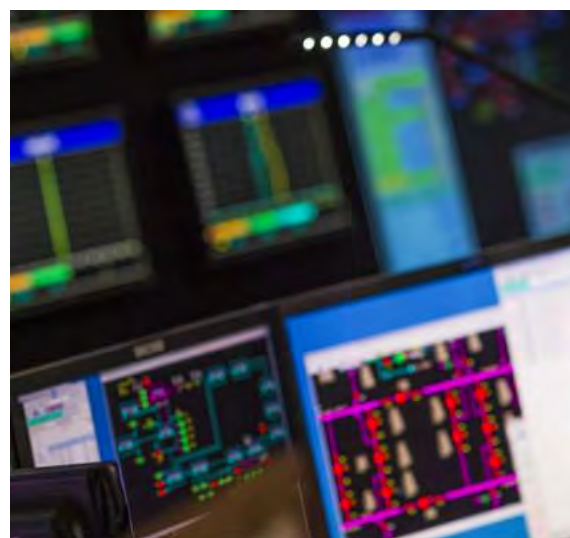


AUTOMATED DEMAND RESPONSE PROGRAM MANUAL

2023 OVERVIEW AND POLICIES



Version 4
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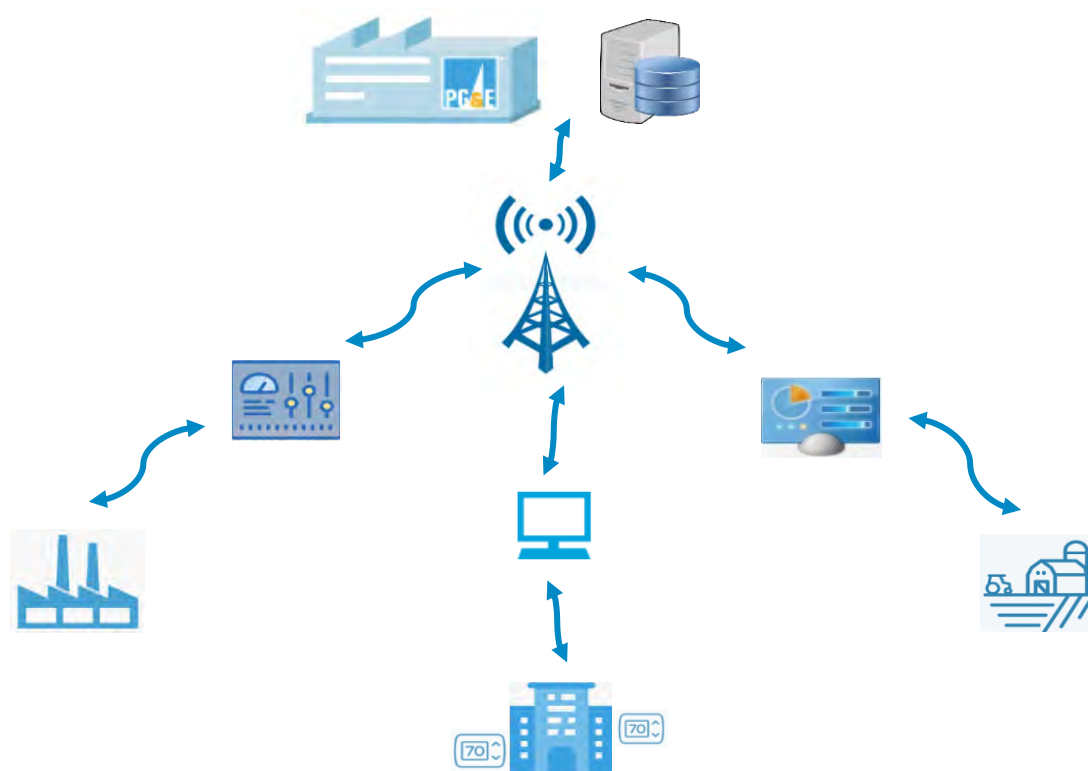
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1 What it is

The Pacific Gas and Electric Company (PG&E) Automated Demand Response (ADR) Program provides rebates and incentives for all segments of the Customer population; residential, small to medium businesses, agriculture, large commercial and industrial Customers who are enrolled in demand response (DR) programs. This manual provides information for ***non-residential Customers and their representatives***.

- The ADR Program provides ***incentives and technical assistance*** to help offset purchase and installation costs of behind-the-meter distributed energy resources and enabling technologies such as controllable energy efficient devices that have ADR controls and can interoperate using generally accepted industry open standards or protocols.
- Customers are encouraged to leverage ***energy efficiency incentives and rebates*** which permanently lower consumption in addition to ADR controls.
- DR programs typically provide ***additional incentives*** for Customers to voluntarily change electrical load during requested periods.
- ADR controls provide an ***automated response to a DR event*** without the Customer taking an action, as illustrated below.



The PG&E ADR Program operates under general program parameters outlined in [The Auto Demand Response Control Incentives Guidelines and Adopted Policies \(Guidelines\)](#) which is updated annually by the California Investor Owned Utilities (IOUs) and as approved by California Public Utilities Commission (CPUC). The ADR Program is currently authorized and funded in Decision (D.) 22-12-009 for the 2023 Bridge Year. PG&E has submitted an application for approval of DR Program Portfolio and Budgets for 2024 through 2027.

Use this manual to understand the details of the ADR Program as it is implemented at PG&E and how Customers can take advantage of this opportunity to install technology that can be programmed to automate equipment such as controllable lighting, HVAC, agricultural pumps and irrigation systems, and ensure the highest potential of performance in a DR program.

There is other information and resources about the PG&E ADR Program at:

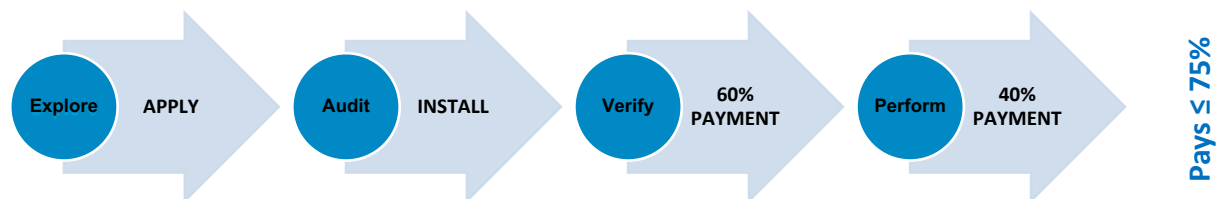
- www.pge.com/autodr

2 The process

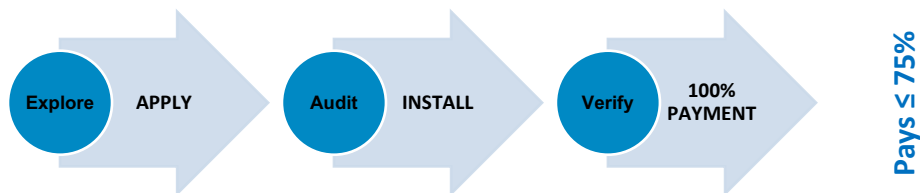
The following is an **overview of the process and the associated steps** which are implemented in the PG&E ADR Program for Standard and FastTrack application projects. The size of the Customer and the type of business determine which of the PG&E ADR two types of applications will be appropriate:

Standard Application Projects (Two Options)

