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hours for which the Meter Data will be collected, the calculation will work sequentially backwards from the Trading Day under examination up to a maximum of forty-five (45) calendar days prior to the Trading Day, including only business days if the Trading Day is a business day, including only non-business days if the Trading Day is a non-business day, and excluding hours in which the Proxy Demand Resource was subject to an Outage or previously provided Demand Response Services (other than capacity awarded for AS or RUC) pursuant to a Bid at or above the net benefits test set forth in Section 30.6.3, or the Reliability Demand Response Resource was subject to an Outage as described in the Business Practice Manual or previously provided Demand Response Services pursuant to a Bid at or above the net benefits test set forth in Section 30.6.3, except as discussed below. The calculation will have complete Meter Data for this purpose if and when it is able to collect Meter Data for its target number of hours the same as the Trading Hour, which target number is ten (10) hours if the Trading Day is a business day or four (4) hours if the Trading Day is a non-business day. If it is not possible to collect Meter Data for the target number of hours, the Meter Data will include a minimum of five (5) hours if the Trading Day is a business day or a minimum of four (4) hours if the Trading Day is a non-business day. If it is not possible to collect Meter Data for the minimum number of hours described above, the Generator Output Baseline will be set at zero.

- (b) The baseline amount of Energy provided by the behind-the-meter generation will be calculated on the simple hourly average of the collected Meter Data.
- (c) In calculating the Generator Output Baseline pursuant to Section 4.13.4.2(a), the Meter Data must be set to zero in any Settlement Interval in which the behind-the-meter generation is charging.
- (d) In any Settlement Interval where the behind-the-meter generation is exporting Energy (i.e., where the behind-the-meter generation Energy output exceeds its location Demand), the Meter Data will consist of the Energy output of the behind-the-meter generation up to, but not including, the output greater than its facility Demand that would

represent an export of Energy from that location.

#### **4.13.4.3 Control Group Methodology**

Scheduling Coordinators will be responsible for calculating the Customer Load Baseline for Proxy Demand Resources or Reliability Demand Response Resources using the control group methodology as follows:

- (a) Prior to any Demand Response Event, a randomized control group of End Users that are registered in the Demand Response System but not responding to CAISO dispatch as Proxy Demand Resources or Reliability Demand Response Resources must be submitted to the CAISO. But for any Demand Response Event, the control group must have nearly identical Demand patterns in aggregate as the Proxy Demand Resources or Reliability Demand Response Resources. The control group must be geographically similar to the Proxy Demand Resources or Reliability Demand Response Resources such that they experience the same weather patterns and grid conditions. The control group must consist of 150 distinct End Users or more. Prior to use of the control group baseline methodology, Scheduling Coordinators will be responsible for validating the control group pursuant to Section 4.13.4.3(c).
- (b) The control group's aggregate Demand during the same Trade Date and Trading Hour(s) as the Demand Response Event, divided by the relevant number of End Users, will constitute the Customer Load Baseline.
- (c) Scheduling Coordinators are responsible for validating that the control group accurately represents its Proxy Demand Resources or Reliability Demand Response Resources. As described in the Business Practice Manual, to validate the control group, Meter Data of the control group and the Proxy Demand Resources or Reliability Demand Response Resources from the previous seventy-five (75) days must be evaluated, excluding days where the Proxy Demand Resources or Reliability Demand Response Resources provided Demand Response Services or participated in a utility demand response program. Using the most recent days, at least twenty (20) eligible days of Meter Data must be used for validation. From these days, an average of the hourly load profile from

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12 p.m. to 9 p.m. must be developed for the Proxy Demand Resources or Reliability Demand Response Resources and the control group by day and by hour. The average hourly Demand of the Proxy Demand Resources or Reliability Demand Response Resources is then regressed against the average hourly Demand of the control group. As described in the Business Practice Manual, the control group must statistically demonstrate (i) lack of bias and (ii) sufficient statistical precision with (iii) sufficient confidence. Control groups that fail these screens may not be used.

- (d) For Proxy Demand Resources or Reliability Demand Response Resources whose number of End Users have not changed by more than ten (10) percent in the prior month, the control group must be re-validated every other month. For Proxy Demand Resources or Reliability Demand Response Resources whose number of End Users have changed by more than ten (10) percent in the prior month, control groups must continue to be re-validated monthly.
- (e) Control group randomization, equivalence, and validation, and all Demand Response Event calculations are subject to CAISO audit for three (3) years from the date Demand Response Event. All results must be reproducible, including underlying interval data, randomization, validation, bias, confidence, precision, and analysis.

