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ENERGY EFFICIENCY AND DEMAND MANAGEMENT DEPARTMENT
TARGETED DEMAND MANAGEMENT SECTION

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ENERGY EFFICIENCY AND DEMAND MANAGEMENT PROCEDURE – GENERAL CALCULATING CUSTOMER BASELINE LOAD

FILE: ENERGY EFFICIENCY AND DEMAND MANAGEMENT: MANUAL NO. 1

TARGET AUDIENCE	**CUSTOMERS ENROLLED IN THE RIDER T Rider AC DEMAND RESPONSE PROGRAMS**
NESC REFERENCE	**N/A**

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1.0 INTRODUCTION

This document is based on the NYISO (New York Independent System Operator) Emergency Demand Response Program Manual (12/02/2010 version 6.2 Section 5.2). It is modified and intended for use by Customers and Aggregators enrolled in the Con Edison Demand Response Programs as it provides guidance for calculating the Customer Baseline Load (CBL).

2.0 DEFINITIONS

Refer to Rider T and Rider AC of the Con Edison Schedule for Electricity Service, P.S.C. No. 10 – Electricity.

3.0 SELECT A CBL VERIFICATION METHODOLOGY

3.1 The participant selects the CBL Verification Methodology when they enroll, or are enrolled by their Aggregator, with Con Edison for program participation. The choice of CBL becomes effective when Con Edison accepts the enrollment.

3.2 During enrollment, participants may select either an Average Day CBL or a Weather Adjusted CBL Verification Methodology.

3.3 A change in the CBL Verification Methodology can be made when resources re-enroll in the Programs during each capability period.

4.0 CBL CALCULATION FOR ALL ACCOUNTS

4.1 It is the responsibility of Con Edison to provide the CBL calculation to the Aggregator or Direct Participant.

5.0 AVERAGE DAY CBL VERIFICATION METHODOLOGY

5.1 Average Day CBLs for Weekdays

5.1.1 **Step 1** - Establish the CBL Window (i.e. a set of days that will serve as representative of participant's typical usage.)

a. Determine the participant's peak hourly load during the event window over the past 30 days. This value becomes the initial seed value for the average event period usage level.

b. Beginning with the weekday that is two days prior to the event:

(1) Eliminate any holidays (Memorial Day, Independence Day, Labor Day) as specified by Con Edison.

(2) Eliminate any days when Con Edison declared a DLRP, CSRP, Term-DLM, or Auto-DLM event for which the participant was eligible for payment for a curtailment.

(3) Eliminate any days when NYISO declared a SCR, EDRP, or TDRP event for which the participant was eligible for payment for a curtailment.

(4) Eliminate the day prior to any day when Con Edison declared a DLRP, CSRP, Term-DLM, or Auto-DLM event for which the participant was eligible for payment for a curtailment.

(5) Eliminate the day prior to any day when NYISO declared a SCR, EDRP, or TDRP event for which the participant was eligible for payment for a curtailment.

(6) Create the average daily event period usage for that day, defined as the simple average of the participant's actual usage over the hours that define the event for which the CBL is being developed.

(7) Eliminate low usage days. If the average daily event period usage is less than 25% of the average event period usage level, eliminate that day.

(8) If the day has not been eliminated, update the average event period usage level by including the average daily event period usage for this day. If this is the first day added to the CBL Window, replace the average event period usage level (which was the initial seed value) with the average daily event period usage. Add this day to the CBL Window.

(9) Move back one day and loop to step 1.b.i

(10) Final Weekday CBL Window must contain 10 weekdays.

(11) If 10 weekdays are not found within the 30-day window, then repeat step 1, but ignore both step 1.a and step 1.b.vii

Figure 1 and Figure 2 below shows CBL window selection for a single weekday event. Figure 1 illustrates the reverse order selection of the 10 days of the CBL window. Figure 2 shows the dates of the CBL window for the event.

