

## Demand Response & Proxy Demand Resource – Frequently Asked Questions 6/24/2011

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### Definitions

1. What is Demand Response (DR)?
  - Demand response programs are designed to enable end use customers to contribute to energy load reduction. One form of demand response can occur when an end use customer reduces their electrical usage in response to a price signal, i.e. the price of electricity is high enough that they decide to reduce their usage. Another form of demand response could be a homeowner that allows the electric utility to cycle their air conditioner to reduce the need for electricity during peak periods when electricity is scarce. Large pumps installed in the State water project can provide demand response by curtailing electricity consumption when dispatched by the CAISO in response to their price signal or when there is a shortage of electricity.
2. What DR products does the CAISO offer?
  - The California Independent System Operator (CAISO) is charged with ensuring the safe and reliable transportation of electricity on the high voltage transmission system while ensuring diverse resources have equal access to the system and markets. In addition to the existing Participating Load Program (primarily the large pumps mentioned above), the CAISO will begin in 2010 to offer the Proxy Demand Response product.
  - It is important to note that end-use customers able to provide demand response may do so through programs offered by their electric utility. The CAISO's wholesale programs tend to involve larger entities and Demand Response Providers (DRP) that have the ability to aggregate several customers into a product, i.e. a Proxy Demand Resource (PDR) that is then capable of participating in CAISO markets.
  - What is PDR?
    - PDR is a load or an aggregation of loads that are capable of measurably and verifiably reducing their electric demand. Proxy Demand Resources can submit bids into the wholesale Day Ahead and/or Real Time market and respond to dispatches at the direction of the CAISO.
  - What is Participating Load?
    - A Participating Load is an entity providing Curtailable Demand. Curtailable Demand is Demand from a Participating Load that can be curtailed at the direction of CAISO in the Real-Time dispatch. Scheduling Coordinators (SC) with Curtailable Demand may offer their product to CAISO. Unlike PDRs, Participating Loads must be scheduled within a unique Custom Load Aggregation Point. Participating Loads do not use a base-line energy calculation to determine the amount of energy curtailed and they can only provide non-spinning reserve or participate as curtailable demand in the Real-Time market. Please refer to the Participating Load Technical Standard for additional details about Participating Loads <http://www.caiso.com/docs/2001/01/22/200101221153242073.pdf>.
3. Who can participate?
  - The Proxy Demand Resource product allows end-use customers to work through a Demand Response Provider to bid demand response services directly into the CAISO markets. All resources types are offered into CAISO markets through a Scheduling Coordinator. Thus, to bid proxy demand resources into the CAISO markets, a Demand Response Provider must be a Scheduling Coordinator or hire the services of an ISO certified Scheduling Coordinator to submit bids and schedules on their behalf.
  - Participation in a Proxy Demand Resource could be by:
    - A large end-use customer acting as its own demand response provider
    - A demand response provider who aggregates end-use customer loads
  - Note: Direct access customers can currently participate under a Proxy Demand Resource in the CAISO market. However, utility bundled customers cannot participate at this time. The CPUC must develop ratepayer protections and other relevant rules before this can happen. It is anticipated that the CPUC will develop these rules in 2011.
  - Note: End use customers must be within the ISO control area to participate. The ISO does not have DR products at the interties.

4. What is a CSP/DRP?
  - A CSP is a Curtailment Service Provider and a DRP is a Demand Response Provider. Both are common terms for an entity that provides demand response services to electricity customers and, who can in-turn, offer the load adjustment capability of those customers as a demand response resource into the wholesale electricity markets. The CAISO prefers and uses the term Demand Response Provider (DRP). This is an entity that executes the Proxy Demand Resource Agreement and will facilitate demand response from Proxy Demand Resource(s) within the CAISO wholesale market.
5. What services can I provide?
  - The PDR product allows customer end use loads to participate in the CAISO markets by bidding their demand responsive loads into the Day Ahead market, Residual Unit Commitment (RUC), Real Time energy, and Non Spinning Reserve Ancillary Service.
6. What is a demand response (DR) event and how is it triggered?
  - A DR event, meaning the time for a demand response, is identified through the optimization of the market based on the market rules, the bidding strategy, and the market service. Unlike retail demand response programs, a DR event is specific to the bidding of the PDR Resource ID in the wholesale market; just like supply from a generator.
7. Web page location
  - Here is the location for additional information on the Proxy Demand Resource product:  
<http://www.aiso.com/23bc/23bc873456980.html>