**4.13.4.4 Five-in-Ten Methodology**

Scheduling Coordinators will be responsible for calculating the Customer Load Baseline for Proxy Demand Resources or Reliability Demand Response Resources using the five-in-ten methodology as follows:

- (a) Meter Data for the Proxy Demand Resource or Reliability Demand Response Resource will be collected for calendar days preceding the Trading Day on which the Demand Response Event occurred for the Customer Load Baseline. Where the Proxy Demand Response or Reliability Demand Response Resource may elect to provide, at all times, Meter Data reflecting the total gross consumption, independent of any offsetting Energy produced by behind-the-meter generation. The calendar days for which the Meter Data will be collected will be determined by working sequentially backwards from the Trading

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Day under examination up to a maximum of forty-five (45) calendar days prior to the Trading Day, including only business days if the Trading Day is a business day, including only non-business days if the Trading Day is a non-business day, and excluding calendar days on which the Proxy Demand Resource was subject to an Outage or previously provided Demand Response Services (other than capacity awarded for AS or RUC) or the Reliability Demand Response Resource was subject to an Outage as described in the Business Practice Manual or previously provided Demand Response Services, except as discussed below. The collection of Meter Data for this purpose stops upon reaching the target number of calendar days, which is ten (10) calendar days if the Trading Day is a business day or five (5) calendar days if the Trading Day is a non-business day. From the target days, the five (5) business days and three (3) non-business days with the highest totalized load during the hours when the Demand Response Services were provided will be used. If these targets cannot be met, the Meter Data will instead be used for the calendar days on which the Proxy Demand Resource was subject to an Outage or previously provided Demand Response Services (other than capacity awarded for AS or RUC) or the Reliability Demand Response Resource was subject to an Outage as described in the Business Practice Manual or previously provided Demand Response Services, and for which the amount of totalized load was highest during the hours when the Demand Response Services were provided in the forty-five (45) calendar days prior to the Trading Day.

- (b) For business days, the Scheduling Coordinator will be responsible for calculating the simple hourly average of the collected Meter Data to determine a baseline amount of Energy provided by the Proxy Demand Resource or Reliability Demand Response Resource. For non-business days, the Scheduling Coordinator will be responsible for calculating a weighted average of the collected Meter Data to determine a baseline as follows: the day closest to the Demand Response Event receives a weight of fifty (50) percent, the next closest receives a weight of thirty (30) percent, and the furthest receives a weight of twenty (20) percent.

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- (c) Unless otherwise requested by the Demand Response Provider and approved by the CAISO, the Scheduling Coordinator will be responsible for multiplying the amount calculated pursuant to Section 4.13.4.4(b) by a percentage of the ratio of:
- (i) the average Demand of Proxy Demand Resource or Reliability Demand Response Resource during (a) the period from four (4) to two (2) hours preceding the Trading Intervals, and (b) the period from two (2) to four (4) hours following the Trading Intervals on which the Proxy Demand Resource or Reliability Demand Response Resource provided Demand Response Services during the Demand Response Event to
  - (ii) the average Demand of the Proxy Demand Resource or Reliability Demand Response Resource during (a) the period from four (4) to two (2) hours preceding the Trading Intervals, and (b) the period from (2) to four (4) hours following the Trading Intervals for which Meter Data was collected pursuant to Section 4.13.4.4(a).

To provide maximum adjustment factor of 1.4, the adjusted percentage can have a maximum value of one hundred-forty (140) percent and a minimum value of seventy-one (71) percent.

- (d) If the Proxy Demand Resource or Reliability Demand Response Resource elects to provide Meter Data reflecting the total gross Demand at all times, independent of any offsetting Energy, the offsetting Energy must be separated from Load to enable the accurate calculation of total gross consumption.