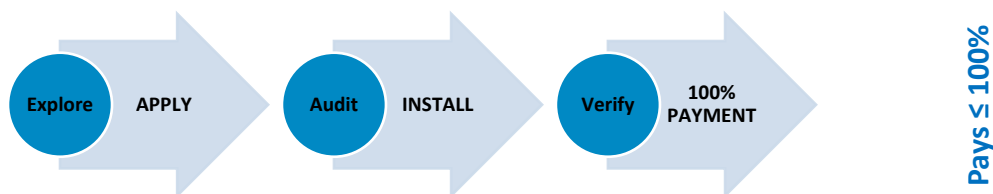
Option One - Requires three years of participation in an ADR eligible DR Program:



Option Two - Available for applications signed after January 1, 2022 - Requires five years of participation in an ADR eligible DR program:



FastTrack Application Projects



FastTrack is a streamlined application process for specific building types with less than or equal to 499 kW average peak summer demand per service agreement identification (SAID)

2.1 Who to know in the process

Many Customers have existing relationships with a **PG&E Business Energy Solutions (BES) representative** who has interested them in this opportunity. If this wasn't the case, it is still a good idea for the Customer to know who their BES rep is so they can support them in various ways through this process. **PG&E's Business Customer Service Center is available at 1-800-468-4743.**

A Customer may have found this opportunity by a company who provides technology and/or may want to partner with the Customer to participate in a DR program. A **Project Sponsor** is willing to accept the terms and conditions of ADR Program participation on behalf of the customer. Companies who provide DR Customers as resources in a DR program under them are called Demand Response Providers (DRP) or **Aggregators**.



PG&E directly contracts with an expert company to take Customers through the process from start to finish with the ADR Program, **Energy Solutions**.

Energy Solutions appoints a **Customer Lead** for the project who will be the primary support for the Customer throughout the process.

A **PG&E Program Manager** oversees the ADR Program, reviews applications, approves Customer incentives, reports the activities to the CPUC, supports regulatory filings and provides a dispatch system for the technology. The PG&E Program Manager is Wendy Brummer wlb@pge.com.

2.2 There's a checklist for the process

For an overview, list and descriptions of all of the steps and documents associated with the process of applying for ADR incentives, everything is in one place on the ADR Program website at www.pge.com/autodr.

2.3 Customer satisfaction is important

The ADR Program is intended to encourage Customers to participate in DR programs without manual intervention. Customer satisfaction is very important to PG&E and Energy Solutions. In the event of a conflict, the **issue resolution process**, as outlined below, is intended to support all parties.

The issue resolution process involves a series of escalation steps:

1. Customer contacts their Customer Lead. Customer Lead responds within 24 hours.
2. Customer Lead documents issue including type, user, program, and details in the Customer Participation Database Tracking System that is available to PG&E for review.
3. Customer Lead works with Customer to resolve issue.
4. If issue is not resolved in two business days, then Kevin Hurless will be notified of the issue and will work with the Customer Lead to resolve the issue in a timely manner.
5. If issue is not resolved in five business days, then Wendy Brummer will be notified of the issue and will work with the ADR Program Lead to resolve the issue in a timely manner.

3 Explore

Interested Customers can contact their PG&E BES representative, call the ADR Program toll-free number at 855-866-2205 or send an email to pge-adr@energy-solution.com to learn more.

PG&E Business Customer Center:

1-800-468-4743

Energy Solutions:

Kevin Hurless

Senior Project Manager

(855) 866-2205

pge-adr@energy-solution.com

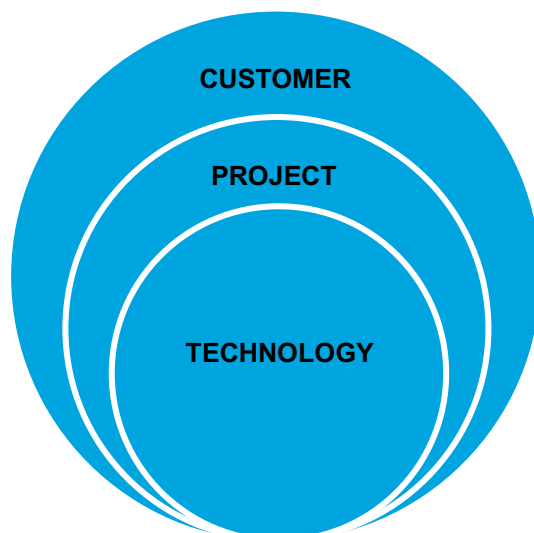


In this early stage of the project it will be ascertained if the Customer is eligible, if the scope of the project at the site(s) to automate participation in a DR program is permitted and if the technology chosen is appropriate under the ADR Program Guidelines.

The Customer Lead is available to support Customers throughout the process including RFP and contractor bid review and serving as a technical support in DR program and technology related questions. The ADR Team will under no circumstances supervise, manage, direct, or otherwise control any construction or installation work, in connection with a project that receives an incentive from the ADR Program. The ADR Team does not purchase any equipment, material, or supplies intended for permanent incorporation into buildings or job sites as a part of a project that receives incentives from the ADR Program.

3.1 Determine eligibility

There are three tiers to assess eligibility for ADR incentives:



3.1.1. CUSTOMER

A Customer is the party that is listed on the PG&E electric account. The Customer may have one or many services agreement IDs (SAID) under the account. The ADR Program is available to all non-residential Customers who:

- Must commit to participating in an ADR eligible DR program for at **least three years for FastTrack** applications and **three or five years for Standard** applications depending on the option selected.
- **Receive electric services** from PG&E or
- Are **Direct Access (DA) and Community Choice Aggregation (CCA)** Customers who purchase electricity from a load-serving entity other than PG&E provided the Customer enrolls in an ADR eligible PG&E DR program that also accepts DA or CCA Customers.
- Have a **PG&E interval meter installed** at the site associated with the SAID. A site is defined as a single free-standing building or structure; an individual utility interval meter and must be where the retrofit or installation takes place.
- Have existing sites with **12 months of billing and usage history** for the SAID. 24-36 months of billing and usage history is ideal for sites with intermittent loads, such as pumping or agricultural irrigation and in some cases.
 - An alternative for **new construction projects is to provide a building energy model** for review.

- **Have not been paid for PG&E ADR incentives in the past 7.5 years**
- Have facilities in the follow sectors for **FastTrack** application projects:
 - Office
 - Retail
 - Quick serve restaurant
 - Conditioned warehouse
 - Grocery

3.1.2. PROJECT

For the **project to be eligible** for the ADR Program incentives it must meet the following criteria:

- ADR controls are new to the site/SAID and the control which enables DR is **not already installed**
- The system **does not require manual intervention** to initiate the pre-programmed load change sequence during a DR event
- **Provides incremental** kilowatt (kW) and kilowatt hour (kWh) load changes relative to existing (baseline) equipment
- Can include **multiple project sites** in a single project application, provided that the requirements listed below apply:
 - Sites can have entirely different DR measures, operating hours, and energy use profiles
 - The same Customer must own and/or occupy the Customer project sites
 - Each site must have a unique service agreement identification (SAID) and be in PG&E's service territory
 - Customer must be able to initiate DR event participation at each facility or site individually, based on the SAID with their control system.

