

# Aggregation Manual Updates: Economic Customer Baseline Load

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# Background & Overview

- **Today's meeting material covers the Aggregation Manual section describing the Economic Customer Baseline Load (ECBL)**
  - This presentation describes the concepts and language to be included in the draft Aggregation Manual part 3
  - All three Aggregation Manual 'parts' will be combined into a single document for final stakeholder approval and publication
- **The ECBL section of the Aggregation Manual with incremental redlines reflecting the contents of today's presentation is posted with the meeting materials and also under the DER portlet section of the NYISO website: <https://www.nyiso.com/manuals-tech-bulletins-user-guides>**

# ECBL History Review

# ECBL for the Day-Ahead Demand Response Program (DADRP)

- The ECBL was originally implemented in the NYISO markets in 2018 as part of NYISO's Order No. 745 compliance.
- The ECBL provided an energy baseline for the NYISO to measure the amount of demand reduction supplied by a Demand Side Resource participating in NYISO's DADRP by taking the difference between the ECBL for the scheduled hour and the actual metered hourly load for that same hour.

# ECBL Updated for DER

- The NYISO updated the ECBL calculation for DER to a 5-minute calculation for participation in the Real-Time energy market.
- As part of the 2019 DER Filing, NYISO modified the ECBL Proxy Load calculation to add back previous performance when the Aggregation is dispatched by the NYISO and Real-Time LBMP is equal to or exceeds the Monthly Net Benefits Threshold.
- The ECBL is described in OATT 24.2

# ECBL Calculation Review

# Baseline Calculations

- **There are three methods for calculating the ECBL:**
  - Weekday ECBL for Energy and Reserves
  - Weekend/Holiday ECBL for Energy and Reserves
  - ECBL for Regulation
- **There are two components of the ECBL calculation:**
  - The unadjusted ECBL:
    - The unadjusted ECBL calculates a value for the DER facility's baseline using the Load of the DER facility at the same time during a window of similar days.
  - The in-day adjustment:
    - The in-day adjustment modifies the unadjusted ECBL based on the in-day conditions one hour before the Aggregation's dispatch.
    - The in-day adjustment is limited to  $\pm 20\%$  of the unadjusted ECBL.

# Weekday Unadjusted ECBL Window - Selection

- The Aggregator or its designee shall select the 10 previous like weekdays to calculate the weekday unadjusted ECBL.
  - NERC designated holidays are skipped.

July 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
25-Jun	26-Jun	27-Jun	28-Jun	29-Jun	30-Jun Day 1	1
2	3 Day 2	4 Holiday	5 Day 3	6 Day 4	7 Day 5	8
9	10 Day 6	11 Day 7	12 Day 8	13 Day 9	14 Day 10	15
16	17 Dispatch Day	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Key	Normal Day	Dispatch Day	Day Used in Calculation	Holiday



# Weekday Unadjusted ECBL Calculation

- The Aggregator or its designee will sort the 10, 5-minute intervals in MW value order from lowest to highest.
- The unadjusted weekday ECBL is then calculated as the average of the 5th and 6th values.

Week Day	Load 11:00-11:05 Interval
30-Jun	1.2
3-Jul	1.8
5-Jul	1.2
6-Jul	2.5
7-Jul	2.4
10-Jul	3.3
11-Jul	4.8
12-Jul	1
13-Jul	1
14-Jul	1.1

Value	Sort
1	1
2	1
3	1.1
4	1.2
5	1.2
6	1.8
7	2.4
8	2.5
9	3.3
10	4.8

Unadjusted ECBL **1.5**

# Weekend Unadjusted ECBL Window - Selection

- The Aggregator or its designee shall select the previous three weekend days of the same type (Saturday or Sunday) to calculate the weekend unadjusted ECBL.
- The window for a weekday that is a NERC holiday will consist of the previous three Sundays.