SUN	MON	TUE	WED	THU	FRI	SAT
JUN 15	JUN 16	JUN 17	JUN 18	JUN 19	JUN 20	JUN 21
JUN 22	JUN 23 ***CBL DAY 10 FOR 7/9***	JUN 24 ***CBL DAY 9 FOR 7/9***	JUN 25 ***CBL DAY 8 FOR 7/9***	JUN 26 ***CBL DAY 7 FOR 7/9***	JUN 27 ***CBL DAY 6 FOR 7/9***	JUN 28
JUN 29	JUN 30 ***CBL DAY 5 FOR 7/9***	JUL 1 ***CBL DAY 4 FOR 7/9***	JUL 2 ***CBL DAY 3 FOR 7/9***	JUL 3 ***CBL DAY 2 FOR 7/9***	JUL 4 *HOLIDAY*	JUL 5
JUL 6	JUL 7 ***CBL DAY 1 FOR 7/9***	JUL 8 *INELIGIBLE DAY (DAY BEFORE)*	JUL 9 *DLRP/CSRP EVENT*	JUL 10	JUL 11	JUL 12

Figure 1: Calendar View of CBL Window Selection - Single Weekday Event Example

EVENT DATE	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10
JUL 9	JUL 7	JUL 3	JUL 2	JUL 1	JUN 30	JUN 27	JUN 26	JUN 25	JUN 24	JUN 23

Figure 2: CBL Window Selection - Single Weekday Event Example

Figure 3 and Figure 4 below shows the CBL windows when multiple weekday events occur. Figure 3 illustrates the reverse order selection of the 10 days of the CBL window for each event. For example, June 27 will be used as Day 1 for the June 30th event and Day 2 for the July 3rd event. Figure 4 shows the dates of the CBL window for each event.

SUN	MON	TUE	WED	THU	FRI	SAT
JUN 15	JUN 16 ***CBL DAY 10 FOR 6/30***	JUN 17 ***CBL DAY 9 FOR 6/30*** ***CBL DAY 10 FOR 7/3***	JUN 18 ***CBL DAY 8 FOR 6/30*** ***CBL DAY 9 FOR 7/3***	JUN 19 ***CBL DAY 7 FOR 6/30*** ***CBL DAY 8 FOR 7/3***	JUN 20 ***CBL DAY 6 FOR 6/30*** ***CBL DAY 7 FOR 7/3***	JUN 21
JUN 22	JUN 23 ***CBL DAY 5 FOR 6/30*** ***CBL DAY 6 FOR 7/3***	JUN 24 ***CBL DAY 4 FOR 6/30*** ***CBL DAY 5 FOR 7/3***	JUN 25 ***CBL DAY 3 FOR 6/30*** ***CBL DAY 4 FOR 7/3***	JUN 26 ***CBL DAY 2 FOR 6/30*** ***CBL DAY 3 FOR 7/3***	JUN 27 ***CBL DAY 1 FOR 6/30*** ***CBL DAY 2 FOR 7/3***	JUN 28
JUN 29	JUN 30 *DLRP/CSRP EVENT*	JUL 1 ***CBL DAY 1 FOR 7/3***	JUL 2 *INELIGIBLE DAY (DAY BEFORE)*	JUL 3 *DRLP/CSRP EVENT*	JUL 4 *HOLIDAY*	JUL 5

Figure 3: Calendar View of CBL Window Selection - Multiple Weekday Events Example

EVENT DATE	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10
JUN 30	JUN 27	JUN 26	JUN 25	JUN 24	JUN 23	JUN 20	JUN 19	JUN 18	JUN 17	JUN 16
JUL 3	JUL 1	JUN 27	JUN 26	JUN 25	JUN 24	JUN 23	JUN 20	JUN 19	JUN 18	JUN 17

Figure 4: CBL Window Selection - Multiple Weekday Events Example

5.1.2 **Step 2** - Establish the CBL Basis. Identify the five days from the 10-day CBL Window to be used to develop CBL values for each hour of the event.

a. Order the 10 days in the CBL Window according to their average daily event period usage level and eliminate the five days with the lowest average daily event period usage.

b. The remaining five days constitute the CBL Basis.

5.1.3 **Step 3** - Calculate Average Day CBL values for the event.

a. For each hour of the event, the CBL is the average of the usage in that hour in the five days that comprise the CBL basis.