Eligible ADR Project Costs

1. ADR control **equipment parts and materials**
2. **Labor** for design, installation, programming and commissioning of ADR control equipment (external and internal labor)
3. ADR **project management labor** (external and internal)
4. **Installation** labor and equipment used to relay metering signals from PG&E's electric meter into the ADR control system to manage the ADR impact in real-time during a DR event

5. **Software and programming costs** required for local hardware controls or local facility energy management systems (EMS) for enabling local ADR DR event strategies at the facility site (see cloud-based projects)
6. **Subscription fees** for cloud-based services to cover the DR program participation requirement
7. **Up to five years of cellular service** to specifically communicate with ADR controls
8. **Dedicated DSL line** to specifically communicate with ADR controls
9. Additional **hardware and programming** needed to pass the stranded asset test

Ineligible ADR Project Costs

1. **Power monitoring equipment** that collect data for post-event performance analysis or sub-metering that is not used to manage ADR impact in real-time.
2. ADR controls for **battery energy storage**. The battery storage device itself is also not eligible.
3. On-site fossil fuel **back-up generation** (BUGs). BUGs are prohibited for use in DR programs by the CPUC. The ADR Program will follow the same definition of a BUG as outlined by the CPUC in [D.14-12-024](#).
4. **Manual DR measures**, manual improvements/changes including Customer behavioral changes to existing equipment.
5. ADR controls **programmed to opt out of DR event** participation as a default setting.
6. Cameras
7. **Metering charges** owed to PG&E, including new meter equipment, KYZ pulses, isolation relays and any on-going tariff charges

Cloud-Based Projects

The CPUC permits cloud-based ADR projects for **non-residential small to medium business customers** which PG&E defines as a SAID associated with a project with under 200 kW average demand over the previous 12 months. These projects must communicate and demonstrate operability using the current OpenADR protocol and pull the event signal from PG&E for participation in PG&E DR Programs. More information about the OpenADR protocol is found at www.openadr.org. The communication protocol between the cloud and the site does not have to follow the OpenADR protocol. In a cloud-based approach, a Project Sponsor's cloud or a Customer's own remote server or energy management system (EMS) can act as a central control hub to execute DR events for one or more sites. Cloud-based ADR projects must include a pre-paid, three-year cloud subscription for FastTrack

applications and three or five years for Standard applications depending on the option selected.

Small agricultural pumps are also eligible as a cloud-based ADR project that meet the above criteria with the following clarifications:

- Pump size requirement is based on a per SAID basis
- Pump size is less than or equal to **200 kW max peak summer demand** (summer includes June to September)
 - Max peak summer demand is based on three years of billing and usage data if available. At a minimum 24 months of billing and usage history is needed due to the intermittent operational characteristics of agricultural pumping

Standard Application Projects

ADR Projects using the standard application may include all non-residential customer sectors and sizes, many different ADR control types and various potential load impacts. Common types of projects for commercial Customers include changes to HVAC and lighting loads. Industrial Customers typically adjust process loads to accommodate DR events.

The following are common types of projects involving ADR controls:

1. **Energy management systems (EMS) global temperature adjustment:** The EMS will raise the setpoint temperature established by a Customer (usually in the range of two to eight degrees).
2. **HVAC equipment cycling:** For buildings with multiple packaged HVAC systems, compressor units shut off a subset of the building's systems during an acceptable period. Once those units turn back on, another section of units turns off for a set amount of time.
3. **Other HVAC adjustments:** Automatic decrease in duct static pressures, auxiliary fan shutoff, pre-cooling, valve limits and boiler lockouts.
4. **Light shutoff or dimming:** Lighting circuits turn off or dim for the entire duration of the DR event. Typically, these are for lighting applications in common areas with enough natural light or for task applications that could accommodate full shutoff given the proximity of other lighting in the area.
5. **Other lighting and miscellaneous adjustments:** Automated bi-level lighting switches and motor/pump shutoff.
6. **Process adjustments:** Given the varying nature of industrial processes, the approach for each Customer is commonly tailored to the site. A common scenario employs

modifying ancillary processes where there is enough storage capability to facilitate complete equipment shutdowns during DR events and catch up production later in the day or the following day.

FastTrack Application Projects

FastTrack is a streamlined incentive calculation process available for projects associated with **specific building types and sites with less than or equal to 499 kW average peak summer demand per SAID**. Eligible Customers select from pre-approved ADR project types through the simple ADR FastTrack Calculation Form. The form requires only five inputs to determine the potential ADR incentive. Eligible FastTrack project types include the following and are limited to the building types of **retail, office, quick serve restaurant, conditioned warehouse and grocery**:

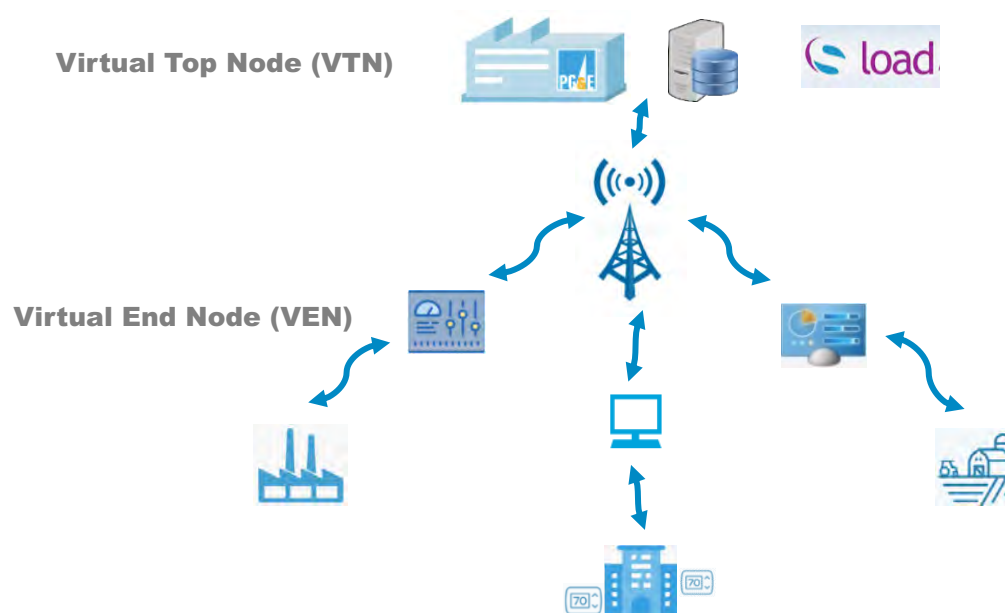
1. **HVAC equipment temperature Reset** – raise the thermostat setpoint by a specified number of degrees relative to the default cooling temperature; 4°F, 5°F, 6°F
2. **HVAC equipment cycling** – disable cooling a set number of minutes per hour with or without fan shutoff; 10, 15, 20, 30 minutes off – only for Retail sites that are also shutting off fans
3. **Dim lighting** – Reduce lighting levels relative to the existing lighting output levels in the building; 20%, 30%, 40%

3.1.3. TECHNOLOGY

As implemented on a statewide basis, the communication standard required for controls to receive an IOU ADR Program incentive, including cloud-based, the controls must be able to communicate and demonstrate operability using the current **OpenADR communication protocols and standards** (currently OpenADR 2.0a or 2.0b). For more information about the OpenADR protocol click [here](#).

At PG&E, the ADR controls must be able to connect to **SEeload**, PG&E's demand response management system (DRMS), by TRC Environmental Corporation.