July 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
25-Jun	26-Jun	27-Jun	28-Jun	29-Jun	30-Jun	1 Day 1
2	3	4 Holiday	5	6	7	8 Day 2
9	10	11	12	13	14	15 Day 3
16	17	18	19	20	21	22 Dispatch Day
23	24	25	26	27	28	29
30	31					

Key	Normal Day	Dispatch Day	Day Used in Calculation	Holiday

# Weekday Unadjusted ECBL Calculation

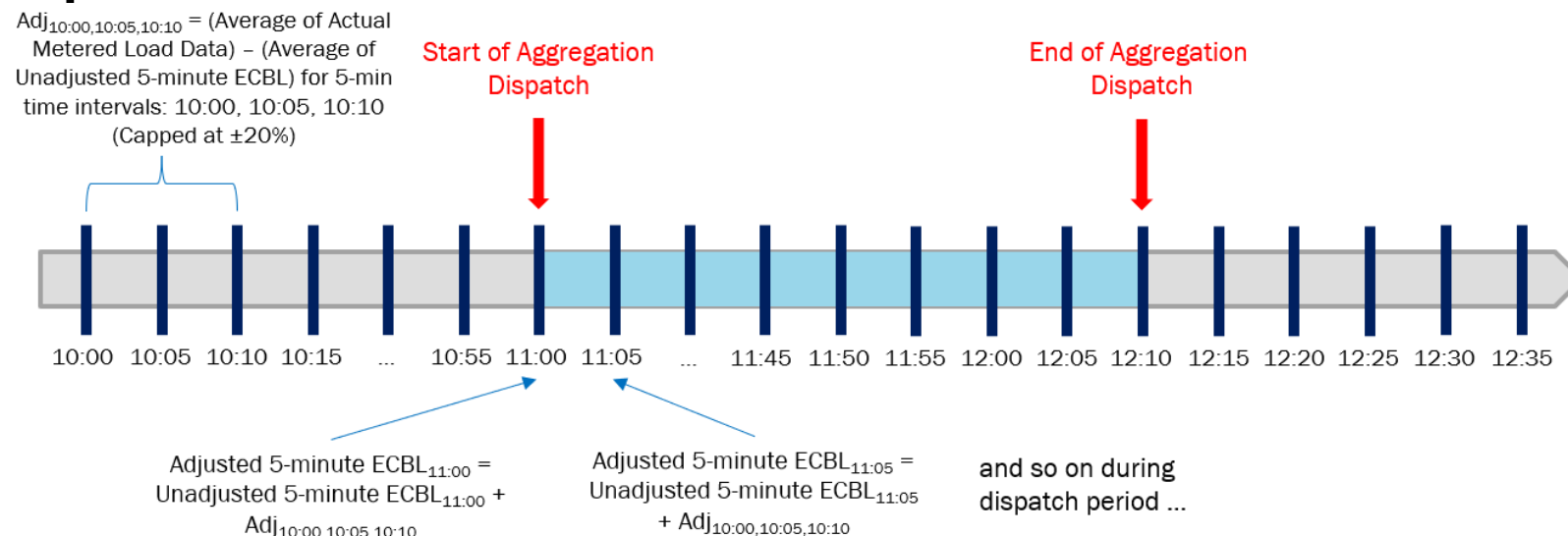
- The unadjusted weekend/Holiday ECBL is then calculated as the average of the three values.

Weekend Day	Load 11:00-11:05 Interval
1-Jul	1.5
8-Jul	1.4
15-Jul	1.9

Unadjusted ECBL	1.6
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# In-Day Adjustment Window

- The in-day adjustment window is one hour prior to the Aggregation's dispatch.
- The intervals to be used in the in-day adjustment window shall be the three consecutive five-minute intervals starting 60 minutes prior to the first operating interval of dispatch and ending 45 minutes prior to the operating interval of dispatch.



# In-Day Adjustment Calculation

- The in-day adjustment is then calculated as the difference between:
  1. The average of the three intervals metered values of the in-day adjustment window and
  2. The average of the three intervals unadjusted ECBLs of the in-day adjustment window.
- The in-day adjustment is capped as  $\pm 20\%$  of the unadjusted ECBL
- All the subsequent intervals of uninterrupted dispatch following the first interval of dispatch shall use the same in-day adjustment window.
- The in-day adjustment window shall be recalculated for every interval of dispatch which is preceded by an interval of at least two hours of non-dispatch.

Time	July 17 10:00- 10:05	July 17 10:05- 10:10	July 17 10:10- 10:15	Average
Load	1.2	1.1	1	1.1
ECBL	1.95	1.1	1.6	1.55

Average Load	Average ECBL	Difference	Unadjusted ECBL July 17 11:00-11:05	In-Day Adjustment for Duration of Dispatch*
1.1	1.55	-0.45	1.5	-0.3
*(Capped at $\pm 20\%$ Unadjusted ECBL)				

# Adjusted ECBL Calculation

- The adjusted ECBL calculation is calculated as the sum of the unadjusted ECBL and the in-day adjustment.
- For use in settlements, the hourly ECBL is calculated as the weighted average of all 5-minute intervals<sup>1</sup> adjusted ECBL for the length of the hour. The 1-hour ECBL is used for calculating the hourly Demand Reduction of a DER facility.

