

DOCKETED

Docket Number:	21-ESR-01
Project Title:	Energy System Reliability
TN #:	247866
Document Title:	OhmConnect Energy System Reliability RFI Response
Description:	N/A
Filer:	Cliff Staton
Organization:	OhmConnect
Submitter Role:	Applicant
Submission Date:	12/1/2022 2:51:04 PM
Docketed Date:	12/1/2022



November 30, 2022

California Energy Commission
Docket Unit, MS-4
715 P St.
Sacramento, CA 95814

Re: Docket number 21-ESR-01 – Responses to Request for Information on Clean Energy Resources for Reliability

Dear California Energy Commissioners and Staff:

OhmConnect, Inc. (OhmConnect) appreciates the opportunity to respond to the above-referenced RFI posted by the California Energy Commission (CEC) on November 7, 2022.

OhmConnect is the leading provider of residential energy flexibility in the United States. Headquartered in Oakland, we help hundreds of thousands of customers in California and other states manage their at-home electricity usage and reward them for smarter energy use when the grid is stressed.

The RFI states that the CEC is accepting public comments to “inform staff on the resources and attributes that should be considered in the analysis required by the multiple legislative requirements of SB 846 and AB 205.” These comments address aspects of AB 205, which among other things requires the CEC to administer and implement the new Demand Side Grid Support (DSGS) program to incentivize dispatchable load reduction for the state’s electrical grid during extreme events.

Background

California has an immediate and long-term interest in scaling up the demand response (DR) resource. Currently, the supply of clean renewable energy is not well-matched with customer demand. As a result, when the sun sets there is a massive ramp of largely fossil-fuel resources to meet demand, which is increasing as the State makes progress toward its electrification goals, including home electrification.

In the immediate future, DR is the most cost-effective method of reducing demand at peak times in order to both help avoid power outages during periods of extreme grid stress, such as during an extended heat wave, by providing emergency load reduction, and reduce the incidence of grid stress events. The DR resource possesses a number of positive qualitative attributes identified in the RFI that are especially pronounced during grid stress events, including readiness, customer acceptance, cleanliness / zero GHG emissions, dispatchability, and equity considerations. These benefits are reflected in provisions of SB 846 that now identify DR and energy efficiency as “preferred resources” in the State’s energy loading order.

Over the next 3-7 years, it is critical that retail electric customers across the state, especially residential and small to medium business customers, learn to engage with market signals that are stronger than those reflected in current residential time-of-use tariffs so that they will be prepared as the State transitions towards dynamic pricing, as envisioned by the CPUC’s CalFUSE framework, and increases the capability of flexible demand to maintain grid reliability. Due to differences in rate design structure, commercial and industrial customers already have experience with stronger pricing-related signals, such as from demand charges, and likely will adapt more readily to dynamic pricing.

The current market rules governing market-integrated DR, however, neither reflect the unique nature of the resource, nor are designed to support its rapid growth in order to meet California’s climate and clean energy goals.

The market rules governing DR under the current resource adequacy model are based on the performance of a traditional fossil-fuel peaker power plant. The methodologies for assessment of the resource require, for example, that DR resources be available for a four to five hour window, which is an appropriate period for a peaker plant. But residential customers who power down for 1-2 hours at a time are able to provide enormous value to the grid during times of extreme grid stress, both with respect to the sheer number of customers who are able to participate without having made a significant capital investment in a customer-sited clean energy resource and with respect to the average potential reduction per customer, and provide aggregate reduction during emergency events that is far greater than in typical conditions. The capability to deliver these reductions when the grid needs them most is not appropriately valued today in either the energy market or the resource adequacy market.

Whereas a peaker plant can be expected to perform consistently regardless of whether it is dispatched during a mild day in April or a 110 degree day in August (although

heat-related derates can and do happen), weather-sensitive DR customers can reduce much more energy consumption and provide much greater value to the grid by powering down their air conditioning during the hottest days of the year – when the grid is most stressed. In other words, this type of a DR resource can perform best precisely when it is needed most. But in order to perform when the grid is most stressed, it is critical that customers participating in the DR resource be educated and engaged on an ongoing basis, during non-emergency events.

