

# Metering Fundamentals

---

**Gina E. Craan**

Manager, Market Training, *New York Independent System Operator*

## **Accounting & Billing Workshop**

November 27 – December 1, 2023

Remote Learning

# Session Objectives

- **Identify the role of a Meter Authority**
- **Name the two types of Meter Authorities**
- **State the meaning of the following terms:**
  - Control Computer System
  - Telemetry
  - Revenue Quality Metering
  - Revenue Quality Real-Time Metering
  - Performance Tracking System (PTS) Data
  - Sub-Zone
  - Settlement Data Exchange (SDX)

# Session Objectives cont'd

- Identify two types of metering devices used to measure and record energy usage and instantaneous demand
- Describe how meter data from real-time and hourly revenue meters are used in financial settlements

# Roles

# Metering Fundamentals

## ■ Meter Authority (MA)

- An entity that is responsible for the calibration, maintenance, operation, and reporting of metered data from an electric revenue meter used in the wholesale electricity markets administered by the NYISO (*i.e., a Member Systems or Meter Services Entity*)

# Metering Fundamentals

## ■ Member Systems

- The eight Transmission Owners that comprised the membership of the New York Power Pool, which are:
  - Central Hudson Gas & Electric Corporation
  - Consolidated Edison Company of New York, Inc.
  - New York State Electric & Gas Corporation
  - Niagara Mohawk Power Corporation d/b/a National Grid
  - Orange and Rockland Utilities, Inc.
  - Rochester Gas and Electric Corporation
  - Power Authority of the State of New York
  - Long Island Lighting Company d/b/a Long Island Power Authority

# Metering Fundamentals

## ■ Meter Services Entity

- An entity registered with the ISO and authorized to provide metering and meter data services, as applicable to:
  - Demand Reduction Providers
  - DSASP Providers
  - Aggregators
  - Responsible Interface Parties or Curtailment Service Providers

# Terms

# Metering Fundamentals

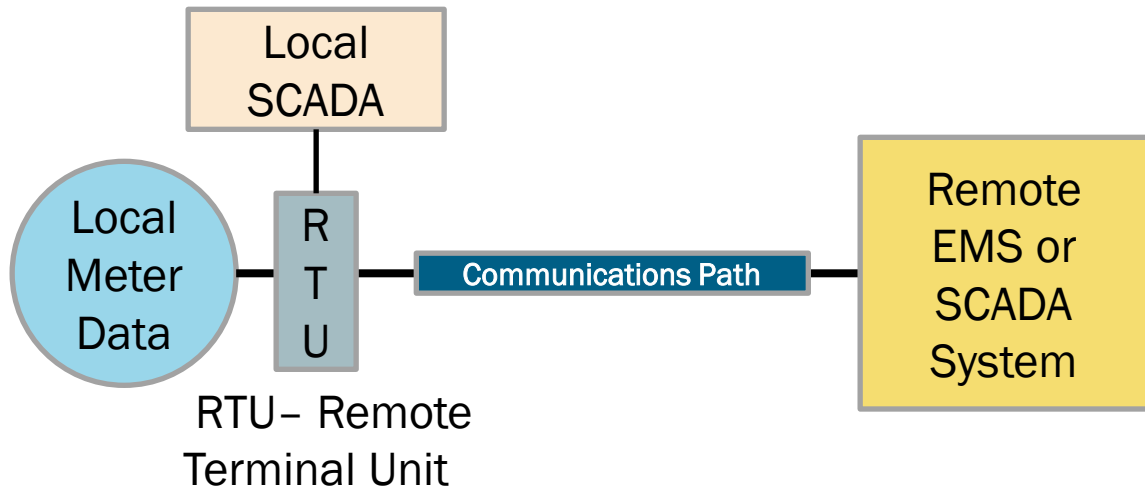
## ■ Control Computer System

- The real-time computer used to monitor and control the power system
- These systems are often referred to as SCADA (supervisory control and data acquisition) systems or;
  - SCADA/AGC (SCADA automatic generation control) systems
  - Energy Management Systems (EMS)
- Individual Transmission Owners may call their systems by other names, such as Power Control System

# Metering Fundamentals

## ■ Telemetry

- Process of collecting meter data and transmitting the data over a communications path to another location



# Metering Fundamentals

## ■ Revenue Quality Metering

- Use of Electric Revenue Metering Systems to provide data for energy billing purpose
- The components of these systems are approved by both the TO and the New York State (NYS) Public Service Commission (PSC) for revenue settlements

## ■ Revenue Quality Real-Time Metering

- An accurate metering system that satisfies American National Standards Institute (ANSI) C12 requirements for electrical energy billing purposes
- Approved for use by both the TO and the NYS PSC

## ■ Performance Tracking System (PTS) Data

- Actual energy injections are measured in real-time and telemetered to the NYISO typically every six seconds
- Real-time telemetry, which is a component of the real-time settlement, and is used by the NYISO for initial billing and final settlement if no other values are available
- NYISO uses both the PTS data and the hourly MWh data reported by the MA to compute real-time interval level and hourly billing

# Metering Fundamentals

## ■ Sub-Zone

- Sub-region of a New York Control Area (NYCA)  
Locational-Based Marginal Pricing (LBMP) zone  
controlled by a single transmission owner
- Sub-zones are defined and metered to allow  
allocation of energy to load

# Metering Fundamentals

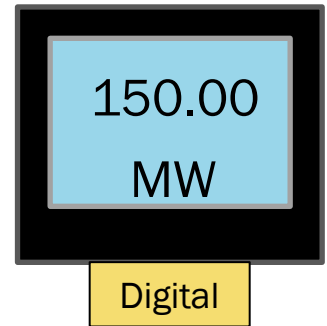
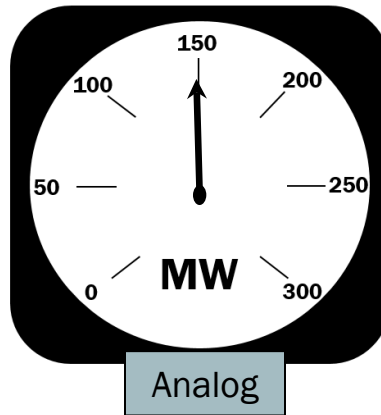
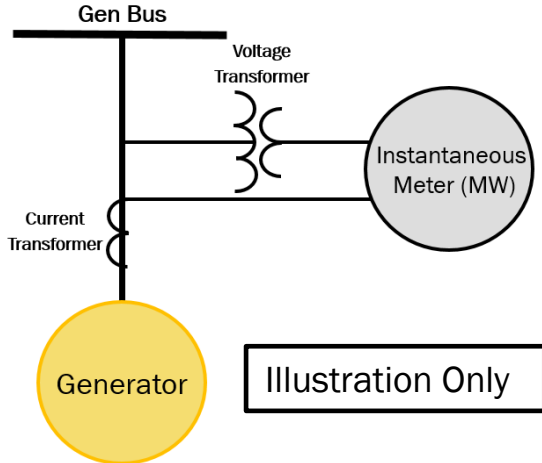
- **Settlement Data Exchange ("SDX")**
  - A web-enabled application for the upload and download query functions related to hourly tie line, generation, Sub-Zone, and load bus data
- **Metering Application Programming Interface (API)**
  - Must be used by Meter Authorities (MA) and Metering Services Entities (MSE) when submitting hourly revenue grade metering for all Aggregations
    - Additionally allows for retrieval of hourly revenue grade metering and calculated sub-zone load data
  - May be used by traditional generators, storage resources, and tie lines