Unadjusted ECBL July 17 11:00- 11:05	In-Day Adjustment for Duration of Dispatch	Adjusted ECBL July 17 11:00- 11:05
1.5	-0.3	1.2

# Proxy Load Calculation

- During any of the intervals the DER is curtailing Load in response to its Aggregation being dispatched by the NYISO, the Proxy Load shall be used instead of the telemetered Load only during intervals when the LBMP is greater than or equal to the Monthly Net-Benefits Threshold (MNBT).
- The Proxy Load is the telemetered Load plus measured Demand Reductions of a DER facility.
- During intervals when the LBMP is less than the MNBT the prior demand reduction response is not added back.

Week Day	Load 11:00-11:05 Interval	Prior Measured Demand Reductions	LBMP≥MNBT?	Proxy Load/Load
30-Jun	1.2			1.2
3-Jul	1.3	0.5	YES	1.8
5-Jul	1.2			1.2
6-Jul	2.5			2.5
7-Jul	2.4			2.4
10-Jul	2.8	0.5	YES	3.3
11-Jul	4.8			4.8
12-Jul	1	1.5	NO	1
13-Jul	1	2	NO	1
14-Jul	1.1			1.1

Value	Sort
1	1
2	1
3	1.1
4	1.2
5	1.2
6	1.8
7	2.4
8	2.5
9	3.3
10	4.8

Unadjusted ECBL **1.5**

# Baseline for DER providing Regulation

- **The baseline for DER facilities that provide Regulation service as part of a DER Aggregation is calculated as the Load of the DER facility six seconds prior to the Aggregation receiving a Regulation dispatch.**
  - If the DER had been dispatched for Energy prior to a Regulation dispatch the baseline is calculated as the sum of the measured Demand Reduction and the load six seconds prior to the Aggregation receiving a Regulation dispatch.
- **This baseline of the DER facility's Load is persisted for duration of the DER facility providing Regulation service as part of the Aggregation's Regulation service response to the NYISO.**



# Response Calculation for DER within an Aggregation – Regulation Only Example

	10:59:48	10:59:54	11:00:00	11:00:06	11:00:12
Aggregation Scheduled for Energy	N	N	N	N	N
Aggregation Scheduled for Regulation	N	N	Y	Y	Y
DER Facility Load	1.3	1.1	1	1.1	0.5
Load Prior to Regulation Dispatch*			1.1	1.1	1.1
Unadjusted 5-min ECBL	2	2	1.5	1.5	1.5
In-Day Adjustment			-0.3	-0.3	-0.3
Adjusted 5-min ECBL			1.2	1.2	1.2
Demand Reduction Response	0	0	0.1	0	0.6

\*This value is the baseline value and is persisted for the duration of the DER facility providing Regulation service as part of the Aggregations Regulation service response to the NYISO.

# Regulation and Energy Example

	11:04:48	11:04:54	11:05:00	11:05:06	11:05:12
Aggregation Scheduled for Energy	Y	Y	Y	Y	Y
Aggregation Scheduled for Regulation	N	N	Y	Y	Y
DER Facility Load	1	0.8	0.9	0.5	1
Baseload Prior to Regulation Dispatch*			1.2	1.2	1.2
Unadjusted 5-min ECBL	1.5	1.5	1.8	1.8	1.8
In-Day Adjustment	-0.3	-0.3	-0.3	-0.3	-0.3
Adjusted 5-min ECBL	1.2	1.2	1.5	1.5	1.5
Demand Reduction Response	0.2	0.4	0.3	0.7	0.2

\*This value is the baseline value and is persisted for the duration of the DER facility providing Regulation service as part of the Aggregations Regulation service response to the NYISO.

# Next Steps

# Next Steps

- The NYISO will bring additional Aggregation Manual additions on April 27.
- Please send any questions that were not addressed during this presentation to: [DER\\_Feedback@nyiso.com](mailto:DER_Feedback@nyiso.com)

# Our Mission & Vision



## Mission

Ensure power system reliability and competitive markets for New York in a clean energy future



## Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation

# Questions?