**4.13.4.5 Weather Matching Methodology**

Scheduling Coordinators will be responsible for calculating the Customer Load Baseline for Proxy Demand Resources or Reliability Demand Response Resources using the weather matching methodology as follows:

- (a) The Scheduling Coordinator will be responsible for collecting Meter Data for the Proxy Demand Resource or Reliability Demand Response Resource for calendar days preceding the Trading Day on which the Demand Response Event occurred. Where the

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Proxy Demand Response or Reliability Demand Response Resource uses behind-the-meter generation to offset Demand, the Proxy Demand Resource or Reliability Demand Response Resource may elect to provide, at all times, Meter Data reflecting the total gross consumption, independent of any offsetting Energy produced by behind-the-meter generation. The calendar days for which the Meter Data will be collected will be determined by working sequentially backwards from the Trading Day under examination up to a maximum of ninety (90) calendar days prior to the Trading Day, including only business days if the Trading Day is a business day, including only non-business days if the Trading Day is a non-business day, and excluding calendar days on which the Proxy Demand Resource was subject to an Outage or previously provided Demand Response Services (other than capacity awarded for AS or RUC) or the Reliability Demand Response Resource was subject to an Outage as described in the Business Practice Manual or previously provided Demand Response Services. As detailed in the Business Practice Manual, from the ninety (90) calendar days prior to the Trading Day, the four (4) days with the closest daily maximum temperature to the Trading Day will be used to calculate the baseline.

- (b) The Scheduling Coordinator will be responsible for calculating the simple hourly average of the collected Meter Data to determine a baseline amount of Energy provided by the Proxy Demand Resource or Reliability Demand Response Resource.
- (c) Unless otherwise requested by the Demand Response Provider and approved by the CAISO, the Scheduling Coordinator will be responsible for multiplying the amount calculated pursuant to Section 4.13.4.5(b) by a percentage equal to the ratio of:
  - (i) the average Demand of the Proxy Demand Resource or Reliability Demand Response Resource during (a) the period from four (4) to two (2) hours preceding the Trading Intervals, and (b) the period from two (2) to four (4) hours following the Trading Intervals on which the Proxy Demand Resource or Reliability Demand Response Resource provided the Demand Response Services during the Demand Response Event to

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- (ii) the average Demand of the Proxy Demand Resource or Reliability Demand Response Resource during (a) the period from four (4) to two (2) hours preceding the Trading Intervals, and (b) the period from two (2) to four (4) hours following the Trading Intervals for which Meter Data was collected pursuant to Section 4.13.4.5(a).

To provide a maximum adjustment factor of 1.4, the adjusted percentage can have a maximum value of one hundred-forty (140) percent and a minimum value of seventy-one (71) percent.

- (d) If the Proxy Demand Resource or Reliability Demand Response Resource elects to provide Meter Data reflecting the total gross Demand at all times, independent of any offsetting Energy, the offsetting Energy must be metered separate from Load to enable the accurate calculation of total gross consumption.

#### **4.13.5 Characteristics of PDRs and PDRRs**

##### **4.13.5.1 Availability to Provide Demand Response Services**

Each Proxy Demand Resource and Reliability Demand Response Resource shall become available to provide Demand Response Services pursuant to the Demand Response Provider Agreement following the date on which the Demand Response Provider Agreement is executed by all parties thereto, as specified by the parties, and shall be available to provide Demand Response Services until the Demand Response Provider Agreement is terminated as set forth in the Demand Response Provider Agreement.

##### **4.13.5.2 Size Limits for PDRs and PDRRs**

###### **4.13.5.2.1 PDRs**

The minimum Load curtailment of a Proxy Demand Resource shall be no smaller than 0.1 MW. Loads may be aggregated together to achieve the 0.1 MW threshold. There is no upper limit on the maximum Load curtailment of a Proxy Demand Resource.

###### **4.13.5.2.2 RDRRs**

The minimum Load curtailment of a Reliability Demand Response Resource shall be no smaller than 0.5 MW. Loads may be aggregated together to achieve the 0.5 MW threshold. The maximum Load curtailment of a Reliability Demand Response Resource that selects the Discrete Real-Time Dispatch

Option shall be no larger than 50 MW. There is no upper limit on the maximum Load curtailment of a Reliability Demand Response Resource that selects the Marginal Real-Time Dispatch Option.

#### **4.13.5.3 Dispatch Parameters for RDRRs**

Each Reliability Demand Response Resource shall be capable of reaching its maximum Load curtailment within forty (40) minutes after it receives a Dispatch Instruction, and shall be capable of providing Demand Response Services for at least four (4) consecutive hours per Demand Response Event. Each Reliability Demand Response Resource shall have a minimum run time of no more than one (1) hour.