5.2 Average Day CBL Verification Methodology for Weekends

5.2.1 **Step 1** - Establish the CBL Window

a. The CBL Window is comprised of the most recent three like (Saturday or Sunday) weekend days. There are no exclusions for Holidays or event days.

5.2.2 **Step 2** - Establish the CBL Basis.

a. Calculate the average daily event period usage value for each of the three days in the CBL Window.

b. Order the three days according to their average daily event period usage level.

c. Eliminate the day with the lowest average value

d. The Weekend CBL Basis contains 2 days.

5.2.3 **Step 3** - Calculate Weekend Average Day CBL values for the event.

a. For each hour of the event, the CBL value is average of usage in that hour in the two days that comprise the CBL basis.

Figure 5 and Figure 6 shows the CBL window selection for a single weekend event taking place on Saturday, 7/26. Figure 5 illustrates the reverse order selection of the 3 previous Saturdays of the CBL window. Figure 6 shows the dates of the CBL window for the event.

SUN	MON	TUE	WED	THU	FRI	SAT
JUN 29	JUN 30	JUL 1	JUL 2	JUL 3	JUL 4 *HOLIDAY*	JUL 5 **CBL DAY 2 FOR 7/26**
JUL 6	JUL 7	JUL 8	JUL 9	JUL 10	JUL 11	JUL 12 **CBL DAY 2 FOR 7/26**
JUL 13	JUL 14	JUL 15	JUL 16	JUL 17	JUL 18	JUL 19 **CBL DAY 1 FOR 7/26**
JUL 20	JUL 21	JUL 22	JUL 23	JUL 24	JUL 25	JUL 26 *DLRP/CSRP EVENT*

Figure 5: Calendar View of CBL Window Selection - Weekend Event Example

EVENT DATE	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10
JUL 26	JUL 19	JUL 12	JUL 5	Weekend CBL Window only uses 3 weekend days of the same day type						

Figure 6: CBL Window Selection - Weekend Event Example

6.0 WEATHER-SENSITIVE CBL VERIFICATION METHODOLOGY

6.1 **Step 1** - Calculate the Average Day CBL values for each hour of the event period as described in (5.0) above.

6.2 **Step 2** - Calculate the Event Final Adjustment Factor. This factor is applied to each of the individual hourly values of the Average Day CBL.

6.2.1 Calculate the Adjustment Basis Average CBL

a. Establish the adjustment period, the two-hour period beginning with the start of the hour that is four hours prior to the

commencement of the event through the end of the hour, three hours prior to the event.

6.2.2 Calculate the Adjustment Basis Average CBL

a. Apply the Average Day CBL formula as described in 5.0 to the adjustment period hours as though it were an event period two hours in duration but using the five or two days selected for use in the Average CBL Basis (i.e., average the ten hours or four).

6.2.3 Calculate the average of the two usage values derived in (b.i), which is the Adjustment Basis Average CBL

6.2.4 Calculate the Adjustment Basis Average Usage

a. The adjustment basis average usage is the simple average of the participant's usage over the two-hour adjustment period on the event day.

6.2.5 Calculate the Gross Adjustment Factor

a. The gross adjustment factor is equal to the Adjustment Basis Average Usage divided by the Adjustment Basis Average CBL

6.2.6 Determine the Final adjustment factor. The final adjustment factor is as follows:

a. If the gross adjustment factor is greater than 1.00, then the final adjustment factor is the smaller of the gross adjustment factor or 1.20

b. If the gross adjustment factor is less than 1.00, the final adjustment factors are the greater of the gross adjustment factor or 0.80.

c. If the gross adjustment factor is equal to 1.00, the final adjustment factor is equal to the gross adjustment factor.

6.3 Step 3 - Calculate the Adjusted CBL Values

6.3.1 The Event Adjusted CBL value for each hour of an event is the product of the Final Adjustment Factor and the Average CBL value for that hour.