# Meters Used for Settlements

# Types of Electrical Metering

## ■ Instantaneous Meter (Demand Meter)

- A meter designed to display/record the real-time or instantaneous value of power (kW or MW)
- Typically, not revenue grade metering
- Meter reading represents real-time energy being produced or consumed, varies with changes

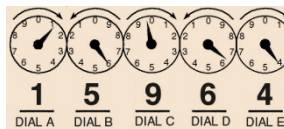
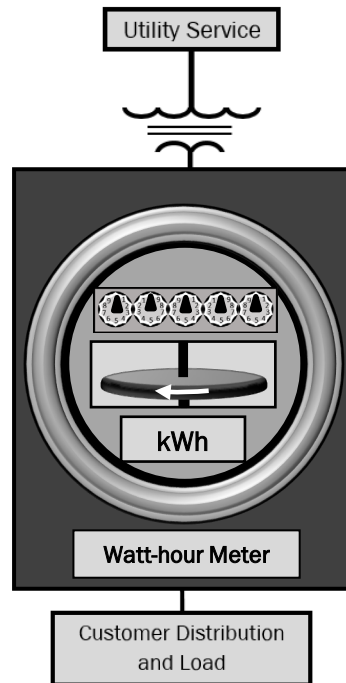


Instantaneous Meters (IM)

# Types of Electrical Meters

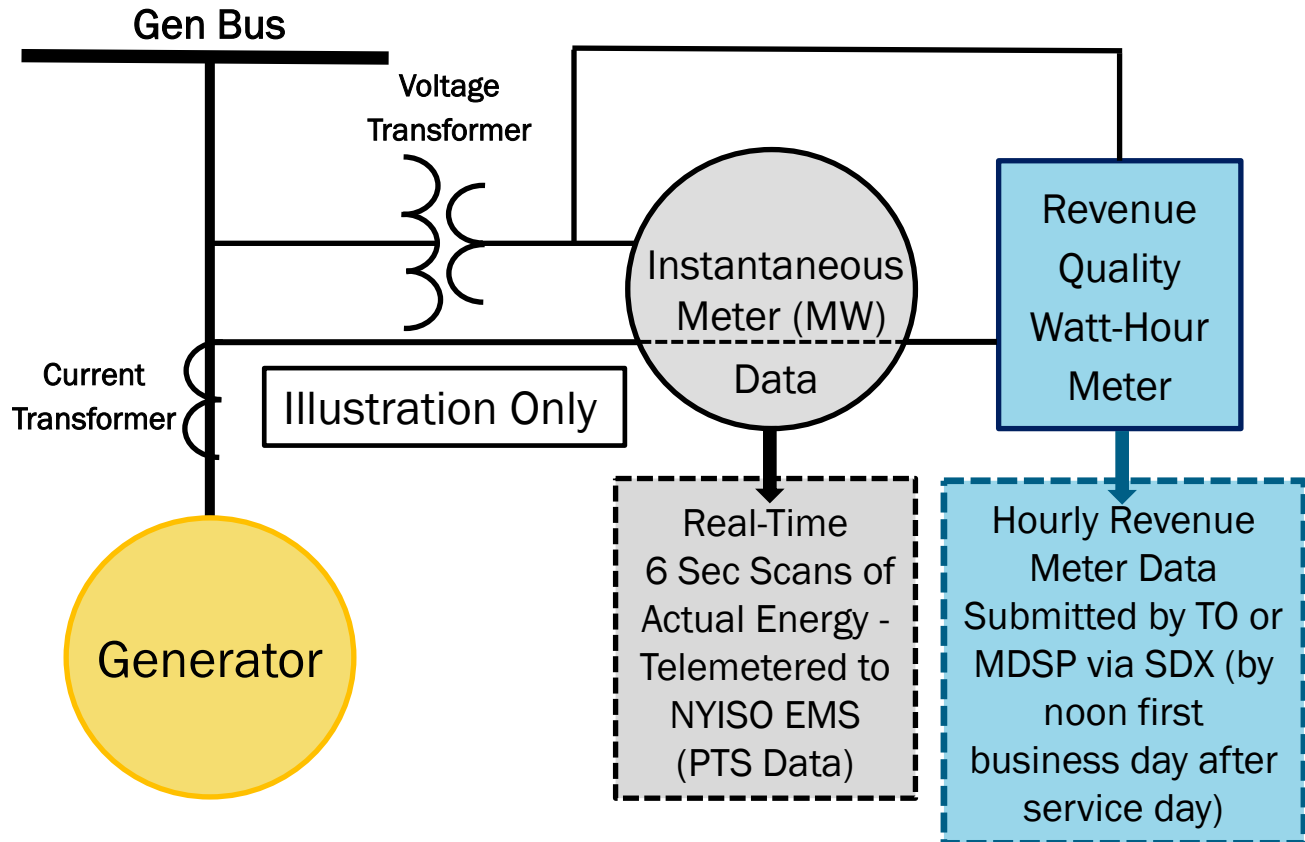
## ■ Watt-hour Revenue Meter

- Watt-hour meters are often used for billing purposes
- Meter indicates the amount of energy consumed over time
- The dials record the total usage of kWh
- Some meters are digital or a combination of mechanical and digital
- Not all watt-hour meters have a time stamp to indicate usage per a set time-period (concept of interval or time of use)



