluntary standards to meet the goals of Senate Bill 49. Standards could be phased with initial voluntary standards laying the groundwork for mandatory standards in the future. The Energy Commission could also establish product performance requirements to guide industry innovation to develop products that will meet California's long-term flexible demand goals. This could include requirements that define flexible demand features

and communication protocols, but that apply to just a subset of appliances in a category (e.g., “connected products”) rather than all products. Additionally, as noted above, these standards will affect many stakeholders and will overlap with many other efforts statewide. Therefore, we recommend that in addition to consumer costs and benefits, the Energy Commission consider the utility costs and impacts of any proposal, such as the effect on transmission and distribution when product stock turns over and products are fully integrated into the grid. Finally, we recommend close coordination with other ongoing rulemakings at CPUC and other California agencies regarding technologies considered in this rulemaking.

## Flexible Demand Appliance Demand Response Modes and Communications Considerations

- 3. The California IOUs recommend the use of existing open communication standards such as OpenADR 2.0 for flexible demand appliance standards. The IOUs also recommend protocols that allow for two-way communication between customers and utilities.**

The California IOUs support a technology-neutral approach to communications protocols to allow for the maximum amount of vendor participation. The use of open standards such as OpenADR 2.0 supports customer choice and the interoperability of flexible load controls. Current utility automated DR programs in California use OpenADR 2.0a and b and rely on “simple” signals that denote the existence, start and end time, and level (e.g., moderate or high) of a demand response event. OpenADR 2.0b compliance requires end nodes to be capable of receiving electricity price signals and incorporating this functionality would allow appliances to react to near real-time price signals.

While one-way communication is generally used by DR programs today (i.e., the utility sends the signal to the customer, aggregator, or vendor cloud), the grid of the future will require two-way communication between the utility or grid operator and the end node receiving the signal. Given that many appliances under consideration for flexible demand appliance standards have typical lifetimes of a decade or more, we recommend support for open standards, including OpenADR 2.0b, that cost-effectively deliver two-way communication capability. For connected devices specifically, ENERGY STAR Connected Criteria specifications are available for a growing list of devices with improvements underway. The Energy Commission’s support of this initiative would send a clear market signal to suppliers and service providers to incorporate this functionality into their products.

The OpenADR 2.0a and b specifications<sup>1</sup> detail communication requirements that enable demand flexibility in end nodes. For OpenADR specifically, communications features can be integrated directly into a product via a software or controls module, but manufacturers can also bundle products with external communications or control modules to provide connectivity. The latter option provides more flexibility and could reduce costs for manufacturers compared to developing their own solution, but integrated communications capability is preferable for consumer ease of use and to facilitate compliance enforcement. A list of OpenADR-certified products can be found on the OpenADR products database webpage.<sup>2</sup>

- 4. The California IOUs recommend against adopting standards that would prevent one-to-many central controllers (such as a building energy management system) or do-it-yourself scheduling from providing demand flexibility control in a building system where appropriate.**

Proposed flexible demand appliance standards should ensure that when appliances are installed in buildings with central control systems, demand flexible control could be provided by the central system or

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<sup>1</sup> <https://www.openadr.org/specification>

<sup>2</sup> <https://products.openadr.org>

could be integrated within the appliance if appropriate. Standards should maintain the customer's ability to schedule appliance operation to take advantage of off-peak power pricing for demand flexibility.

## Consumer Benefits

### **5. The California IOUs recommend including the following components in the analytical framework for evaluating the cost effectiveness of flexible demand appliance standards.**

When determining the cost effectiveness of flexible demand appliance standards, the Energy Commission should consider both costs and benefits. Costs considerations should include the incremental cost of transitioning to flexible demand appliances from non-flexible demand appliances. On the benefit side, components to include are contingent upon the scope of analysis and a consideration of which stakeholders will realize the benefits of the standard. We recommend that the Energy Commission analyze benefits to consumers and ratepayers, utilities, and the State of California at large (i.e., societal benefits).

Energy benefits from a flexible demand system can be converted to monetary benefits using existing tools, such as the CPUC's Avoided Cost Calculator (ACC),<sup>3</sup> and time-of-use rates can be used as well, depending on scope. The ACC includes annual hourly leveled value of electricity calculations and components such as cap and trade, GHG emissions, energy, generation, transmission and distribution capacity, and ancillary services. Economic metrics such as benefit cost ratio (BCR) and life cycle savings (to IOU's, society, or consumers) can be used to characterize the cost effectiveness of the standard. It is important to note that the incremental cost of transitioning to flexible demand appliances is not static and is expected to decrease with increased flexible demand appliance deployment – this has the potential to increase the cost effectiveness of the standard moving forward. We believe that it is necessary to consider these various components when developing the initial analytical framework to assess the cost effectiveness of these standards.

### **6. The California IOUs recommend that the Energy Commission consider how time-of-use rates and/or program incentive payments will affect consumer benefits when evaluating the flexible demand standard.**

Time-of-use (TOU) rates are a primary mechanism to translate energy benefits (represented by customer load profiles before and after flexible demand appliance deployment) into actual monetary benefits for consumers. The TOU rates used to estimate monetary benefits may be independent of the type of appliance providing flexible demand services, and in large part, TOU rates can drive the economic performance of flexible demand appliances.

Consumers also benefit via traditional incentive payments. This approach applies to emergency or “shed” demand response events where payments are made based on participation in discrete grid reliability events or based on providing capacity in case such events are needed. One drawback of incentives is the need to calculate a counterfactual baseline. TOU rates avoid the need for baselining and allow for capture of daily and hourly variations in grid operating conditions. The Energy Commission should consider how both of these payment mechanisms might be used to result in consumer benefits for flexible demand appliance use.

### **7. The California IOUs offer information about utility flexible demand technology programs in California.**

California consumers are currently participating in demand response technology incentive programs that allow them to reap the benefits of flexible demand technologies in their homes or businesses. The statewide IOUs recently commissioned a study that reviewed historical costs, incentives, and technologies

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<sup>3</sup> <https://www.cpuc.ca.gov/general.aspx?id=5267>

within the commercial IOU automated DR programs with an eye towards changes for the future.<sup>4</sup> Flexible demand appliance standards could affect the customer technology options for participation in these programs, however the future lies with open automated demand response (ADR) technologies.

In conclusion, the California IOUs commend the Energy Commission's effort to adopt flexible demand appliance standards in California. We are examining various product options that may be able to provide flexible demand services, and we intend to provide more information on this topic in the future. We thank the Energy Commission for the opportunity to respond to this request, and we look forward to future opportunities for engagement.

Sincerely,



Patrick Eilert  
Manager, Codes & Standards  
Pacific Gas and Electric Company



Karen Klepack  
Senior Manager, Building  
Electrification and Codes &  
Standards  
Southern California Edison



Kate Zeng  
ETP/C&S/ZNE Manager  
Customer Programs  
San Diego Gas & Electric  
Company

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<sup>4</sup> [http://www.calmac.org/publications/Automated Demand Response Non-Residential Incentive Structure Research Project Report.pdf](http://www.calmac.org/publications/Automated_Demand_Response_Non-Residential_Incentive_Structure_Research_Project_Report.pdf)