### **Qualifications**

1. Who is eligible to participate in the CAISO markets on behalf of Proxy Demand Resources?
  - A PDR resource is represented in the CAISO market by the Scheduling Coordinator (SC) for the Demand Response Provider. The Demand Response Provider enters into a Proxy Demand Resource Agreement with the CAISO. The Demand Response Provider will request, through the Demand Response System, a Proxy Demand Resource ID to represent the end use customer(s) providing the demand response. To perform the interfacing functions with the CAISO, the DRP must use a CAISO certified SC.
2. How does one enroll in the DR program?
  - Individual end use customers should contact a Demand Response Provider or their electric utility. If the entity would like to be its own Demand Response Provider, the entity must file a Proxy Demand Resource Agreement with the CAISO. <http://www.aiso.com/27dc/27dc82c4502a0.pdf> and complete the Proxy Demand Resource Agreement Information Request Sheet <http://www.aiso.com/docs/2005/10/28/2005102815281216540.html> (see "Proxy Demand Resource Agreement Information Request Sheet").
  - If the entity would like to become a Scheduling Coordinator to represent the Demand Response Provider, they would need to follow the Scheduling Coordinator process as outlined in the CAISO's Business Practice Manual for Scheduling Coordinator Certification and Termination. <https://bpm.aiso.com/bpm/bpm/list>.
3. Is there a fee to participate in DR?
  - There are no additional fees or charges for participating as a Proxy Demand Resource in the CAISO market. There are administrative, Grid Management Charges (GMC), and market fees associated with participation in the CAISO markets. The Scheduling Coordinator can provide information about these charges and how they plan to allocate the charges to their participants.
4. What agreements are needed between the Demand Response Provider and the electric utility or Load Serving Entity (LSE)?
  - The CAISO does not define the specific agreements needed between the DRP and the Load Serving Entity of the end use customers used in a PDR resource. The required agreements between these entities will be defined by the Local Regulatory Agency.
5. Why do I need an agreement with my load serving entity if I'm participating in the CAISO program?
  - The CAISO has not completed an analysis of terms and conditions that should be incorporated into agreements between an LSE and DRP. However, we anticipate that at a minimum, agreements will be needed to cover the following contractual arrangements: DRP access to end use customer meter data, the DRP is responsible for providing unique meter information needed for registration of the end use customers in a PDR resource ID, and in recognition that the LSE will be responsible for reviewing and approval of the DRP's PDR registration request.

6. Can end-use customers participate in more than one DR program?
  - Yes, but there must be a one-to-one relationship between an end use customer and a Proxy Demand Resource (as well as a Demand Response Provider). A Proxy Demand Resource may also be eligible to participate in retail Demand Response programs such as critical peak pricing, air conditioning cycling, and the capacity bidding program, etc.
7. What is the minimum volume of load reduction required to participate in the DR program?
  - The minimum load size for a Proxy Demand Resource is 0.1 MW (100 kW). Smaller loads may be aggregated together to achieve the 0.1 MW threshold. The demand response bid segments may be as low as 0.01 MW (10 kW).
8. What is the required response time for DR participants?
  - The Proxy Demand Resource is a market product; because of this the required response times are based upon the market award received by the Proxy Demand Resource.
9. Can an end-user who meets the minimum volume contract directly with the CAISO?
  - If an end-user would like to participate directly with the CAISO, they would first need to become a Demand Response Provider. After that, they would need to use a certified Scheduling Coordinator to interface with the CAISO.
10. Is there a minimum amount of time required per load reduction event to participate in the event?
  - The Proxy Demand Resource is a market product. The minimum load reduction period will be based on predefined response times for the PDR, the bid submitted on behalf of the PDR, and the market award received by the PDR.
11. Is there a minimum amount of curtailment required per contract period to participate in DR?
  - A Demand Response Provider does not enter into a contract defining a specific period when they can participate. The CAISO does not dictate a prescribed term or level of participation other than minimum load and bid size. The PDR resource, once assigned to a Demand Response Provider, is free to participate in the market until they no longer want to participate, subject to any contractual requirements imposed by their DRP.
12. How quickly can an end-user begin participating, after they execute a contract with an LSE, DRP or the CAISO?
  - The timing of participation is dependent on the service the Proxy Demand Resource is providing, the contractual relationship between the DRP and the end use loads, and the needed infrastructure for the service being provided.
13. What are the communication requirements between the LSE & DRP and / or the end-user?
  - The CAISO does not prescribe the communication requirements between the entities to achieve the required demand response as awarded. The Proxy Demand Resource must meet the communication requirements of the service being provided (for instance, non-spin requires telemetry and capability to receive a CAISO dispatch). The Proxy Demand Resource must be able to perform based on their awards from the market.
14. Do I need to become a Scheduling Coordinator with the CAISO?
  - The Proxy Demand Resource must be represented in the CAISO market by a certified Scheduling Coordinator that additionally is certified to submit Settlement Quality Meter Data. The Demand Response Provider can be or become a Scheduling Coordinator or they can retain a certified Scheduling Coordinator. The list of certified Scheduling Coordinators is posted at: <http://www.caiso.com/docs/2005/10/28/200510281214421255.pdf>.