This Month kWh	15964
Last Month kWh	15123
Total Usage kWh	841

# Meters for Settlement - Gens



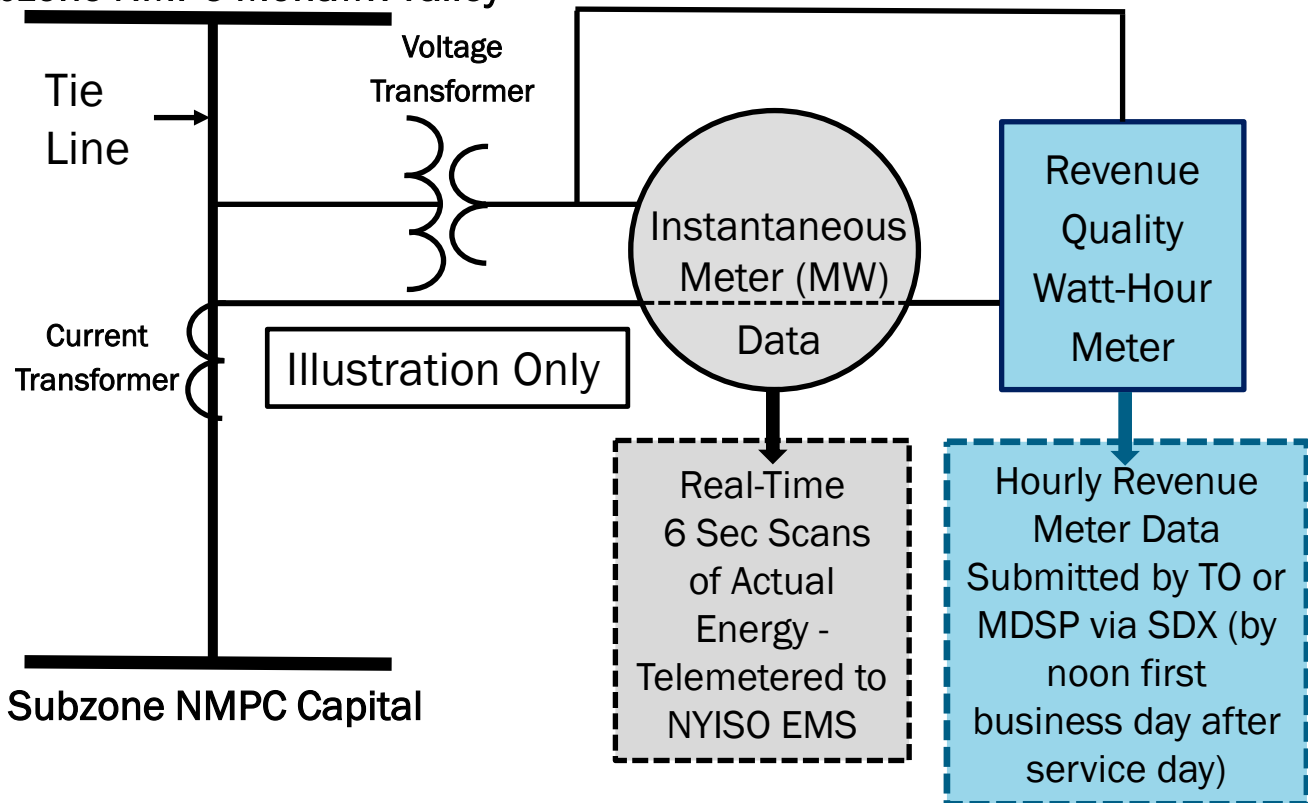
# Metering Requirements for Energy Storage Resources (ESRs)

## ■ Metering Requirements

- Provide direct metering regardless of physical location
  - Meters must:
    - Be approved by Metering Authority
    - Provide revenue-quality metering information
    - Provide six-second telemetry
    - Comply with minimum acceptable accuracy standards
- Submit dual channel hourly meter data
  - Separate fields for Injection MW and Withdrawal MW vs. single net MW value
  - Results in less distortion of values
- Provide Energy Level (MWh) telemetry in RT