While current market rules *allow* demand response providers to operate, they haven't *encouraged* them to operate. As a consequence, the number and size of third-party demand response providers in California—especially those that engage residential and small- to medium-size business customers—is shrinking rather than growing. As such, the DR resource is unlikely to see sufficient growth to help the State manage the immediate grid stress challenges of summer 2023 and summer 2024, let alone help achieve the state load shift goal that is to be established by the CEC next year.

The DSGS program established by AB 205 can provide an important pathway to develop a more robust demand response resource during the upcoming transition period, during which other state policies are expected to evolve to better support flexible demand, and to help the State transition to a clean energy future as homes and businesses increasingly electrify. OhmConnect offers three proposals through which the DSGS program can support the continued growth and development of the demand response resource.

Proposal 1: Supplement Energy Value During All Dispatch Events

CAISO wholesale energy market prices, which generally are relatively low, currently provide little incentive for demand response providers (DRPs) to dispatch their customers outside of emergency conditions. Therefore, most revenue for DRPs (and even for fossil fuel based power plants) comes from resource adequacy payments, creating a perverse incentive for DRPs to not dispatch frequently due to the limited upside of energy market revenues. As a consequence, DRPs have been criticized for not being “used and useful”. This proposal is intended to incentivize DRPs for becoming “used and useful” and reflect the higher value of dispatchability, relative to capacity payments. This is important to build the robustness of the DR resource to maximize its capability during periods of extreme grid stress.

DR providers participating in the Resource Adequacy (RA) program face multiple dispatch requirements that are tethered neither to market prices nor grid need. This reality pushes DR providers into uneconomic dispatch while limiting the resource's

potential to help prevent grid emergencies in the first instance. The DSGS program can help correct the misaligned incentives that exist today. Specifically, a pathway within DSGS can be established to supplement market-integrated DR resources' CAISO energy settlements.

A DSGS incentive could be calculated for each CAISO dispatch event by multiplying a DR resource's CAISO energy settlement (provided it is non-negative) by a factor of X (e.g. 100%, 200%, 300%, etc.). The incentive factor could be constant year round or it could vary seasonally; moreover, the incentive factor could differ between emergency and non-emergency grid conditions. The incentive amount could be adjusted to ensure a minimum effective payment rate (e.g. \$250/MWh) for each energy market dispatch event. Table 1 shows how the DSGS incentive could be calculated in four hypothetical scenarios.

Table 1: Example DSGS Energy Incentive Calculations

Example No.	CAISO Settlement (\$)	Delivered Energy (MWh)	Implicit Price (\$/MWh)	Exceeds Minimum?	Grid Emergency?	DSGS Incentive (\$)
1	\$15,000	50	\$300	Yes	No	\$15,000
2	\$15,000	50	\$300	Yes	Yes	\$45,000
3	\$5,000	50	\$100	No	No	\$12,500
4	\$5,000	50	\$100	No	Yes	\$37,500

Assumptions:

- (1) DSGS incentive factor = 100% if non-emergency conditions, = 300% if emergency conditions
- (2) Minimum DSGS incentive rate is \$250/MWh

There are several advantages to this approach:

- Encourages DR resources to be “used and useful”
 - All CAISO dispatch events are eligible for DSGS payments (“used”)
 - DSGS payments are greatest when CAISO grid need is greatest (“useful”)
 - Payments only made for actual energy deliveries
- Straightforward to administer
 - Leverages existing CAISO infrastructure for DR resource performance and settlement calculations
 - CEC calculates and disburses DSGS payments using data available from CAISO
- Builds a bridge to the future when dynamic retail rates are implemented
 - DR providers and customers are conditioned to respond to price signals year-round, not just during infrequent summer emergencies
- Supports the state’s greenhouse gas emissions goals

Proposal 2: Supplement Capacity Value with Performance Adder

DR capacity has remained relatively flat since 2020; in 2023, it is set to explicitly decline. This lackluster growth is the result of a number of issues, including the contraction of the Demand Response Auction Mechanism (DRAM) budget since 2019, the high cost and complexity of market entry outside of the DRAM, and a general lack of incentives to invest in the growth of the resource in an uncertain regulatory climate.

