4.13.4 Performance Evaluation Methodologies for PDRs and RDRRs

The following methodologies may be utilized to calculate Customer Load Baselines and Demand Response Energy Measurements for Proxy Demand Resources and Reliability Demand Response Resources. Proxy Demand Resources and Reliability Demand Response Resources consisting of residential End Users may elect to use the ten-in-ten methodology, metering generator output methodology, control group methodology, five-in-ten methodology, or weather matching methodology. Proxy Demand Resources and Reliability Demand Response Resources consisting of non-residential End Users may elect to use the ten-in-ten methodology, metering generator output methodology, control group methodology, or weather matching methodology. Proxy Demand Resources providing Ancillary Services must submit Meter Data for the intervals immediately preceding, during, and following the Trading Interval(s) in which the Proxy Demand Response Resources were awarded Ancillary Services. As specified in the Business Practice Manual, the CAISO will retain authority to calculate or correct Customer Load Baselines and Demand Response Energy Measurements for those resources that used the CAISO’s Demand Response System, until all relevant metering, settlement, and correction windows have lapsed since the CAISO retired its ability to calculate on behalf of Scheduling Coordinators in the Demand Response System.

4.13.4.1 Ten-in-Ten Baseline Methodology

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

(a) Meter Data will be collected 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 Proxy Demand Resource 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 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 four (4) calendar days if the Trading Day is a non-business day. If these targets cannot be met, a minimum of five (5) calendar days if the Trading Day is a business day or a minimum of four (4) calendar days if the Trading Day is a non-business day must be collected. If these targets cannot be met, Meter Data will be collected 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) 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 4.13.4.1(b) by a percentage equal to the ratio of (i) the average load of the Proxy Demand Resource or Reliability Demand Response Resource during the second, third, and fourth hours preceding the hour of the Trading Day on which the Proxy Demand Resource or Reliability Demand Response Resource provided the Demand Response Services during the Demand Response Event to (ii) the average load
of the Proxy Demand Resource or Reliability Demand Response Resource during the same second, third, and fourth hours of the calendar days for which Meter Data has been collected pursuant to Section 4.13.4.1(a). To provide a maximum adjustment factor of twenty (20) percent, the adjusted percentage can have a maximum value of one hundred-twenty (120) percent and a minimum value of eighty (80) 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 separately from Load to enable the accurate calculation of total gross consumption.

4.13.4.2 Metering Generator Output Methodology

For behind-the-meter generation registered in Proxy Demand Resources or Reliability Demand Response Resources and settling Energy Transactions pursuant to Section 11.6.2, the Generator Output Baseline will be calculated as follows:

(a) Meter Data will be collected for the behind-the-meter generation for the same hour as the Trading Hour on calendar days preceding the Trading Day on which the Demand Response Event occurred for which the Generator Output Baseline is calculated. Meter Data will consist of Energy output of the behind-the-meter generation up to, but not including, output that represent an export of energy from that location. To determine the 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 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 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.

(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 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

(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.