Typically, a system such as SEElload serves as the **virtual top node (VTN)** in the OADR architecture, however, a Project Sponsor or DRP/Aggregator's cloud-based system can receive the DR dispatch signal from SEElload and can then serve as a VTN to **virtual end nodes (VEN)** at Customer sites.



Technical Requirements

In order to be eligible, ADR control **technology requirements** include:

1. **Communicate and demonstrate operability with OpenADR** communication protocols and standards (OpenADR 2.0a or 2.0b).
2. **Previously demonstrated DR capability**
 - Previously installed and operational at a customer site; or
 - Have been evaluated in an independent assessment; or
 - Be currently installed and available for evaluation by program staff at a site in PG&E territory or other location easily accessed by the program staff, and where both pre- and post-project conditions are documented or currently verifiable.
3. Under manufacturer **warranty for a minimum of three years**
4. The ability to **poll SEElload on a one-minute interval** if participating in a PG&E DR Program
 - An ADR control/VEN using cellular for a communication pathway or with a pay as you go data plan have the option to poll the DRAS at intervals greater than

one minute but at least five minutes less than the notification time window of their DR program. In these cases, the Customer assumes all risk of missed event notifications, changes, cancellations, and any other missed information payloads transmitted between SEeload and the Customer's resources.

- Customer assumes the lost revenue risk due to missed notifications.
5. Technology must have the ability to **set the market context field** to recognize all DR Programs which commonly result in either a blank or wildcard character (*) in that field.

DR Event Signaling

The OpenADR ADR controls or cloud service must **pull the automated OpenADR DR event signal directly from SEeload where PG&E is the demand response provider (DRP)**.

Customers participating in other ADR eligible DR programs are encouraged to pull an OpenADR event signal from their DRP/Aggregator.

1. A **DRP/Aggregator does have the option to pull the event OpenADR signal from SEeload** and can send either via OpenADR or a proprietary signal to the Customer, but is then assumes any risk and/or penalty for non-performance due to signal issues between the DRP/Aggregator and the customer.
2. Projects utilizing a cloud-based ADR solution will need to adhere the eligibility policies laid out in 3.1.2.

3.2 Screening

The ADR Team **collects information** about the Customer and their sites to assess for eligibility. The ADR Team works closely with PG&E BES reps, Share My Data team, the Project Sponsor and the Customer.

Examples of screening information gathered to determine eligibility includes, but is not limited to, the following:

- Valid electric SAID
- Prior participation in DR programs or new DR program enrollment eligibility
- Peak demand
- Facility size
- Interval meter data to assess availability of kW load for DR
- Customer willingness to curtail loads

To kick off the process, there is an **initial meeting** between the ADR Team and the Customer, and could include the Project Sponsor and BES reps. First meetings are usually one hour in length. It is helpful for the Customer to have their facilities manager and any key decision makers present. At this meeting the ADR Program is explained to the Customer, expectations are communicated, energy usage patterns are discussed, energy management capability and possible ADR controls are explored. Customers are also given information about the DR program participation options.

In order to **estimate potential ADR incentives**, the ADR Team needs the Customers electric meter data from PG&E. The Customer grants authorization to Energy Solutions via the Share My Data Customer Information Authorization Form so the ADR Team can estimate potential ADR incentives.

→**Documents:** Share My Data Customer Information Authorization Form

ADR Application

3.3 Site Review and Evaluation

Activities performed during this phase will vary, depending on the ADR controls, application process and may involve an **on-site visit, remote data collection and review of the project(s)**. The ADR Team reviews audits performed by Vendors for acceptability of curtailment strategies, calculation of curtailment kW in accordance with ADR Program standards, and consistency with program policies. For standard application projects, the ADR Program Audit Review document summarizing the ADR Team's findings is provided to the Customer, and to the Vendor where applicable. The Audit Review document developed by the ADR Team includes details such as; descriptions of the site(s), descriptions of any existing EE or DR systems, inventory of associated equipment with nameplate and electrical data, descriptions of potential or existing ADR controls, potential DR program(s), DR event strategies, calculations for each ADR control with load impact values and cost estimates.

The project is evaluated to assess for reliability and consistency of performance during DR events. The ADR Team staff uses analysis methodology vetted with Lawrence Berkeley National Laboratory (LBNL) and is used by both PG&E and Southern California Edison (SCE) ADR Programs. Using a consistent methodology ensures that similar projects are treated equally and fairly.

A sample vendor audit report and project information requirements guidance can be found on the Energy Solutions program website at: <http://pge-adr.com/resources/>.

For FastTrack application projects the customer or the ADR Team completes the ADR FastTrack Calculation Form that only requires 5 inputs to calculate the ADR incentive potential.

Customer must also provide OpenADR 2.0 (A or B) certification documentation for ADR technology solution which can include directions to the OpenADR Alliance website that lists certified equipment.

→**Documents:** Audit Review – Standard Application Projects

ADR FastTrack Calculation Form – FastTrack Application Projects

OpenADR 2.0 (A or B) certification documentation

3.4 Customer Decision

For Standard application projects, the ADR Team Customer Lead shares the Audit Review with the Customer and for FastTrack application projects the ADR Customer Lead shares the FastTrack Calculation Form. Then the Customer reviews the approved kW commitment along with the calculated incentives. The Customer Lead is available to provide any additional technical information, answer any questions and may even provide information about similar installations at other facilities. The Customer may consult with their BES rep or Project Sponsor for guidance or additional information. The **Customer's decision authorizing which, if any, ADR controls to proceed should be submitted in writing** to the ADR Team.

→**Documents:** Email from the Customer with decision

4 Apply

Once a Customer decides to move forward with their ADR project, a **formal application package** is submitted by the ADR Team to PG&E consisting of:

- **Standard Application Projects:** ADR Application, Audit Review and usually written confirmation from the Customer to move forward
- **FastTrack Application Projects:** the ADR Application, FastTrack Calculation Form and usually written confirmation from the Customer to move forward.

The PG&E Program Manager reviews the documentation, approves and reserves the incentive funding. The incentive reservation is based on the approved kW from the Audit Review or FastTrack Calculation Form.

The PG&E application system automatically **notifies the Customer** and Project Sponsor (if applicable) of the incentive reservation via email. The Customer is then authorized to begin installation of their ADR project.

If, for any reason, the Customer and/or project is not approved, the Customer Lead notifies the Customer via email.

The Customer may combine **multiple sites** into a single application. Under this approach, projects will not be reviewed, approved, or receive payment until paperwork on all the individual sites is complete. The Customer acknowledges that all sites in the application will be aggregated together in determining ADR incentives. If the project is being implemented in phases, the Customer should consider submitting individual applications. Under extenuating circumstances, the ADR Team, at its sole discretion, may provide exemptions.

Substantial **changes to the project scope** after approval may require a cancellation of the existing application and resubmission. Substantial changes include significant modifications to the proposed equipment type, size, quantity, configuration, or the expansion of project to include additional ADR controls. The revised project scope is subject to an additional review with potential for a revised incentive value. Customers also have the option of submitting a new application for the additional ADR controls.

To align with the ADR Program timeline, projects must be installed and fully operational by October 31, 2023.

→**Documents:** Email approval/declination to Customer/Project Sponsor

5 Install

For Standard and FastTrack application projects, **only after a Customer receives formal approval from the ADR Team can installation of ADR controls begin**. PG&E is not responsible for any costs associated with projects that have not been formally authorized under the steps previously listed. “Installation” includes installation of new ADR equipment.