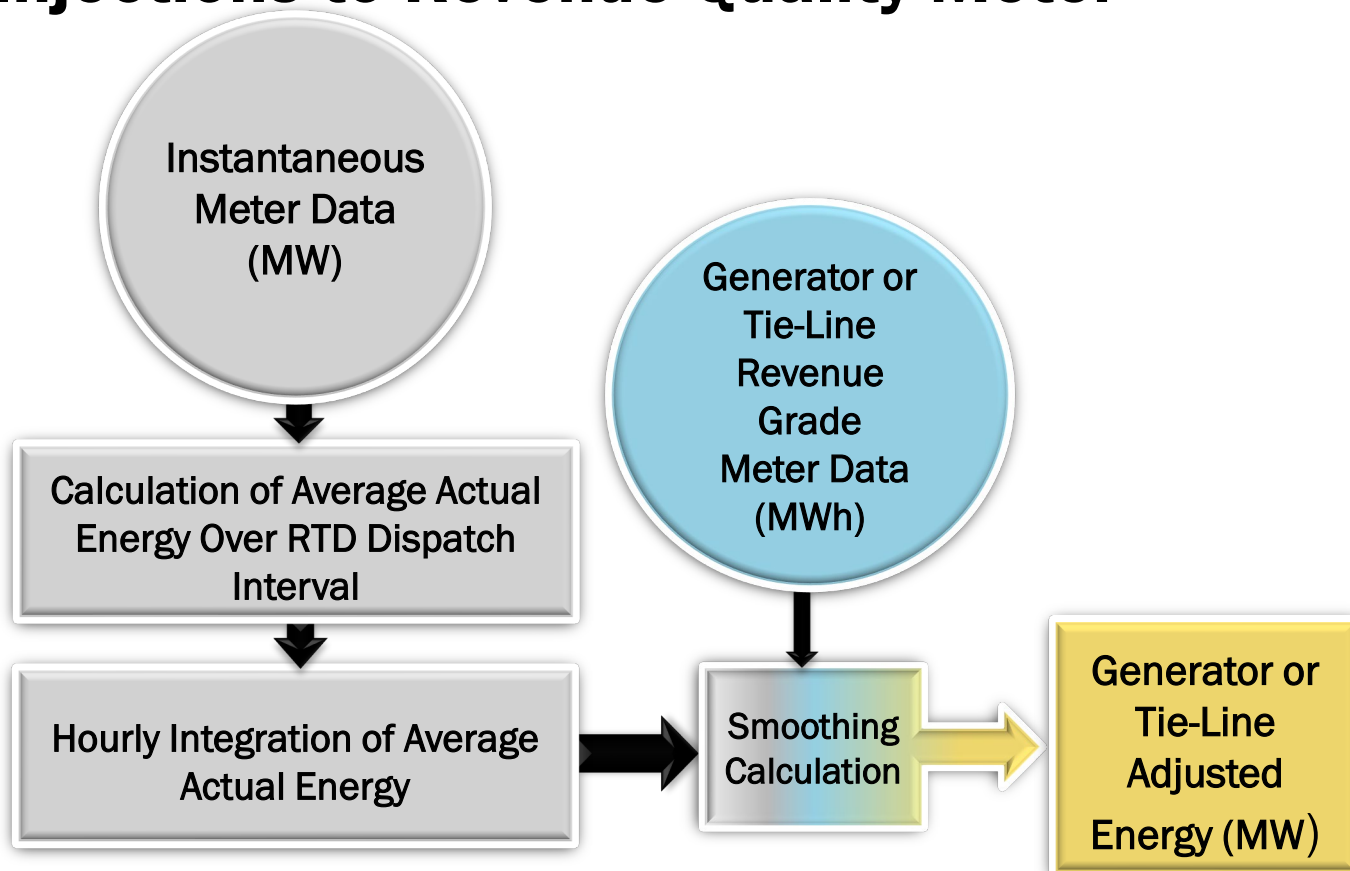
# Meters for Settlement – Tie Lines

Subzone NMPC Mohawk Valley



Subzone NMPC Capital

# Adjustment of Actual Energy Injections to Revenue Quality Meter



# Calculation of Gen Average Actual Energy Over RTD Interval

Time	MW	Time	MW	Time	MW	Time	MW	Time	MW
01:00:00	10	01:01:00	9.9	01:02:00	10	01:03:00	10	01:04:00	10
01:00:06	10	01:01:06	10	01:02:06	10	01:03:06	10	01:04:06	10
01:00:12	10.1	01:01:12	10.0	01:02:12	10.1	01:03:12	9.9	01:04:12	10.1
01:00:18	10.2	01:01:18	9.9	01:02:18	10.2	01:03:18	10	01:04:18	10
01:00:24	10.1	01:01:24	10	01:02:24	10.1	01:03:24	10.1	01:04:24	9.9
01:00:30	10	01:01:30	10	01:02:30	10	01:03:30	10	01:04:30	9.8
01:00:36	10.2	01:01:36	9.9	01:02:36	9.9	01:03:36	10.1	01:04:36	9.9
01:00:42	10	01:01:42	10	01:02:42	10	01:03:42	10	01:04:42	10
01:00:48	9.9	01:01:48	10	01:02:48	10	01:03:48	9.9	01:04:48	10
01:00:54	10	01:01:54	10	01:02:54	10.1	01:03:54	10	01:04:54	10

Average Actual Energy over RTD Interval = 10.0060 MW

# Hourly Integration of the Generators

## Average Actual Energy – Example 1

Date Time	Gen Average Actual Energy (MW) for RTD	Length of RTD Interval/3600	Energy Injected per Dispatch Interval
08/19/2018 01:00	10.0060 X	300/3600 =	0.83383
08/19/2018 01:05	10.0040	300/3600	0.83367
08/19/2018 01:10	10.0045	300/3600	0.83371
08/19/2018 01:15	10.0000	300/3600	0.83333
08/19/2018 01:20	10.0010	300/3600	0.83342
08/19/2018 01:25	10.0000	300/3600	0.83333
08/19/2018 01:30	9.9990	300/3600	0.83325
08/19/2018 01:35	10.0001	300/3600	0.83334
08/19/2018 01:40	10.0000	300/3600	0.83333
08/19/2018 01:45	10.0010	300/3600	0.83342
08/19/2018 01:50	10.0000	300/3600	0.83333
08/19/2018 01:55	10.0020	300/3600	0.83350
	Average = 10.0015	↔	Σ = 10.0015

Note: If the RTD Intervals are all the same, 5 Minutes (300s), then the Average =  $\Sigma$

# Hourly Integration of the Generators

## Average Actual Energy – Example 2

Date Time	Gen Average Actual Energy (MW) for RTD	Length of RTD Interval/3600	Energy Injected per Dispatch Interval
08/19/2018 01:00	10.0060	300/3600	0.83383
08/19/2018 01:05	10.0040	300/3600	0.83367
08/19/2018 01:06	10.0045	60/3600	0.16674
08/19/2018 01:15	10.0000	540/3600	1.50000
08/19/2018 01:20	10.0010	300/3600	0.83342
08/19/2018 01:25	10.0000	300/3600	0.83333
08/19/2018 01:30	9.9990	300/3600	0.83325
08/19/2018 01:35	10.0001	300/3600	0.83334
08/19/2018 01:40	10.0000	300/3600	0.83333
08/19/2018 01:45	10.0010	300/3600	0.83342
08/19/2018 01:50	10.0000	300/3600	0.83333
08/19/2018 01:55	10.0020	300/3600	0.83350
Non-Time Weighted Average = 10.0015			$\Sigma = 10.00117$

Note: If the RTD Intervals are not all the same, then the Average  $\neq \Sigma$

# Compute Gen Adjusted Energy

$$\begin{array}{l} \text{Generator} \\ \text{Adjusted} \\ \text{Energy} \end{array} = \begin{array}{l} \text{Generator} \\ \text{Average Actual} \\ \text{Energy for RTD} \\ \text{Interval} \end{array} \times \frac{\begin{array}{l} \text{Generator Hourly} \\ \text{Revenue Meter Energy} \end{array}}{\begin{array}{l} \text{Hourly Integration of} \\ \text{the Generators} \\ \text{Average Actual} \\ \text{Energy} * \end{array}}$$

\* Value is time-weighted  
based on RTD Interval length

# Generator Adjusted Energy

Date Time	Gen Average Actual Energy (MW) for RTD	Gen Rev. Meter Energy (MW)	Gen Adjusted Energy (MW)
08/19/2018 01:00	10.0060	10.0010	10.0055
08/19/2018 01:05	10.0040	10.0010	
08/19/2018 01:10	10.0045	10.0010	
08/19/2018 01:15	10.0000	10.0010	
08/19/2018 01:20	10.0010	10.0010	
08/19/2018 01:25	10.0000	10.0010	
08/19/2018 01:30	9.9990	10.0010	
08/19/2018 01:35	10.0001	10.0010	
08/19/2018 01:40	10.0000	10.0010	
08/19/2018 01:45	10.0010	10.0010	
08/19/2018 01:50	10.0000	10.0010	
08/19/2018 01:55	10.0020	10.0010	
Hrly Integration of Avg Actual Energy = 10.0015			

$$10.0060 \times \frac{10.0010}{10.0015}$$

# Generator Adjusted Energy

Date Time	Gen Average Actual Energy (MW) for RTD	Gen Rev. Meter Energy (MW)	*Gen Adjusted Energy (MW)
08/19/2018 01:00	10.0060	10.0010	10.0055
08/19/2018 01:05	10.0040	10.0010	10.0035
08/19/2018 01:10	10.0045	10.0010	10.0040
08/19/2018 01:15	10.0000	10.0010	9.9995
08/19/2018 01:20	10.0010	10.0010	10.0005
08/19/2018 01:25	10.0000	10.0010	9.9995
08/19/2018 01:30	9.9990	10.0010	9.9985
08/19/2018 01:35	10.0001	10.0010	9.9996
08/19/2018 01:40	10.0000	10.0010	9.9995
08/19/2018 01:45	10.0010	10.0010	10.0005
08/19/2018 01:50	10.0000	10.0010	9.9995
08/19/2018 01:55	10.0020	10.0010	10.0015

\* The Gen Adjusted Energy will be a billing determinant in the Balancing Market Energy Settlements