7.0 EXAMPLE CUSTOMER BASELINE CALCULATION

In Figure 7, assume a 5-hour event was called from 11 AM to 4 PM; notice was sent out at 9 AM. The table shows 10 qualifying baseline days selected as per section 5.0 and the MW consumption for each hour. Note that HB stands for "Hour Beginning", with the hours covered from 7 AM to 3 PM.

Day	HB 7	HB 8	HB 9	HB 10	HB 11	HB 12	HB 13	HB 14	HB 15	Avg Event Period Usage (MW/h)	Total Event Period Usage (MW)	Rank
CBL Day 1	4	5	5	7	8	10	11	7	5	8.20	41	4
CBL Day 2	5	4	3	5	6	8	6	9	6	7.00	35	7
CBL Day 3	3	4	5	6	8	9	12	9	7	9.00	45	1
CBL Day 4	3	4	4	5	6	7	8	6	6	6.60	33	8
CBL Day 5	3	3	4	5	7	10	11	9	7	8.80	44	2/3
CBL Day 6	2	6	2	5	8	12	8	9	7	8.80	44	2/3
CBL Day 7	3	2	3	4	5	5	8	8	6	6.40	32	9
CBL Day 8	2	3	3	4	6	7	8	8	7	7.20	36	6
CBL Day 9	2	3	2	4	6	7	6	6	5	6.00	30	10
CBL Day 10	3	4	4	5	7	8	10	9	6	8.00	40	5

Figure 7: Example of CBL Window Selection

Steps 1 and 2 - Sum the MWh usage for HB 11 through HB 15 each day and select the 5 highest totals, as seen in Figure 8.

Day	HB 7	HB 8	HB 9	HB 10	HB 11	HB 12	HB 13	HB 14	HB 15	Avg Event Period Usage (MW/h)	Total Event Period Usage (MW)	Rank
CBL Day 1	4	5	5	7	8	10	11	7	5	8.20	41	4
CBL Day 3	3	4	5	6	8	9	12	9	7	9.00	45	1
CBL Day 5	3	3	4	5	7	10	11	9	7	8.80	44	2/3
CBL Day 6	2	6	2	5	8	12	8	9	7	8.80	44	2/3
CBL Day 10	3	4	4	5	7	8	10	9	6	8.00	40	5

Figure 8: Example of CBL Basis Selection

Step 3 - Calculate the CBL for each hour using the five highest days selected as seen in Figure 9.

Time	HB 11	HB 12	HB 13	HB 14	HB 15
Average Day CBL	7.6	9.8	10.4	8.6	6.4

Figure 9: Example of Hourly CBL Calculation

To calculate the hourly load reduction, for each hour, subtract the actual load from the CBL, as seen in Figure 10.

Time	HB 11	HB 12	HB 13	HB 14	HB 15
Avg Day CBL	7.6	9.8	10.4	8.6	6.4
Event Day – Actual Load	3	2	3	3	4
Load Reduction Using Average Day CBL	**4.6**	**7.8**	**7.4**	**5.6**	**2.4**

Figure 10: Example of Average Day Load Reduction Calculation

The CBL shown in Step 3 above is the non-weather–adjusted value. If this customer signed up with the weather-sensitive verification method, the CBL would be adjusted upward or downward based on the actual usage in the two hours prior to event notification. In this example, the Adjustment Basis Average CBL will be the average of the MWh for hours beginning 7 and 8 over the five days chosen for the CBL. Figure 11 below shows how the adjustment will be calculated.

Time	HB 7	HB 8	Adjustment Basis Average CBL
Avg Day CBL – Adjustment Hours	3	4.4	3.7

Figure 11: Example of Adjustment Basis Average CBL

On the day of the event (day N), assume the actual metered load consumption is as shown in Figure 12.

Day	HB 7	HB 8	HB 9	HB 10	HB 11	HB 12	HB 13	HB 14	HB 15	Adjustment Basis Average Usage
Event Day - Actual Load	3	4	5	4	3	2	3	3	4	3.5

Figure 12: Example of Adjustment Basis Usage

In this case, the Adjustment Basis Average Usage is the average of the MWh in hours 7 and 8, or 3.5 MWh.