The Customer notifies the Customer Lead when the new equipment is installed, operational and commissioned. The Customer must also submit detailed invoices outlining labor and equipment. The vendor or Customer also reviews and completes the Installation Form, which describes the technical details of the installation including description of the VEN, location of the VEN, and DR event execution sequence.

The invoices that the Customer submits must have a level of detail or granularity to allow the ADR Team to verify the major equipment components installed. Costs above \$5,000 must include itemized details. Please see Appendix 9 for additional invoice guidelines.

→**Documents:** Installation Form from Customer

Invoices from Customer

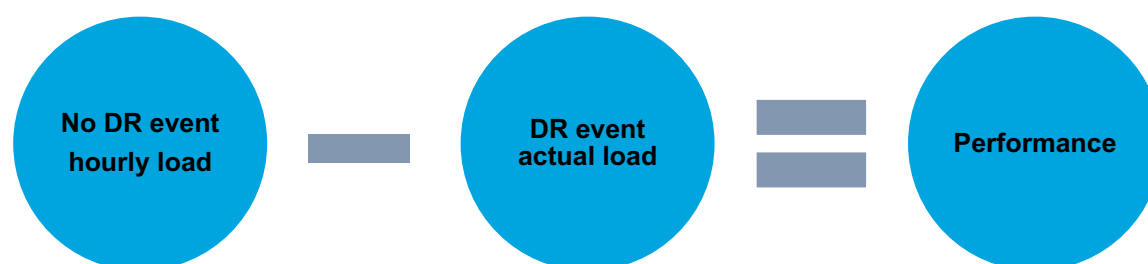
Notification of project completion from Customer

6 Verify

For Standard and FastTrack application projects, after installation, commissioning, and submission of all previously listed documents, the **ADR Team must confirm the ADR controls associated with a project and its sites are capable of operating as designed and according to program policies.** The ADR Team will conduct a verification process which includes a project inspection and simulated DR test event.

Only utility revenue meter data will be used to confirm performance during DR test events or in calculating incentive payments.

Performance is calculated using an industry standard Customer baseline and comparing it to the average hourly energy use during DR event hours. Accuracy is extremely important in calculating the Customer baseline. The ADR Program uses a 10-in-10 baseline for all Customers in testing and the payment of incentives.



The following are **details about the performance calculation**:

- The baseline (signified as 'No DR event hourly load' in the above image) is calculated as the average **hourly load (usage) that the Customer has** as measured from the ten previous business and non-holiday days that didn't have a DR event.
- **Subtract the actual load during the DR test or real event** from the baseline for the hours of the event.
- During testing, the baseline **can vary depending on conditions at the time of testing** as compared to typical summer daytime activity. The ADR Team accounts for this variability and adjusts the baseline as appropriate to account for these seasonal variations.

6.1 Project Inspection & Testing

In most situations, an in-person on-site project inspection takes place that includes a DR test event. However, there are circumstances where, for a variety of reasons enumerated under section 6.1.2, it may make more sense to conduct remote project inspection and testing.

The following are general guidelines for both on-site and remote project inspection and testing:

- Test event dates and times should be **scheduled two weeks** in advance.
- Test events must coincide with **event hours associated with the DR program** the Customer is enrolled in. The only exception is for Agricultural Pump tests, which may be scheduled at other times of day.
- Test events for **HVAC projects** are scheduled when cooling is available within the DR Program the Customer is enrolled in (earlier as necessary) and for a **minimum of two hours** so that indoor temperatures can be evaluated appropriately.
- **High temperatures are best for testing HVAC projects**; however, this is not always possible. To provide timely testing and payment to Customers, test results from days with cooler weather are adjusted to compensate for the effects on DR event performance. At a minimum, a project must be tested on a day where, under normal HVAC parameters, the cooling equipment is on and cooling is called for by the zones.
- **Friday afternoon tests are not permitted** for office buildings and other facilities where loads vary by day of the week.

Recorded meter data for the DR test event is used to establish the site's verified load impact.

The kW impact measured during the test event must be within 25% of the approved kW load calculated. If the measured load change is outside of that window, the ADR Team will investigate the cause of the discrepancy. If necessary, a second test may be scheduled. The results of the DR test event can impact the amount of the incentive payment.

Maintaining occupant comfort and safety is essential for all ADR projects. The **maximum allowable curtailment is 50% of cooling** to ensure comfort and specifically, 50% of space cooling power in any occupied areas, excluding the cooling power from any spaces not participating in DR. The on-peak cooling load will be assessed using the California Commercial End-Use Survey data, unless specific building data is available. This requirement does not apply to cooling for refrigeration and cold storage warehouses. The ADR Program will **require correction** of any projects not meeting this requirement before the site passes the inspection and DR test event and an incentive payment is approved.

→**Documents:** Verification Report

6.1.1. ON-SITE

The **inspection typically takes two to four hours** and is scheduled on a day and time that is convenient to the Customer but must be capable of representing an actual DR event day as closely as possible.

During the project inspection, the following are verified:

- All ADR controls are located and verified for **proper installation and connection** to the related equipment. Photos may be taken.
- **Pre-test site conditions**, ie. lighting foot-candles, temperatures, motor frequencies, etc. are recorded as they relate to the ADR controls and equipment.
- The ADR Team member records **the time the test initiates**.
- If the **test does not initiate**, the ADR staff member works with the Customer to work out the source of the issue. A second test may be necessary.
- It may or may not be necessary for the ADR Team to **remain at the site** for the duration of the test. Each test case is unique.
- Upon completion of the DR test event, a **second set of observations** are made to verify site conditions resulting from the sequence of operations (the same observations as pre-test conditions apply). Photos may be taken.
- The ADR Team takes note of any potential **comfort or safety issues** that might arise during the test (i.e. areas that are too dark, or too hot).
- If potential issues have not been identified the **inspection is concluded**.

For ADR projects that have more than four sites, the ADR Team may utilize the following **sampling criteria** to determine the number of sites to visit in-person on-site. Regardless of which sites are visited in person, all sites must participate in the load shed test and interval data from all sites will be analyzed to determine successful completion of project testing.

Table 1: Sampling criteria for site selection of multi-site ADR projects

Population	Site Selection Sample Size
4	3
5 - 7	4
8 – 11	5
12 - 15	6
16 - 24	7
25 - 39	8
40 - 79	9
80 - 399	10

6.1.2. REMOTE

The remote option is currently being piloted at PG&E and provides an **alternative to the on-site project inspection and testing** after ADR controls are installed at Customer sites where each SAID has an average summer peak demand of less than 500 kW and where ADR controls pertain to HVAC, lighting, and/or water pumping. The initial demonstration of this policy will permit no more than 1MW of load reduction/increase value. The ADR Team will then conduct a review to assess the effectiveness resulting in potential future modifications to the remote inspection and testing policy. During shelter-in-place orders due to the impacts of COVID-19, the remote option will be authorized on a case-by-case basis to all customer types.

Utilization of the remote option shall be at the discretion of the ADR Team and PG&E. Neither a Project Sponsor or Customer may request remote inspection and testing. ADR projects selected for remote inspection and testing are chosen on a site-by-site basis and not all sites related to a Customer may be chosen.