# ESR Generator Adjusted Energy

## ■ Example:

### Dual Channel Metering

	RTD Avg Actual Injection MW	RTD Avg Actual Withdrawal MW	RTD Adjusted Injection MW	RTD Adjusted Withdrawal MW	Final Adjusted MW
:00	10	0	10.4854	0.0000	10.4854
:05	10	0	10.4854	0.0000	10.4854
:10	10	0	10.4854	0.0000	10.4854
:15	10	0	10.4854	0.0000	10.4854
:20	10	0	10.4854	0.0000	10.4854
:25	1.5	-2	1.5728	-1.9024	-0.3296
:30	0	-5	0	-4.7561	-4.7561
:35	0	-6	0	-5.7073	-5.7073
:40	0	-7	0	-6.6585	-6.6585
:45	0	-7	0	-6.6585	-6.6585
:50	0	-7	0	-6.6585	-6.6585
:55	0	-7	0	-6.6585	-6.6585
	4.2917	-3.4167	4.5000	-3.2500	1.2500
Revenue Meter MWH	4.5000	-3.2500			
Adjustment Ratio	1.0485	0.9512			

VS.

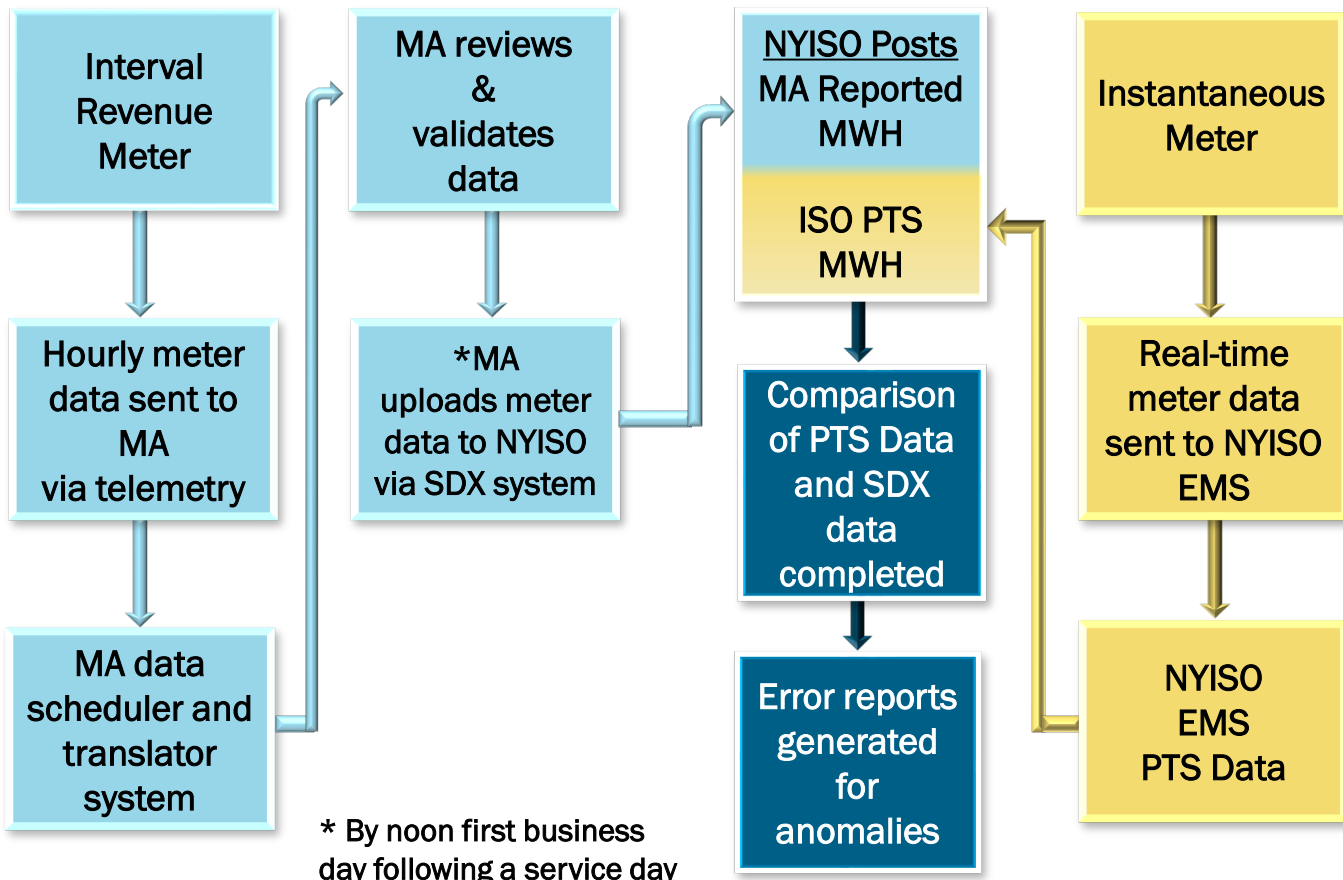
### Single Net Meter

	RTD Avg Actual MW	RTD Adjusted MW
:00	10	14.2857
:05	10	14.2857
:10	10	14.2857
:15	10	14.2857
:20	10	14.2857
:25	-0.5	-0.7143
:30	-5	-7.1429
:35	-6	-8.5714
:40	-7	-10.0000
:45	-7	-10.0000
:50	-7	-10.0000
:55	-7	-10.0000
	0.8750	1.2500
Revenue Meter MWH	1.2500	
Adjustment Ratio	1.4286	