The Gross Adjustment Factor is the ratio of the Adjustment Basis Average Usage to the Adjustment Basis Average CBL, 3.5 / 3.7 or 0.95, as seen in Figure 13.

Adjustment Basis Average Usage	Adjustment Basis Average CBL	Gross Adjustment Factor
3.5	3.7	0.95

Figure 13: Example of Gross Adjustment Factor

Since the Gross Adjustment Factor is less than 1, select the greater of the Gross Adjustment Factor or 0.8, which in this case is the Gross Adjustment Factor of 0.95. The CBL will therefore be adjusted downward by five percent. Figure 14 shows the resulting weather-adjusted CBL and the computed load reduction for the five-hour event period.

Time	*HB 11*	*HB 12*	*HB 13*	*HB 14*	*HB 15*
Weather-Adjusted CBL	7.22	9.31	9.88	8.17	6.08
Event Day - Actual	3	2	3	3	4
Load Reduction Using Weather-Adjusted CBL	**4.22**	**7.31**	**6.88**	**5.17**	**2.08**

Figure 14: Example of Computed Load Reduction

It is important to note that if the actual usage in the two hours prior to notification was higher than the Adjustment Basis Average CBL, the CBL curve would have been shifted upward and would result in load reduction performance that was higher than would have been determined using the Average Day CBL (without weather adjustment).

8.0 CBL VERIFICATION METHODOLOGY FOR QUALIFYING FACILITIES TAKING SERVICE UNDER SC-11 BUY-BACK SERVICE ACCOUNTS

A Qualifying Facility with Local Generation taking service under SC-11 Buy-Back Service will use this CBL Verification Methodology to eliminate any base load portion of generation from the actual performance during the event.

8.1 Calculate the Local Generation during the same hours as the event over the past 10 weekdays, beginning two days prior to the curtailment event and excluding days where curtailment due to participation in a DLRP, CSRP, Term-DLM, or Auto-DLM event occurred.

8.1.1 MWh(k) = sum(h(i)...h(j)) for each day k = d(n-2)...d(n-11)

8.1.2 Select the 5 lowest export values of MWh(k) and use those days d(l), l = 1...5 to calculate the CBL.

8.1.3 Calculate the CBL for each hour h(i) as the average of the five h(i) values for days d(l), l = 1...5.

9.0 ATYPICAL WEATHER ADJUSTMENTS

In accordance with the 4/20/2018 Commission order in case 17-E-0741, the language below was removed from Rider T Leaf 269 and is being added to this document:

When the weather-adjusted CBL Verification Methodology is used and the calculated weather adjustment falls outside of Company defined ranges (i.e., the Company deems the weather to be atypical on the day of a Load Relief Period or Test Event when compared to the baseline period), the Company may review and revise a participant's baseline based on the Customer's historical load data. When the weather-adjusted CBL Verification Methodology is used, the Company, at its own discretion, may select alternate hours for the adjustment period to calculate the weather adjustment factor in order to accurately reflect the customer's typical usage."

10.0 AUTHORIZED PERSONNEL

The Section Manager, Program Manager or designee of Targeted Demand Management, Demand Response will be the administrators responsible for updating and maintaining the processes. The procedure shall be reviewed periodically for feasibility.

11.0 AUTHOR

The Section Manager and Program Manager of Targeted Demand Management, Demand Response are the authors of this procedure.

12.0 PROCEDURAL RESPONSIBILITY

The Program Manager is responsible for the administration of this procedure.

Griffin Reilly (Signature on File)
Griffin Reilly
Section Manager
Energy Efficiency & Demand Management

REVISION NO. 4: Added Term- and Auto-DLM to the list of programs for which event days and days before event days are excluded in Sections 5.1.1.b.2, 5.1.1.b.4, and 8.1. **REVISION NO. 3:** Added Section 5.1.1.a.11 covering how to handle situations where 10 qualifying CBL weekdays are not found within the 30-day window. **REVISION NO. 2:** Added Section 9.0 covering how atypical weather adjustments are handled. **REVISION NO. 1:** Initial Version	**FILE:** Energy Efficiency and Demand Management: Manual No. 1