#### **4.14 Relationship Between the CAISO and CBEs**

Only entities that satisfy all of the requirements specified in this Section 4.14 will be certified by the CAISO to be Convergence Bidding Entities and thus be authorized by the CAISO to submit Virtual Bids. A Convergence Bidding Entity may submit Virtual Bids only through a Scheduling Coordinator, which can be either the Convergence Bidding Entity itself or another entity that is a Scheduling Coordinator. A Convergence Bidding Entity may be represented by only one Scheduling Coordinator at any given time.

##### **4.14.1 Procedure to Become a Convergence Bidding Entity**

###### **4.14.1.1 Convergence Bidding Entity Application**

To become a Convergence Bidding Entity, a Convergence Bidding Entity applicant must submit a completed written application, as provided in the applicable form posted on the CAISO Website, to the CAISO by mail or in person.

###### **4.14.1.2 CAISO Information**

The CAISO will provide the following information, in its most current form, on the CAISO Website and, upon request by a Convergence Bidding Entity applicant, the CAISO will send the requested information by electronic mail:

- (a) the Convergence Bidding Entity application form; and
- (b) the CAISO Tariff and Business Practice Manuals.

###### **4.14.1.3 Convergence Bidding Entity Applicant Submits Application**

At least sixty (60) Business Days before the date on or after which the Convergence Bidding Entity applicant proposes to start submitting Virtual Bids, the Convergence Bidding Entity applicant must return a completed application form.



**4.14.1.4 Notice of Receipt**

Within three (3) Business Days of receiving the application, the CAISO will send written notification to the Convergence Bidding Entity applicant that it has received the application.

**4.14.1.5 CAISO Review of Application**

Within ten (10) Business Days after receiving an application, the CAISO will notify the Convergence Bidding Entity applicant whether the Convergence Bidding Entity applicant has submitted all necessary information as set forth in Section 4.14.1.

**4.14.1.5.1 Information Requirements**

The Convergence Bidding Entity applicant must submit with its application:

- (a) the proposed date on or after which the Convergence Bidding Entity applicant proposes to start submitting Virtual Bids, which may not be less than sixty (60) Business Days after the date the application was filed, unless waived by the CAISO;
- (b) an explanation of whether the Convergence Bidding Entity applicant is a Rated or Unrated Public/Private Corporation, a Rated or Unrated Governmental Entity, a Local Publicly Owned Electric Utility, or another type of entity, and a chart, or equivalent information, depicting the Convergence Bidding Entity applicant's corporate structure, including all parent companies of the Convergence Bidding Entity applicant, all subsidiaries of the Convergence Bidding Entity applicant, and all Affiliates of the Convergence Bidding Entity applicant that meet the requirements of Section 4.14.2.1; and
- (c) the name of the Scheduling Coordinator and SCID(s) that the Convergence Bidding Entity anticipates will be used for submitting Virtual Bids on behalf of the Convergence Bidding Entity.

Additional instructions for completing the foregoing requirements will be set forth in the applicable Business Practice Manual(s) posted on the CAISO Website.

**4.14.1.6 Deficient Application**

In the event that the CAISO determines that the application is deficient, the CAISO will send an electronic notification of the deficiency to the Convergence Bidding Entity applicant within ten (10) Business Days of

receipt by the CAISO of the application explaining the deficiency and requesting additional information.

**4.14.1.6.1 Additional Information**

Once the CAISO requests additional information, the Convergence Bidding Entity applicant has five (5) Business Days, or such longer period as the CAISO may agree not to exceed five (5) additional Business Days, to provide the additional material requested by the CAISO.

**4.14.1.6.2 CAISO Approval or Rejection of an Application**

If the Convergence Bidding Entity applicant does not submit additional information within five (5) Business Days or the longer period referred to in Section 4.14.1.6.1, the application may be rejected by the CAISO.

**4.14.1.7 CAISO Approval or Rejection of an Application**

**4.14.1.7.1 Approval or Rejection Notification**

- (a) If the CAISO approves the application, it will send a written notification of approval. In addition, the CAISO will provide an executable Convergence Bidding Entity Agreement.
- (b) If the CAISO rejects the application, the CAISO will send an electronic notification of rejection stating one or more of the following grounds:
  - (i) incomplete information; or
  - (ii) non-compliance with any other CAISO Tariff requirements.