The DSGS program could incentivize DR providers to enter the California market in spite of the persistent difficulties and, importantly, grow beyond the existing capacity commitments. In particular, DSGS could supplement third-party DR providers' RA contract revenues during summer months in which DR resource performance exceeds RA contract quantity.

DR is not particularly well suited for the Resource Adequacy market, which credits resources for the amount of capacity they can be expected to deliver under weather conditions that occur with 50% likelihood (so-called "1-in-2" weather conditions). During times of extreme weather – e.g. "1-in-10" weather conditions – weather-sensitive DR is often significantly more effective and impactful, sometimes on the order of 200%.

A simple example is instructive: many of OhmConnect's residential DR customers typically use ~1.5 kW per hour from 4:00-9:00 PM. During the September 2022 heat wave, these customers' usage doubled to ~3 kW per hour, which both 1) created stress on the grid, and 2) enabled each customer to have more savings potential, in kW, than would otherwise be the case. Resource Adequacy does not properly account for this benefit: while RA provides a revenue stream that reflects 1-in-2 weather conditions, the DSGS can provide additional incentives for resources that can double their performance during times of extreme weather (say 1-in-10 weather conditions), which are often the biggest drivers of extreme grid stress.

Specifically, a "base" DSGS incentive rate (e.g. \$10/kW-month in August) could be established that is common to all DR providers, but can vary by month. A DR provider would be eligible for this incentive in each month for which its demonstrated capacity meets or exceeds its contracted capacity (thereby rewarding reliable resources only). A multiplier ranging from 1.0-2.0 could be applied to the base monthly incentive rate based on individual DR providers' performance. For simplicity, and in order to avoid disincentivizing frequent dispatch, the incentive could apply to the maximum demonstrated capacity value each month. Examples of the DSGS capacity payment calculations are provided in Table 2 below.

Table 2: Example DSGS Capacity Incentive Calculations

DR Resource Performance	Performance (as % of RA Contract MW)	DSGS Base Incentive Rate Multiplier	DSGS Adjusted Incentive Rate (\$/kW-month)	Total DSGS Incentive (\$)
9 MW	90%	0	\$0	\$0
10 MW	100%	1	\$10	\$100,000
11 MW	110%	1.5	\$15	\$165,000
12 MW	120%	2	\$20	\$240,000

Assumptions:

- (1) August RA contract MW = 10 MW
- (2) August DSGS base incentive rate = \$10/kW-month

There are several advantages to this approach:

- Rewards strong performance by weather-sensitive DR resources during periods of extreme weather and grid stress.
- Does not perversely incentivize DR providers to bid aggressively or withhold their resources from the California RA market.
- Incentive is paid only when the DR provider meets a performance goal of 100% or above, thereby incentivizing growth of the resource during the delivery year.
- Straightforward to administer: CEC calculates and distributes incentive payments.

Proposal 3: Allow customers who are not yet market-enrolled to participate in DSGS

The current “click-through” process by which consumers authorize their investor-owned utility to provide their smart meter data to a third-party DRP is unnecessarily cumbersome. This has had the effect of limiting the number of customers who have completed the process to be enrolled in the CAISO market – and thereby limiting the market-integrated residential demand response resource. The California Public Utilities Commission initiated Proceeding A. 18-11-015 in November 2018 to address the click-through challenges and streamline the process. Although the proceeding was fully briefed in June 2021, no decision has yet been issued.

OhmConnect respectfully proposes that customers who are not yet market enrolled be allowed to participate in DSGS and receive payments for reducing their energy use. For example, customers could receive a flat reward payment for connecting and using a smart energy device (smart communicating thermostat or smart plug) during a grid stress event.

This approach has several advantages:

- Allows significantly more consumers to engage in managing their home energy use.
- Provides third party DR providers with a large base of engaged customers – and could create an on-ramp to DRRS enrollment and greater engagement.
- Straightforward to administer.

We appreciate the CEC's attention to the further development of the DSGS program and the peak grid stress challenges it is intended to address. The first edition of the guidelines for the DSGS program were prepared rapidly following the creation of the program as part of the state budget approved in June 2022. We look forward to working with CEC staff on the revision of the DSGS program guidelines so that DR providers can confidently invest in the development and implementation of new programs in advance of summer 2023.

Sincerely,



Cliff Staton

Head of Government Affairs and Community Relations