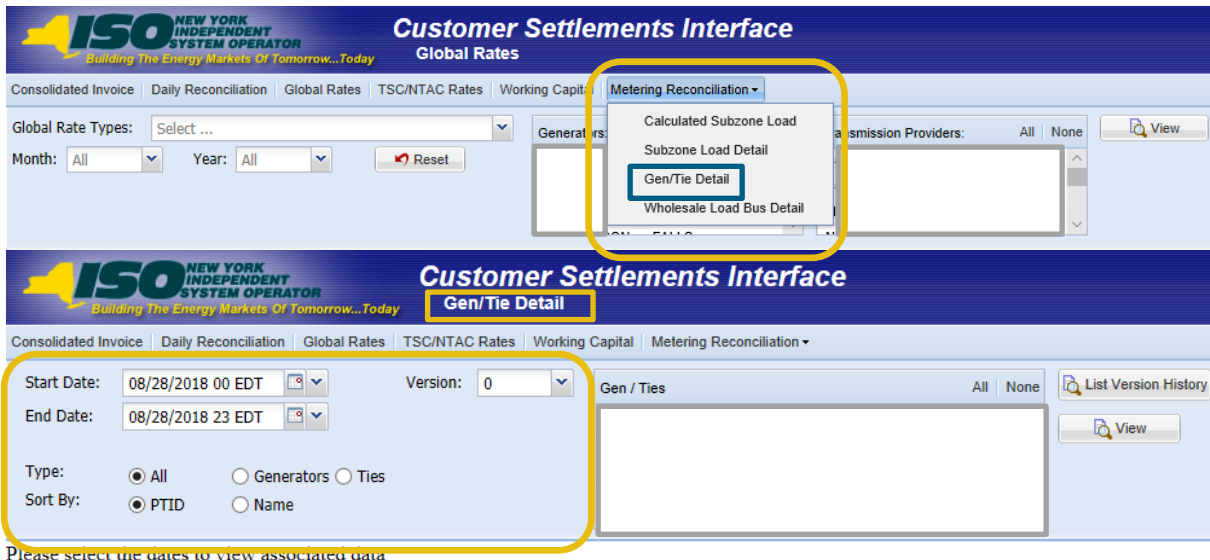


# Meter Data in CSI

# Meter Data in CSI



# Meter Data in CSI



The image displays two screenshots of the New York ISO Customer Settlements Interface (CSI) web application, illustrating the steps to view Gen/Tie Detail meter data.

**Top Screenshot:** The "Customer Settlements Interface" header is visible. The "Global Rates" tab is selected. A dropdown menu for "Metering Reconciliation" is open, showing options: "Calculated Subzone Load", "Subzone Load Detail", "Gen/Tie Detail" (highlighted with a blue box), and "Wholesale Load Bus Detail". A yellow box highlights the "Metering Reconciliation" dropdown and its menu.

**Bottom Screenshot:** The "Customer Settlements Interface" header is visible. The "Global Rates" tab is selected. The "Gen/Tie Detail" sub-tab is selected. A yellow box highlights the "Gen/Tie Detail" sub-tab and the search filters on the left. The filters include:

- Start Date: 08/28/2018 00 EDT
- End Date: 08/28/2018 23 EDT
- Version: 0
- Type: ☒ All, ☐ Generators, ☐ Ties
- Sort By: ☒ PTID, ☐ Name

The main content area shows a table for "Gen / Ties" with columns "All" and "None". A "View" button is visible in the bottom right corner.

Please select the dates to view associated data

# Meter Data in CSI

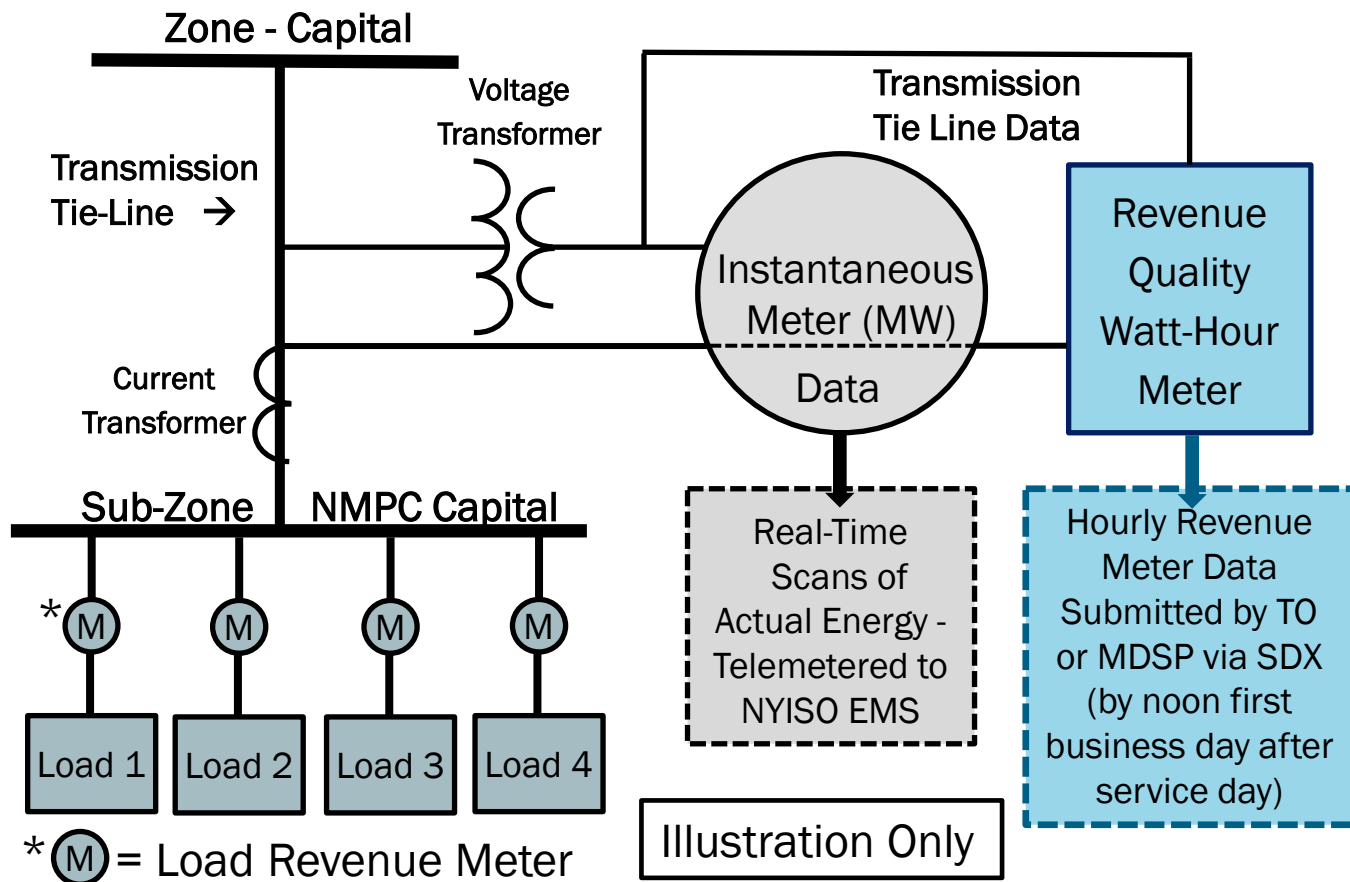
Hourly  
Revenue  
Meter Data  
submitted  
by MA  
through SDX

Legend: † ≥ ±5% and <±10% Anomaly ‡ ≥ ±10% Anomaly * Null PTS Value Anomaly					
Time ▲	Ptid	Ptid Name	Type	MA Reported MWH	ISO PTS MWH
08/28/2018 07:00:00...			GEN	0.0000	0.0000
☒ Date/Time: 08/28/2018 08:00:00 EDT					
08/28/2018 08:00:00...			GEN	0.0000	0.0000
☒ Date/Time: 08/28/2018 09:00:00 EDT					
† 08/28/2018 09:00:00...			GEN	21.1200	19.6583
☒ Date/Time: 08/28/2018 10:00:00 EDT					
08/28/2018 10:00:00...			GEN	41.1600	40.0917