In addition to the general project inspection and testing guidelines in Section 6.1, the following are requirements associated with using the remote option:

- ADR controls at these sites must pertain to **HVAC and/or lighting measures** capable of monitoring occupant impacts during DR events.
- For water pumping projects, only technology capable of monitoring on-site operations are eligible.
- ADR controls must have been **verified through previous on-site project inspection and testing**.
- ADR projects must be **no more than 50% or 15 kW larger**, by approved kW, than previous PG&E ADR projects successfully completed with the ADR controls.
- **Photographs**, taken by any on-site staff, of the control equipment and VEN installed under the ADR project must be provided four business days prior to the Test Event.
- For projects without the installation of any new physical equipment, a **screenshot from the new ADR-capable software must be provided**.
- **Photographs must be provided** to verify that an ADR signal was received. Details of what will be included in the photos will be outlined by the ADR Team for each specific VEN prior to the DR test event.
- **HVAC**
 - HVAC project must be capable of **reporting per-zone space temperature** at intervals less than 20 minutes during the event.
 - The **space temperature data for each zone** from the test event must be provided.
 - The ADR Team reserves the **right to investigate the rate of space temperature increase**, including requiring an additional test event.
- **LIGHTING**
 - Lighting project must include a **lighting control system listed** on the [Design Lights Consortium's Networked Lighting Controls QPL](#) as capable of energy monitoring or equivalent.
 - Provide **lighting power data recorded** during the DR test event showing that adequate lighting for safety and task performance remained on for the duration of the event. If

available, also provide lumen data on a project basis and lighting power and/or lumen data on a per zone basis.

- The ADR Team reserves the right to require an **additional test event**.

- **WATER PUMPING**

- **All project sites must be tested** and have their measure verified through their PG&E interval data. Such a test **requires the pump to be operating** for a minimum of 15 minutes prior to the test event to ensure the full operating load appears on the PG&E interval data.

6.2 Stranded Asset Testing

There are notable efficiencies with cloud-based services that can directly dispatch DR events to VENs. However, cloud-based services introduce a unique risk to DR dispatchability. For Customers that are over 200kW average demand, the CPUC requires **the control must be onsite** and able to communicate and demonstrate operability using the current OpenADR protocols and standards (currently OpenADR 2.0a or 2.0b).

In the event a Project Sponsor offers a cloud-based service and that service connects to SEElload and acts as a VTN, the VENs are typically no longer connected to SEElload directly. If the relationship with the DRP/Aggregator were to be terminated, the VENs could become what is referred to as “stranded assets”. The way to mitigate this potential risk is to **ensure that VENs can connect directly with SEElload through stranded asset testing**.

For Customers with SAIDs of greater than 200 kW average demand, the **cloud-based ADR VEN** must pass the stranded asset test. The stranded asset test is conducted following completion of project installation and before the project inspection and DR test event:

- Testing includes initiating an event notification signal via SEElload and assessing if each VEN solution can perform without going through the cloud.
- The Project Sponsor or Customer will work with their vendor or DRP/Aggregator to provide written instructions detailing how the VEN can be reconfigured to pull a signal directly from SEElload.
- Any additional hardware and programming services needed to pass the stranded asset test must be provided to the Customer during project installation.

- The additional hardware must be of similar construction. For example, if the original VEN is built for the outdoor environment, the additional hardware will be built for the outdoor environment.
- All future revisions to the VEN must also be able to pass stranded asset testing.
- The VEN on-site includes the proper security certificate for connection to the SEELoad endpoint and must be able to connect to 2.0a or 2.0b (connecting to an OpenADR 1.0 endpoint is not allowed).
- The ADR Team conducts this test once per VEN and may require a repeat of the test at any time if there are concerns that there is a dramatic hardware or software reconfiguration or update.

Customers that cannot pass the stranded asset testing will be permitted to connect to SEELoad but will not be eligible for PG&E ADR Incentives.

7 Payment

Depending on whether the project uses the Standard or FastTrack applications, a Customer can be approved to receive either one or two incentive payments and can be reimbursed for up to 75% or 100% of eligible ADR project costs.

Customers may be applying for energy efficiency as well as ADR incentives, it is important to note that under no circumstances can greater than 100% of total project costs be paid from PG&E.

For Standard application projects, Customers have two options:

Option One: Customer agrees to participate in an ADR eligible DR program for three years. Incentive payment calculations are based on engineering calculations verified by a DR test event for the initial 60% payment and actual DR event performance for the second 40% payment.

Option Two: Customer agrees to participate in an ADR eligible DR program for five years. Incentive payment calculations are based on engineering calculations verified by a DR test event, after which 100% of the incentive is paid.

Only utility revenue meter data will be used to confirm performance in calculating incentive payments. As described in section 6, a Customer's performance is calculated using an industry standard Customer baseline and comparing it to the average hourly energy use during DR event hours. The ADR Program uses a **10-in-10 baseline** for all Customers to ensure constancy.

Customers are required to remain enrolled and participate in an ADR eligible DR program for three years for FastTrack applications and three or five years for Standard applications based on option selected starting after both the successful completion of the project inspection verification test and successful enrollment in an ADR eligible DR program. Additional information is found in Section 8.

Good Faith Participation

The ADR Program requires Customers to participate in an ADR eligible DR program as noted above. Therefore, a Customer must, in good faith, intend to participate in DR events to fulfill their ADR obligations. If it is determined, at the discretion of the PG&E ADR Program, that a Customer/Project Sponsor is not participating in good faith, the Customer/Project Sponsor may be suspended from future participation in the PG&E ADR Program, and projects may have to return already received incentives from not meeting the participation requirement.

7.1 Standard Application Projects

For Standard application projects, Customers will be awarded incentives in either one or two installments, depending on the option selected. The **maximum possible incentive is capped** at the committed and verified load impact multiplied by \$200 and **limited to up to 75% of eligible ADR project costs**. The ADR incentive may be paid to the Customer or the Project Sponsor.

OPTION ONE - REQUIRES THREE YEARS OF PARTICIPATION IN AN ELIGIBLE DR PROGRAM:



For the purpose of illustration, the following example will be used to demonstrate incentive calculations:

Project Costs	\$150,000
Incentive @ 75% of Project Costs	\$112,500
Committed & Verified Load Impact	500 kW
Maximum Incentive (500 kW x \$200)	\$100,000
1st Payment (60% of \$100,000)	\$60,000
Minimum for 40% Payment (60% x 500 kW)	300 kW
Potential 2nd Payment	\$40,000

Actual Performance	481 kW
TOTAL INCENTIVE (Actual Performance x \$200)	\$96,200
2 nd Payment (TOTAL – 1 st Payment)	\$36,200

1st Payment

- Customers receive 60 percent of the total incentive **after a successful project inspection, DR test event and confirmed enrollment in an ADR eligible DR program**

2nd Payment

- **Paid 12 months after the first payment.**
- A **minimum performance of 60 percent** of the verified kW curtailment, averaged across all events called during the DR season, must be achieved to be eligible for any second incentive payment.
- Based on **12 months of DR event performance** which will encompass one full DR season of participation:
 - Based on average kW during DR events hours
 - Each event is given equal weight
 - All events that the customer is nominated/awarded for are included in the average performance
 - If a customer is not nominated in a month the ADR Program may request a reason to why the customer was not nominated. If the customer was not nominated for a reason that is outside of good faith participation, a penalty of one event with zero performance will be added for that month
 - If a customer is not nominated for any events, their performance will be calculated as zero
- **The maximum 2nd payment is the total incentive minus the 1st payment amount.**
 - Never less than zero
 - Never greater than the approved second payment for the project, even if the Customer's actual performance exceeds 100% of verified kW
- Customers participating in the Demand Response Auction Mechanism (DRAM) **must provide performance information** via a provided template for all awards/dispatches for the purpose of calculating the 40% payment.