## **Registration**

1. What is the registration process for participating DRPs, LSEs, and end-users?
  - Demand Response Providers must enter into a Proxy Demand Response Agreement with the CAISO.
  - The Demand Response Provider must apply for a Proxy Demand Resource ID using the Demand Response System.
  - The DRP must have agreements with the Load Serving Entities that serve the end-use loads that the DRP will be aggregating. There are no requirements for Load Serving Entities and end use customers to enter into agreements with the CAISO.
2. How long is the contract / agreement period with the CAISO?
  - The Proxy Demand Resource Agreement does not have a specified end date.

3. Can an end-use customer change DRPs during a contract period?
  - The CAISO will not impose a contract period with an end use customer. The end use customer must have a contractual relationship with a Demand Response Provider. A change in the DRP representing an end use customer will require a registration change in the CAISO Demand Response System by the effected Demand Response Providers. The date of the change is important because it effects when the end users metered load needs to be provided for the proper calculation of the baseline.
  - It is important to note that besides the registration of the resource in the CAISO Demand Response System, the process of switching a DRP is primarily a business consideration between the end use customer the existing DRP, and the new DRP
4. Can end-use customers be registered with more than one DRP or LSE at a time?
  - No. An end-use customer's load at one location can only be represented in a single Proxy Demand Resource at one time. As required by Local Regulatory Agencies, an end use customer can only be represented by one Load Serving Entity at a time, (note: this is regardless of participation in a Proxy Demand Resource product.)
5. How does the DRP verify to the CAISO and LSE that the local regulatory authority allows the customers of the LSE to be part of a third party DRP portfolio?
  - The verification method will be prescribed by the Local Regulatory Authority.
6. How frequently do the DRP and LSE report on who their end-use customers are?
  - It is important for calculating the correct performance of a Proxy Demand Resource to have accurate information about the end use customers within a Proxy Demand Resource. This will be maintained by the Demand Response Provider in the Demand Response System. Meter data must be submitted daily for all entities to ensure the accuracy of the baseline calculations for a demand response event.
7. Will the CAISO maintain the database of end-use customers and the DRP or LSE relationships? How do I access that information?
  - The CAISO will maintain a Demand Response System that will allow the Demand Response Provider to submit the required information for a Proxy Demand Resource. This system will accommodate the registration of Proxy Demand Resources, the submittal of meter data, and the calculation of the Proxy Demand Resource response performance. A DRP will be able to see their information. The SC for the DRP will be able to see that DRP's information. The LSE/SC of the underlying load of the PDR resource will be able to see registration information for customers that they represent, baseline and performance calculations, and the historic data used to establish the baseline). End-use loads will not have access to the Demand Response System. Access to the Demand Response System will be controlled by the CAISO's certification process as described on the CAISO website.

### **Notification**

1. Who notifies the end user when a DR event is initiated?
  - Notification of the end user "customers" to achieve the demand response is the responsibility of the Demand Response Provider.
2. Does the CAISO require notification when an end-user changes DRP or LSEs?
  - Yes, the registration process is required to ensure that the Demand Response Provider and the Load Serving Entity are recognized. The CAISO must recognize the relationship between the DRP and LSEs to ensure accurate settlements.
3. Does the LSE need a copy of schedule changes and dispatches resulting from DRP bids submitted to the CAISO?
  - No. Schedule changes and CAISO dispatches are communicated to the Scheduling Coordinator by the CAISO. It is expected that the SC will share this information with the DRP. The decision to share this information with the LSE is between the DRP and LSE.
4. Does the DRP need a copy of the LSE's scheduled energy awarded by the CAISO?
  - No, there is no need for the Demand Response Provider to know the quantity of load awarded to a Load Serving Entity by the CAISO.