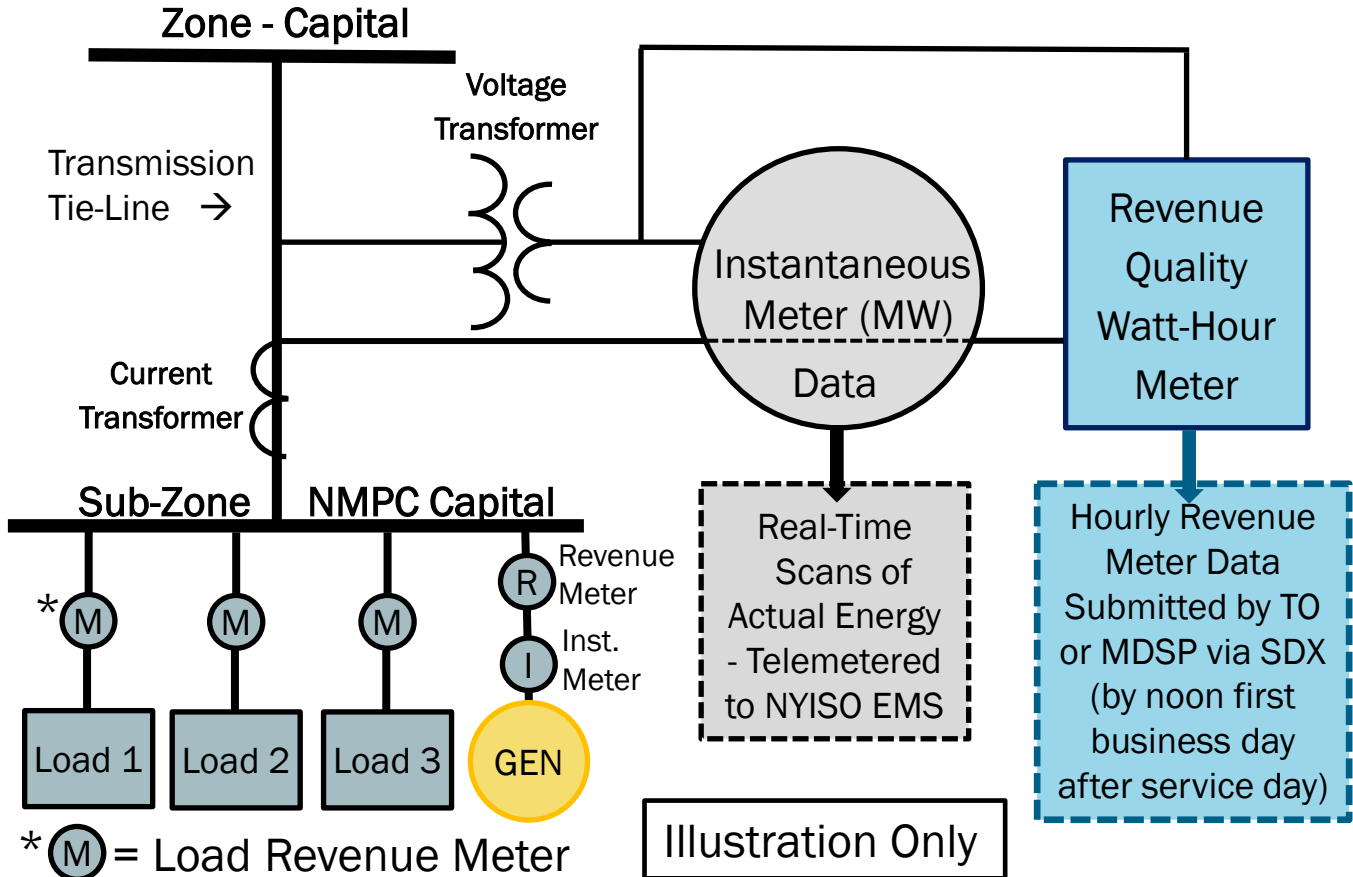
Hourly  
Integration of  
the Generators  
Average Actual  
Energy from  
Real Time  
Metering

# Estimating Sub-Zonal Load

# Estimating Sub-Zonal Load



# Estimating Sub-Zonal Load



# Estimating Sub-Zonal Load

- **First determine electricity consumed in the sub-zone (withdrawals)**
  - Use real-time metering data from:
    - Transmission Tie-Line(s)
    - Injections by Generator(s)
- **Sub-Zonal Load = Net Transmission Tie-Line Flows + Net Generation Injected – Sub Zonal Transmission Losses**
- **Calculation performed for each RTD Interval**

# Meter Data Schedules

# Locating Meter Data Schedules



## DELIVERING THE GRID OF THE FUTURE

Reliably managing NY's power grid & wholesale energy

Megawatts (MW)

15,270

NY REAL-TIME LOAD

Wholesale Cost/MWh

\$20.00

DAY AHEAD MARKET

Official NYISO Time (EDT):



15:11:58

SYSTEM CONDITIONS

MEMBER COMMUNITY

BUDGET & FINANCE

Billing & Settlements

NYISO Credit

MARKET MONITORING

CUSTOMER REGISTRATION

KNOWLEDGE ARTICLES

# BILLING & SETTLEMENTS

## Quick Links

[Customer Settlements Interface Login](#)
[pdf Accounting and Billing Manual](#)
[pdf Revenue Metering Requirements](#)
[pdf MSE Registration Packet](#)

## Support

### Budget & Finance ^

[Budget & Priorities Working Group](#)

### Billing & Settlements ^

[Billing Rates](#)
[NYISO Credit](#)
[Customer Registration](#)
[Knowledge Articles](#)
[Market Monitoring](#)
[Member Community](#)

## Banking & Billing Info

Please submit banking information or billing contact changes to the NYISO Finance Department at:

## Disputes/Electronic Funds

Per the ISO Services Tariff, any disputed amounts are to be paid in full. Upon resolution of the dispute, if it is determined that an overpayment

## All Other Inquiries

For all other Billing Inquiries, Questions or Comments please contact the NYISO Customer Support Team:

### Billing & Settlements

Name	Published	Type
✓ Billing and Reference Documents		
✓ Billing Notices		
✓ Invoice Support		
✓ Meter Services Administration		
✓ Processing and Invoice Schedule		