OPTION TWO -REQUIRES FIVE YEARS OF PARTICIPATION IN ADR ELIGIBLE DR PROGRAM):



Pays up to 75% of eligible project costs but no more than \$200/kW of committed & verified load impact

Project Costs	\$150,000
Incentive @ 75% of Project Costs	\$112,500
Committed & Verified Load Impact	500 kW
Maximum Incentive (500 kW x \$200)	\$100,000
TOTAL INCENTIVE	\$100,000

Incentive Payment

- Customers receive 100 percent of the total incentive **after a successful project inspection, DR test event and confirmed enrollment in an ADR eligible DR program.**

7.2 FastTrack Application Projects

The **maximum possible incentive is capped** at the committed and verified load impact multiplied by \$200 and **limited to up to 100% of eligible ADR project costs**. For the FastTrack process, Customers are eligible to receive 100% of the ADR incentive after a successful project inspection, and DR test event and confirmed enrollment in an ADR eligible DR program. **The ADR incentive may only be paid to the Customer**. See section 3.1.2 for more information about FastTrack eligible projects.



Pays up to 100% of eligible project costs

Project Costs	\$25,000
Incentive @ 100% of Project Costs	\$25,000
Committed & Verified Load Impact	25 kW
Maximum Incentive (25 kW x \$200)	\$5,000
TOTAL INCENTIVE	\$5,000

Incentive Payment

- Customers receive 100 percent of the total incentive **after a successful project inspection, DR test event and confirmed enrollment in an ADR eligible DR program**.

7.3 Special Requirements

7.3.1. RESERVATION PERIOD

Following project approval, **incentive funds are reserved for one year** pending demonstration of active Customer progress. All projects must demonstrate reasonable progress towards completion of project installation. If PG&E determines a project is not making reasonable progress towards installation, the ADR application is subject to cancellation. Extensions may be requested and granted at PG&E's discretion.

7.3.2. INCENTIVE CAPS BY DR PROGRAM

The PG&E ADR Program **reserves the right to create incentive caps by DR Program** as needed to meet program diversity goals, and to change the cap as needed.

7.3.3. INCENTIVE CAPS BY TECHNOLOGY AND CUSTOMER TYPE

The PG&E ADR Program **reserves the right to create incentive caps by technology or Customer type** as needed to meet program diversity goals, and to change the cap as needed.

7.3.4. ADDITIONAL ELIGIBLE PROGRAM INCENTIVES

Customers **cannot receive incentives or rebates from other load serving entities for the same equipment for DR program purposes.**

ADR projects are eligible to receive energy efficiency incentives and Customers are encouraged to combine DR and energy efficiency measures in one project. PG&E offers both prescriptive (deemed) and customized energy efficiency rebates for hundreds of measures for lighting, HVAC, motors, and other technologies. Under no circumstances should a Customer receive incentives greater than 100% of project costs from all PG&E sources. For more information on energy efficiency rebates from PG&E visit www.pge.com.

8 Perform

As covered under section 3.1.1, Customers are required to remain **enrolled and participate in an ADR eligible PG&E DR program for three years for FastTrack and up to five years for Standard applications** starting after both the successful completion of the project inspection verification test and successful enrollment in an ADR eligible DR program. If the Customer is not yet enrolled in an ADR eligible DR program at completion of the project inspection verification test, the requirement starts at the date of enrollment in an ADR eligible DR program. Customers who de-enroll from an ADR eligible DR Program before the minimum enrollment requirement has been completed will forfeit their incentive, including any incentive already paid to Customer. The calculated amount of the incentive refund is prorated based on remaining months of enrollment.

Project Sponsors are responsible for ensuring that their ADR Customers are informed and understand the minimum enrollment requirement, by notifying their ADR Customers in writing when their ADR project is approved.

Customers may **choose an ADR eligible DR program that best fits their needs**. The BES rep or a member of the ADR Team can support identifying the most appropriate program.

[Peak Day Pricing](#) (PDP) Note – CCA critical peak pricing programs are not eligible

[Capacity Bidding Program](#) (CBP)

[Demand Response Auction Mechanism](#) (DRAM)

For information on each of these programs click on its name or go to pge.com and look under “Large Business”, “Save Energy & Money” and then “Energy Incentive Programs”. There is also a brief description of each on PG&E’s DR webpage: https://www.pge.com/en_US/large-business/save-energy-and-money/energy-management-programs/energy-incentives.page

8.1 Ongoing Customer Support

8.1.1. PARTICIPATION IN DR EVENTS

Whether a Customer is working with a DRP/Aggregator or is directly enrolled in a DR program, **Customers are expected to participate in DR events to meet the good faith participation expectation**. It is the responsibility of the Customer to ensure their loads are nominated monthly by the DRP/Aggregator (not applicable for PDP).

PG&E dispatches ADR controls through SEElload on DR event days and the ADR Team monitors all event activities. The ADR Team is available to assist, if needed, to ensure event signals are received and that Customers are ready for the DR event.

8.1.2. PERFORMANCE MONITORING

For Customers in their 2nd payment performance year, the ADR Team tracks DR event participation, monitors performance and maintains communication with the Customers to provide DR event performance feedback and help resolve challenges. The ADR Team compiles and sends performance reports to these Customers mid-way through the DR season. The report includes information such as the Customer's ADR commitment level, the number of DR events called, and average performance.

→**Document:** Mid-year Performance Report

8.2 Connectivity Monitoring

Customers and Project Sponsors must monitor for any loss of connectivity between SEElload and a VEN. If there is a connectivity issue, customers and Project Sponsors can reach out to the ADR Team for support in troubleshooting.

8.2.1. ANNUAL TEST EVENT

In the case that there aren't any DR events for a Customer in a given year, the ADR Team schedules a set of three testing days and requires each Customer to sign up each site for a testing day of their choice.

- On each of these testing days, a two-hour test event is dispatched by SEElload
- Event performance is measured for each site
- The ADR Team addresses issues at non-performing sites either remotely or onsite, as appropriate to ensure future connectivity and performance

8.2.2. FIRST DR EVENT OF THE SEASON

When the first DR event of the season is issued, the ADR Team follows up with any newly non-performing sites to troubleshoot and correct site configuration.

9 ADR Program Manual Updates

The ADR Program Manual is updated on an as needed basis as program policies are updated or clarified. Table 1 below outlines major changes that occur during respective revisions.