5. What will the method of communication be between the CAISO and the DRP and the CAISO and LSE for DR events?
  - The CAISO is not establishing any new communication infrastructure or processes to transmit awards and dispatches. The CAISO will receive bids through the Scheduling Infrastructure and Business Rules (SIBR) system. Awarded bids will be available through the CAISO Market Results Interface (CMRI) system and real-time energy awards will be dispatched through the Automated Dispatch System (ADS). It is the DRP's responsibility to determine how the award or dispatch is communicated to its end use customers.
6. What minimum types of communication equipment will the DRP and its customers need to have in order to receive DR event notifications from the CAISO?
  - The type of communication equipment needed by the Demand Response Provider and its end use customers is dependent on the market products and the relation between the DRP and the Scheduling Coordinator, (e.g. real time energy awards and non spin ancillary services require the use of the CAISO Automated Dispatching System (ADS). The CAISO will require that the Demand Response Provider be capable of achieving the demand response when required.
7. How will the DR event notification be transmitted to the DRP and /or customers of the DRP, and what response time is required after the notification is received?
  - The Demand Response Provider and their Scheduling Coordinator has access to the systems that provide the Proxy Demand Resource's awards (ie. Day Ahead, RUC, and Real Time awards) and ancillary services dispatches (if involved in this service). The Demand Response Provider is responsible to provide enough information about the DR event to their end use customers to enable them to achieve the required demand response.
8. What is the notification time for a Demand Resource?
  - The PDR is a market product that a Demand Response Provider (DRP) will offer to our markets through a Scheduling Coordinator. With the offer into the CAISO market, the DRP would be providing the time and duration they want to perform. If the DRP is awarded then they will have information, based on their award. For instance, a Day Ahead award will be known a day in advance. However, a real-time and non-spin dispatch would be within the market timelines for dispatching, e.g. 10 minutes for non-spin. The CAISO would expect that the DRP will offer services its PDR is capable of providing. If participating in the Day Ahead market, notification would be hourly for energy and Ancillary Service. If participating in the Real-Time market notification would be five minutes for energy and 15 minutes for Ancillary Services.
9. Is there a clearing price published for the capacity?
  - All of the prices are published in OASIS.

### **Scheduling and Bidding**

1. Who creates and submits bids to the CAISO?
  - A Scheduling Coordinator will represent the Demand Response Provider by bidding into CAISO markets. This requires close coordination and communication between the Scheduling Coordinator and the Demand Response Provider.
2. Will DR be utilized in the Day Ahead and Real Time markets?
  - Proxy Demand Resources can participate in both the Day Ahead and Real Time markets.

### **Metering & Telemetry**

1. What are the metering and telemetry requirements to participate in DR?
  - For market settlement, the CAISO requires that the end use customers have interval meters that meet the Local Regulatory Authorities' requirements. For market services that require telemetry (non-spin ancillary services and curtailable load of greater than 10 MWs), the telemetry must meet the CAISO's technical requirements. Telemetry technical requirements are posted at: <http://www.aiso.com/thegrid/operations/gcp/index.html>. See Metering Business Practice Manual (BPM) at: <https://bpm.aiso.com/bpm/bpm/version/000000000000132>
2. What is the length of time over which a DR event will be measured?
  - The length of time for measurement of the demand response event is based on bid submitted on behalf of the PDR and the corresponding award.
3. Is the same meter applicable for settlement and validating compliance of services provided by the LSE (i.e., energy) and the DRP (i.e., Ancillary Services)?

- All CAISO settlement activities are based on settlement quality meter values provided for the Proxy Demand Resource.
4. Can a DRP provide revenue quality meter data instead of providing telemetry data to support settlement of DR response?
    - All CAISO settlement activities are performed with settlement quality meter data. Telemetry data is not used for market settlement. In cases where the Proxy Demand Resource is representing a direct load control program, the resource may require a unique baseline that must be agreed upon by the CAISO.

