

# **New DR Program/Rate designs for Agricultural customers**

## **1. Overview**

PG&E received direct feedback from major aggregators of agricultural customers whose customers have significant load to drop and are interested in an agricultural specific DR program. Existing demand response programs are not an optimal fit for some customers in the agricultural industry given their unique load patterns and energy usage. By creating an agricultural specific demand response program or rate that helps customers overcome these obstacles and optimize their unique resources, more customers will have the opportunity to participate in demand response and PG&E will be able to meet its goals of maintaining, growing, and optimizing DR megawatts (MWs).

The objective of this study was to collect data on new DR Program/Rate designs for agricultural customers during 2021 in order to create a draft DR program design for agricultural and irrigation customers to be filed by PG&E in its 2023-2027 DR funding application. Specifically, the study goal is to collect data that informs a new pilot program designed for agricultural customers to do the following (including but not limited to):

- Increase load reduction per agricultural participants in existing DR programs
- Increase number of agricultural participants
- Reliable load reduction: ability to deliver the amount of load reduction that is promised
- Higher customer and aggregator satisfaction than agricultural participants in existing DR programs
- Whether cost-effectiveness remains the same or better than other agricultural participants in existing DR programs

## **2. Collaboration**

The DRET team contracted with a 3<sup>rd</sup> party vendor who are familiar with the agricultural industries and market to implement this DRET study.

## **3. Results/Status**

The results of the conjoint choice experiment study are fundamentally a reflection of relative customer preferences for some program attributes over others: stronger preferences drive enrollment likelihood. The strongest respondent preferences included:

- Performance-only participation terms (relative to terms with penalties): 3 to 5 fold relative preference, depending on the penalty magnitude
- Earlier notification (24 hour v. 30 minute): 3 fold preference

Preferences within other attributes (incentive level, expected event frequency, or expected event duration) are documented below and more detailed in the final report

What is the tradeoff relationship between program incentives and program rules for agricultural customers?	<b>A performance-only design is preferred three to five fold over a design with penalties</b> , depending on the penalty magnitude. Given the expected boost to enrollments, a performance-only design is therefore expected to yield greater MW load reduction and greater net benefits than a design with a penalty, even after factoring in assumptions for lower performance with a performance-only design.
How much notice should customers receive before being dispatched?	<b>Event notification is a key driver of enrollment likelihood, with one day ahead (24 hour) notification strongly preferred to day of (30 min) notification.</b>
How does the duration and volume of event dispatch impact enrollment likelihood for agricultural customers?	<b>Event duration and event frequency are not the primary drivers of enrollment likelihood</b> , though respondents preferred fewer event hours in general. Given that longer and more frequent events also deliver more avoided capacity value, moderate event duration (4 hour) and frequency (12 events) balance net benefits with dispatch flexibility.
Would alternative incentive units (\$/hp) resonate better with Ag customers than usage based units (\$/kW, \$/kWh)?	<b>Horsepower (hp) is best understood by most agricultural customers.</b> When discussing peak load, water district customers were most familiar with kilowatts (kW), whereas all other agricultural customers were most familiar with horsepower (hp) as units.
How do preferences and load reduction potential differ by agricultural segment, e.g., small v. large firm?	<b>Smaller customers may be able to curtail a larger portion of their peak load. Program element preferences were directionally similar for small respondents (bottom 20% of peak load) compared to large respondents. The main difference is that small respondents were open to curtail a larger percentage of their peak load.</b> <b>Tree growers may be most able to curtail load. Barriers may exist for some water district customers. Nut and fruit tree growers were willing to shift a large portion of their peak load, significantly more than agricultural customers with other activities. In contrast, water/irrigation districts (often very large customers) were most likely to have peak loads that are manually controlled and left on all the time, though this was still a minority.</b>
What program design is likely to deliver the greatest net benefits to PG&E and society?	<b>A performance-only design with day ahead notification is expected to maximize MW load reduction and net benefits for PG&amp;E (Utility Cost Test (UCT) perspective) and for society (Total Resource Cost (TRC) perspective). This was based on assessing costs and benefits for 108 design permutations tested.</b>

#### 4. Next Steps

This assessment ended on December 2021. PG&E posted the final report at the ETCC website.