## Billing & Settlements



Name	Published	Type
------	-----------	------

^ Processing and Invoice Schedule

✓ Close-out Schedule

✓ Flexible Invoicing Schedule

^ Meter Data Review

Member System Contacts Updated October 2023

2023/10/31

pdf

2023 Daily Lock-Down Schedule

2023/02/01

pdf

2023 Hourly Tie-line, Generator, & LSE Bus Meter Data Review, Revision, & Lock-down Schedule

2022/10/20

pdf

Meter Data Management Protocols-Revised 9/15/11

2020/02/04

pdf

# Daily Lock-Down Schedule

## Daily Lock-down Schedule - Initial Month - November 2023

Billing Day	Lock-down for Daily Advisory	Unlock For Updates	Re-Lock After Updates	In-Month Open Season	
				Unlock For Updates	Re-Lock After Updates
11/1/2023 W	11/2/23 12:00 TH	11/6/23 8:00 M	11/6/23 16:00 M		
11/2/2023 TH	11/3/23 12:00 F	11/6/23 8:00 M	11/6/23 16:00 M		
11/3/2023 F	11/6/23 12:00 M	11/8/23 8:00 W	11/8/23 16:00 W		
11/4/2023 S	11/6/23 12:00 M	11/8/23 8:00 W	11/8/23 16:00 W		
11/5/2023 S	11/6/23 12:00 M	11/8/23 8:00 W	11/8/23 16:00 W		
11/6/2023 M	11/7/23 12:00 T	11/9/23 8:00 TH	11/9/23 16:00 TH		
11/7/2023 T	11/8/23 12:00 W	11/13/23 8:00 M	11/13/23 16:00 M		
11/8/2023 W	11/9/23 12:00 TH	11/13/23 8:00 M	11/13/23 16:00 M	11/20/23 8:00 M	11/20/23 16:00 M
11/9/2023 TH	11/13/23 12:00 M	11/15/23 8:00 W			
11/10/2023 F	11/13/23 12:00 M	11/15/23 8:00 W			
11/11/2023 S	11/13/23 12:00 M	11/15/23 8:00 W			
11/12/2023 S	11/13/23 12:00 M	11/15/23 8:00 W			
11/13/2023 M	11/14/23 12:00 T	11/16/23 8:00 TH			
11/14/2023 T	11/15/23 12:00 W	11/17/23 8:00 F			
11/15/2023 W	11/16/23 12:00 TH	11/20/23 8:00 M			
11/16/2023 TH	11/17/23 12:00 F	11/20/23 8:00 M			
11/17/2023 F	11/20/23 12:00 M	11/22/23 8:00 W			
11/18/2023 S	11/20/23 12:00 M	11/22/23 8:00 W			
11/19/2023 S	11/20/23 12:00 M	11/22/23 8:00 W			
11/20/2023 M	11/21/23 12:00 T	11/27/23 8:00 M			
11/21/2023 T	11/22/23 12:00 W	11/27/23 8:00 M			
11/22/2023 W	11/27/23 12:00 M	11/29/23 8:00 W			
11/23/2023 TH	11/27/23 12:00 M	11/29/23 8:00 W			
11/24/2023 F	11/27/23 12:00 M	11/29/23 8:00 W			
11/25/2023 S	11/27/23 12:00 M	11/29/23 8:00 W			
11/26/2023 S	11/27/23 12:00 M	11/29/23 8:00 W			
11/27/2023 M	11/28/23 12:00 T	11/30/23 8:00 TH			
11/28/2023 T	11/29/23 12:00 W	12/1/23 8:00 F	12/1/23 16:00 F		
11/29/2023 W	11/30/23 12:00 TH	12/4/23 8:00 M	12/4/23 16:00 M		
11/30/2023 TH	12/1/23 12:00 F	12/4/23 8:00 M	12/4/23 16:00 M		

November 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2

\*\*Billing Day 11/9 will have a delayed lock-down for MA's

\*\*Billing Day 11/7 will have a delayed unlock for updates for MA's

\*\* 11/23 and 11/24 are NYISO Holiday's

## Billing & Settlements



Name	Published	Type
Processing and Invoice Schedule		
Close-out Schedule		
Flexible Invoicing Schedule		
Meter Data Review		
Member System Contacts Updated October 2023	2023/10/31	pdf
2023 Daily Lock-Down Schedule	2023/02/01	pdf
2023 Hourly Tie-line, Generator, & LSE Bus Meter Data Review, Revision, & Lock-down Schedule	2022/10/20	pdf
Meter Data Management Protocols-Revised 9/15/11	2020/02/04	pdf

# Review, Revision, and Lock-Down

Billing Month	November 2023
Initial Invoice Date	December 7, 2023
Period for Tie-line & Generator Metering Revision Submission by Meter Authorities Begins	December 13, 2023
Period to Challenge Tie-line & Generator Metering Only Through Written Request Begins	January 12, 2024
Period to Challenge Tie-line & Generator Metering Data Ends (Day-55)	January 31, 2024
Tie-line & Generator Metering Precluded From Further Revisions (Day-60)	February 5, 2024
LSE Bus Metering Data for 4-Month True-up Due From Meter Authorities (Day-70)	February 15, 2024
4-Month True-up LSE Metering Posted For Review (Day-75)	February 20, 2024
4-Month True-up LSE Metering Revisions Suspended for Invoice Processing	March 1, 2024
4-Month True-up Advisory LSE Metering Posted For LSE Review & Challenge** (Day-90)	March 6, 2024
Period to Challenge LSE Bus Metering Data for 4-Month True-up Ends (Day-100)	March 18, 2024
LSE Bus Metering Data for 4-Month True-up Precluded from Further Revisions (Day-105)	March 21, 2024
4-Month True-up LSE Metering Revisions Suspended Due to Invoicing (Day-120)	April 5, 2024
Close-out Settlement LSE Metering Due From Meter Authorities (Day-130)	April 15, 2024
Close-out Settlement Results and LSE Metering Posted For Review & Challenge** (Day-135)	April 22, 2024
Period to Challenge LSE Metering Ends (Day-145)	April 30, 2024
Close-out Settlement LSE Metering Data Finalized (Day-150)	May 6, 2024

\* Any deadline that falls on a Saturday, Sunday or holiday for which the NYISO is closed is observed on the NYISO's next business day.

# Metering Fundamentals

## ■ Reference Material

- NYISO Revenue Metering Requirements Manual
  - Meter Authorities Roles – Section 4.3
  - Metering Terminology – Section 1.2
  - Metering System Equipment – Section 2.2
  - Meters for Settlement – Section 4.1 and 4.4
- NYISO Control Center Requirements Manual
  - Metering Terminology – Section 1.1
  - Metering System Equipment – Section 3.1
- NYISO Accounting and Billing Manual
  - Meters for Settlement – Section 3.2.1 and 4.1.3
  - Estimating Sub-Zonal Load – Section 3.2.2
  - Meter Data Schedules – Section 3.2
- NYISO Billing and Settlement Services – Lockdown Schedules
  - 2018 Daily Lock-Down Schedules
  - 2018 Hourly Tie-Line, Generator, and LSE Bus Meter Data, Review, Revision, & Lock-Down Schedule