Table 2: Program Manual Revisions Log

Revision	Date	Revision Notes
Original Release	8/15/2018	Issue of 2018 ADR Program Manual
Version 2	2/12/2021	<p>Release of 2018-22 ADR Program Manual.</p> <p>Updated organization to improve consistency and clarity</p> <ul style="list-style-type: none"> • Added reference to CPUC decisions and ADR Guidelines that govern the PG&E ADR Program • Added CCA eligibility guidelines • Clarified sites on one application will be aggregated together for ADR incentive calculations • FastTrack is not limited to SMB but customers up to 499 kW average summer demand • Clarified locational dispatch is by SAID • Cloud solutions are allowed for SMB and small agricultural pumps • ADR enabling controls for Battery storage are not eligible for ADR incentives • Remote inspection and testing available for small sites with ADR measures of HVAC, lighting and/or water pumping on a limited basis • Removed definition for Project Office as ADR applications are processed in the PG&E Energy Insight. • Removed the section on Manage Your Power as that is no longer a part of the program • Removed reference to Incentive Recipient Certification of Contractor License and Permit as it is no longer needed

		<ul style="list-style-type: none"> • Removed Audit Procedures section to remove redundancy with 2.6.3 Facility Audit • Added good faith participation expectation • Updated 40% payment to be based on nominated events instead of all events • Updated to reflect only a mid-year performance report provided to customers in the 40% performance window
Version 3	7/22/2022	<ul style="list-style-type: none"> • Updated policy for applications signed on or after January 1, 2022 in that standard application customers can choose from the following two options: <ul style="list-style-type: none"> ○ Enroll and participate in an ADR eligible DR program for three years, receiving 60% of incentive payment after successful installation and verification and 40% based on performance ○ Enroll and participate in an ADR eligible DR program for five years, receiving 100% incentive payment after successful installation and verification • Section 6.1 Updated scheduling guidelines for HVAC projects for project inspection and testing • Section 8.0 Clarified CCA DR program eligibility
Version 4	4/10/2023	<ul style="list-style-type: none"> • Issue of 2023 Program Manual

10 Glossary of Terms

Automated Demand Response (ADR) – ADR control is the ability to receive an automated demand response signal to enable the customer to participate in a demand response event without any manual customer intervention. Note: Many controls either allow or require the customer to acknowledge the signal before it begins equipment shutdown and that customers have override authority when a signal is received.

ADR Eligible DR Program (Qualifying DR Program) – A DR program approved by the CPUC, in which the program’s participants are eligible to receive ADR incentives which automate a customer’s participation in program events.

Aggregator - A DRP/Aggregator is a commercial entity that provides demand response services such as assisting retail customers with strategies or technology to reduce their electric consumption and then making the electric load reductions as a ‘bid’ in wholesale energy markets. Some entities focus entirely on working with customers to reduce their electric consumption and paying incentives for their reductions. Such entities are often referred to as “aggregators” and will have commercial arrangements with other entities that specialize in interfacing with the wholesale market. The wholesale-facing entities are called Demand Response Providers (DRPs). Some entities will handle both retail and wholesale transactions. Note – this definition focuses on a customer providing a load reduction, but a customer can also provide a load increase based on the eligibility of the demand response program.

Business Energy Solutions (BES) – PG&E account managers who manage Customer relationships and promote all PG&E programs including DR and energy efficiency programs.

Cloud-based - Cloud-based ADR projects allow a remote server or energy management system to act as a central hub for receiving the OpenADR DR event signal from the utility DRAS and then execute DR strategies for one or more facilities across a campus or a region (city, country).

Commissioning – Commissioning of an ADR project includes ensuring that all systems and components of the ADR project are designed, installed and tested according to the operational requirements of the Customer and the ADR Program.

Customer - An eligible non-residential ratepayer who is applying for incentives through the statewide ADR Program. Purchaser of electricity and/or natural gas from Pacific Gas and Electric Company or entity receiving electricity via PG&E transmission and distribution network

Demand Response (DR) – A reduction or increase in electrical usage by a Customer upon request of an electric utility or other entity to improve the system reserve margins during high use periods or for cost mitigation.

Demand Response Event (DR Event) or Dispatch or Dispatchable – The act of reducing or increasing existing load at the Customer’s facility(ies), in response to a signal or dispatch instruction from a utility or DRP’s automated dispatch system, for all or a portion of the Customer’s electrical consumption during the DR event.

Demand Response Management System (DRMS) – A DRMS is a VTN and is the web server or software tool system operators use to publish DR event notification. The DRMS is responsible for communicating event details including duration, start time and end time to VENS.

Demand Response Operations Team – PG&E Team who calls events based on triggers such as forecasted weather, Customer demand, and scheduled or available generation supply.

Demand Response Provider (DRP) - A DRP/Aggregator is a commercial entity that provides demand response services such as assisting retail customers with strategies or technology to reduce their electric consumption and then making the electric load reductions as a ‘bid’ in wholesale energy markets. Some entities focus entirely on working with customers to reduce their electric consumption and paying incentives for their reductions. Such entities are often referred to as “aggregators” and will have commercial arrangements with other entities that specialize in interfacing with the wholesale market. The wholesale-facing entities are called Demand Response Providers (DRPs). Some entities will handle both retail and wholesale transactions. Note – this definition focuses on a customer providing a load reduction, but a customer can also provide a load increase based on the eligibility of the demand response program.

Demand Response Strategies – Methods that a Customer uses to change electrical energy consumption during DR Events, such as reducing air conditioning or lighting use

Load Serving Entity (LSE) - Any company that (a) sells or provides electricity to end users located in California, or (b) generates electricity at one site and consumes electricity at another site that is in California and that is owned or controlled by the company.

OpenADR - Open Automated Demand Response (OpenADR) is an open and standardized software protocol for electricity providers and system operators to communicate DR signals with each other and with their customers using a common language over any existing IP-based communications network, such as the Internet. It is an open and interoperable information exchange model and emerging Smart Grid standard. OpenADR standardizes the message format used for ADR so that dynamic price and event information can be delivered in a uniform and interoperable fashion among utilities, ISOs, and energy management and control systems.

Project Sponsor – The Customer is solely responsible to select a Project Sponsor or act on its own behalf to implement the ADR Project. The Project Sponsor agrees to adhere to and be legally bound to the ADR Application Terms and Conditions. If the ADR Application does not list a Project Sponsor, the Customer is deemed the Project Sponsor.

Share My Data – A national effort to allow customers to grant access of their utility interval data to third party providers and have the data provided in a common format

VEN – VEN stands for Virtual End Node (VEN) and is also referred to as a *client*. The VEN accepts the OpenADR sign from a server referred to as a Virtual Top Node (VTN). Common VENs include an energy management system, thermostat or other ADR control device.

VTN – VTN stands for Virtual Top Node and is typically a server that transmits OpenADR signals to end devices or other intermediate servers.

11 Appendix: Invoice Requirements Checklist

The invoice at a minimum should include the following:

- Label clearly stating the document is an invoice
- Date of submittal
- Vendor contact name, job title, contact information and address
- Project Address
- Reference to PO number, with contract number below (IF AVAILABLE)
- Invoice #
- Page # of #
- Contract Summary - Contract value (Not to Exceed amount,) invoiced charges to date, plus contract or P.O. balance
- Labor cost detail - Itemized invoice consistent with the scope of contract and payment terms. Costs above \$5,000 must include itemized details
- In-house labor - Include hourly or per unit rate (whichever applicable) consistent with the contract plus corresponding quantities and current charges, with dates and description of work performed
- Non-In-house labor - Hours for each classification of work (management, programming, etc.)
- Parts and Materials - Itemized invoice consistent with the scope of contract and payment terms. Costs above \$5,000 must include itemized details
- Sub-Contractor invoices (if applicable)

Parts and Labor not covered by PG&E:

- Leasing equipment
- PG&E metering charges: new meter, new meter equipment, KYX pulses, isolation relay and any on-going tariff charges
- Power monitoring equipment that collects data for performance analysis post-event or sub-metering