Upon request, the CAISO will provide guidance as to how the Convergence Bidding Entity applicant can cure the grounds for the rejection.

**4.14.1.7.2 Time for Processing Application**

The CAISO will make a decision whether to accept or reject the application within ten (10) Business Days of receipt of the application. If more information is requested, the CAISO will make a final decision within ten (10) Business Days of the receipt of all outstanding or additional information requested.

**4.14.1.8 Convergence Bidding Entity Applicant's Response**

**4.14.1.8.1 Convergence Bidding Entity Applicant's Acceptance**

If the CAISO accepts the application, the Convergence Bidding Entity applicant must return the partially executed Convergence Bidding Entity Agreement previously provided by the CAISO.

**4.14.1.8.2 Convergence Bidding Entity Applicant's Rejection**

**4.14.1.8.2.1 Resubmittal**

If the CAISO rejects the application, the Convergence Bidding Entity applicant may resubmit its application at any time.

#### **4.14.1.8.2.2 Appeal**

The Convergence Bidding Entity applicant may also appeal the rejection of an application by the CAISO. An appeal must be submitted within twenty (20) Business Days following the CAISO's issuance of a notification of rejection.

#### **4.14.1.9 Final Certification**

The Convergence Bidding Entity applicant will become a Convergence Bidding Entity when:

- (a) its application has been accepted;
- (b) it has entered into a Convergence Bidding Entity Agreement and any other applicable agreements with the CAISO; and
- (c) it has fulfilled all requirements of Section 4.14.1.5.1.

The CAISO will not certify a Convergence Bidding Entity applicant as a Convergence Bidding Entity until the Convergence Bidding Entity applicant has completed all the above-referenced requirements to the CAISO's satisfaction, at least ten (10) Business Days before the commencement of service.

### **4.14.2 Convergence Bidding Entity's Ongoing Obligations**

#### **4.14.2.1 Affiliate Disclosure Requirements**

Each Convergence Bidding Entity applicant will notify the CAISO of any Affiliate that is a Market Participant, any Affiliate that participates in an organized electricity market in North America, and any guarantor of any such Affiliate. Upon request, a Convergence Bidding Entity applicant will provide the CAISO with information on each such Affiliate, including information concerning the ownership structure of such Affiliate and the business purpose of such Affiliate. These requirements will continue to apply after a Convergence Bidding Entity applicant becomes a Convergence Bidding Entity.

#### **4.14.2.2 Obligation to Report a Change in Filed Information**

Each Convergence Bidding Entity has an ongoing obligation to inform the CAISO of any changes to any of the information submitted by it to the CAISO as part of the application process, including but not limited to any changes to such information after the application is initially submitted, any changes to the additional information requested by the CAISO, and changes regarding its Affiliates that satisfy the















Aggregation(s) provides Ancillary Services, through telemetry to the CAISO's EMS in accordance with the CAISO's standards for direct telemetry and consistent with the requirement for telemetry set forth in Section 7.6.1.

#### **4.17.6 Operating Requirements**

Distributed Energy Resource Aggregations will respond to CAISO Dispatch Instructions. The CAISO may dispatch a Distributed Energy Resource Aggregation to the extent the Distributed Energy Resource Aggregation bids or schedules Energy or Ancillary Services into the CAISO Markets and receives an award. The CAISO may also issue an Exceptional Dispatch Instruction for the Distributed Energy Resource Aggregation for reliability pursuant to Section 34.10. Distributed Energy Resource Aggregations shall respond to Dispatch Instructions consistent with Generation Distribution Factors for the Distributed Energy Resource Aggregation.

Each Distributed Energy Resource Provider will operate its Distributed Energy Resource Aggregation(s) in a manner consistent with limitations or operating orders established by the Utility Distribution Company or Metered Subsystem. Scheduling Coordinators for Distributed Energy Resources Providers shall submit Outages to the CAISO as necessary to reflect any distribution constraints impacting Distributed Energy Resources that comprise a Distributed Energy Resource Aggregation under its control. The CAISO shall have the authority to coordinate and approve Outage schedules for the Distributed Energy Resource Aggregation(s) listed in a Distributed Energy Resource Provider Agreement, in accordance with the provisions of Section 9.