## **Settlements**

1. If I'm an end-user, how do I get paid for my demand response?
  - The rates that are used for CAISO settlements are established through the wholesale market. End users will need to understand and agree upon how they will be compensated by their Demand Response Provider for their participation and performance in the PDR program.
2. How will the CAISO settle with a DRP or LSE if the end-user changes providers during the agreement period?
  - Any changes to the Proxy Demand Resource must be reflected in the bidding, metering, baseline calculation, and settlements; and may impact the CAISO masterfile database. Therefore, the Demand Response Provider will need to assure that registrations are updated in the Demand Response System. Also, the Proxy Demand Resource does not have a prescribed agreement period. The effective dates of the Proxy Demand Resource are maintained in the masterfile and the associated end use customers and LSE is registered in the Demand Response System.
3. What is baseline energy usage and how will it be calculated?
 

The customer baseline (CBL) is used to calculate how much a PDR should be paid for reducing load. The CBL establishes a method for estimating how much electricity a customer would have used had it not reduced its use in response to a DR event. The PDR product will start with two types of baselines. The first will be used for the majority of the resources and is a 10 in 10 non-event day selection method (an average of the load during the last 10 eligible days). The second is an agreed upon methodology that will be used for direct load control type programs (e.g. air conditioning cycling) which are composed of many end use customers. Both of these baseline methods are discussed in the implementation plan: <http://www.caiso.com/thegrid/operations/gcp/index.html>. For resource providing ancillary service review the ISO Monitoring and Communication Requirements - Non-AGC Units Providing Ancillary Services document. For resource greater than 10 MW and only providing energy, review the ISO Monitoring and Communications Requirements - Generating Units Providing Only Energy and Supplemental Energy document.
4. What CAISO settlement capabilities are required between the DRP and LSE to purchase the right to curtail energy? Are they at the retail price?
  - The CAISO is responsible for the wholesale settlement of the Proxy Demand Resource. The relationship between the Demand Response Provider and the Load Serving Entity are governed by the Local Regulatory Authority. This would include the method and process for any settlements between these two parties.
5. How is the demand response provided by the DRP allocated to the various LSEs?
  - During the registration process of a Proxy Demand Resource the Demand Response Provider must register the end use customers by CAISO sub-Load Aggregation Points (LAP) and by Load Serving Entity. In the process of assigning a Proxy Demand Resource to a Demand Response Provider, the underlying load of the Proxy Demand Resource will be associated to a single Load Serving Entity.
6. How is pricing determined?
  - Pricing for PDR in the wholesale market is based on the Day-ahead or Real-time market LMP, depending in which market the PDR is participating. If a PDR is located at a single node, then the price is the LMP at that node. If the PDR is a custom aggregation of loads, then it is the weighted average LMP of the nodes where that PDR load is located. If is an aggregated Default PDR, then it is the LMP of the sub-LAP where that PDR loads are located. The ISO will settle PDRs through the Scheduling Coordinator at one of these respective prices depending on the PDR configuration.

7. Would a DRP incur a penalty for non-performance of its RA resources in PDR?
  - There are no non-performance penalties for PDR resources in terms of additional risk. However there are settlement consequences for non-performance for AS resources since they would have received capacity payments for energy that they did not deliver. These consequences are considered No-pay and they involve: undelivered capacity, unavailable capacity, and undispachable capacity. These consequences protect the market from paying for services that were not provided. There are no additional penalties attached to these consequences.
8. Are the prices in OASIS financially binding?
  - The prices in the OASIS system are not binding prices. The CAISO utilize prices in the CMRI system for settlements. However even the CMRI prices are subject to adjustments for a short period of time.

### **Training**

1. What are the training requirements to participate in DR?
  - There are training requirements associated with the participation in the CAISO markets if the participant does not use an authorized scheduling agent. These training requirements are associated with becoming a new scheduling coordinator. Should the participant use a scheduling agent, the Scheduling Agent will represent the Demand Response Provider in the ISO Markets. There are no additional training requirements.
2. Does the CAISO provide training to help me participate in DR?

The CAISO will offer computer based training for the demand response program designed to address new participant needs and will be focused on the market rules and requirements associated with the demand response program. In addition, the CAISO offers on-site customized training for participants who wish to receive demand response training at their customer site.
3. How do I get involved in CAISO training programs?
  - An online course catalog will be available through the CAISO Training website for upcoming classes. Participants may also send emails or inquiries to: [MarketTraining@caiso.com](mailto:MarketTraining@caiso.com).

### **Current Participants**

1. Who is currently participating in PDR?
  - The current LSE, UDC and DRPs are listed at: <http://www.caiso.com/2822/2822d48747fe0.pdf>.