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September 8, 2016

WebEx Broadcast

Settlements Issues Forum

Q3 2016 Meeting

Rachel Likover

Market Analysis & Settlements



forum

Topics



Upcoming Settlement/Market Changes

- Sub-hourly Settlements
- Fast Start Pricing and Dispatch
- Dispatchable Asset Related Demand (DARD) Pump Parameter Changes
- Net Commitment Period Compensation – Dispatch Lost Opportunity Cost (LOC)



Divisional Accounting Update



August 2016 Forward Capacity Market Shortage Event



Informational Items

- Enhanced LMP selection option on the ISO-NE website
- Next meeting date

Upcoming Settlement/Market Changes

- *Sub-hourly Real-Time Settlement*
- *Fast Start Pricing and Dispatch*
- *Dispatchable Asset Related Demand (DARD) Pump Parameter Changes*
- *NCPC Dispatch Lost Opportunity Cost (LOC)*



Sub-hourly Real-Time Settlement

March 1, 2017



Joint ISO-NE/NEPOOL Filing

- Settle Real-Time Markets at sub-hourly (5 minute) interval
- Provide more accurate compensation, especially for flexible resources that respond quickly
- Add and revise MIS Reports
 - Current hourly reports will have some revisions
 - New reports will detail sub-hourly calculations
- New MIS report descriptions available December 1, 2016

Joint ISO-NE/NEPOOL FERC Filing

[ER16-1828-000](#)

See additional information at: [Settlements Forum Q1 2016](#)

Sub-hourly Real-Time Settlement

March 1, 2017



Streamlining of Reserve Market

MIS Reports

- Current Reserve Market MIS reporting include rows of data where the values are all zero
- The reports will be streamlined to eliminate rows where there is no market activity
- Streamlining will apply to new versions of hourly reports, and to subhourly detail



Fast Start Pricing and Dispatch

March 31, 2017



Joint ISO-NE/NEPOOL Filing

- Fast Start generators will set LMP under broader range of conditions
- Improve performance incentives for all resources
- Introduce new NCPC payment, Rapid Response Pricing Opportunity Cost, to compensate resources postured down when fast start units are setting price

Joint ISO-NE/NEPOOL FERC Filing

[ER15-2716-000](#)

DARD Pump Parameter Changes

March 31, 2017



Joint ISO-NE/NEPOOL Filing

- Improve modeling and dispatch of pump storage hydro resources in pumping mode
- Provide new bidding parameters for pumps
- Improve outcome for pump storage owners and for market as a whole through more optimal dispatch solutions

Joint ISO-NE/NEPOOL FERC Filing

[ER16-954-000](#)

NCPC – Dispatch Lost Opportunity Cost (LOC)

March 1, 2017*



Market Rule Provision Modifications

1. New provision for Net Commitment Period Compensation (NCPC)
 - NCPC Dispatch LOC to provide the financial incentive for resources to follow dispatch instructions when the DDP (desired dispatch point) is lower than the EDP (economic dispatch point)
2. Dispatchable asset-related demand (DARD) pump provisions aligned with subhourly settlement

Markets Committee Materials

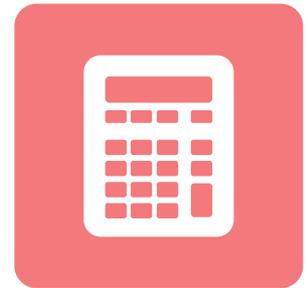
[ISO Presentation](#)

* Pending ISO/NEPOOL filing and FERC approval

Questions?



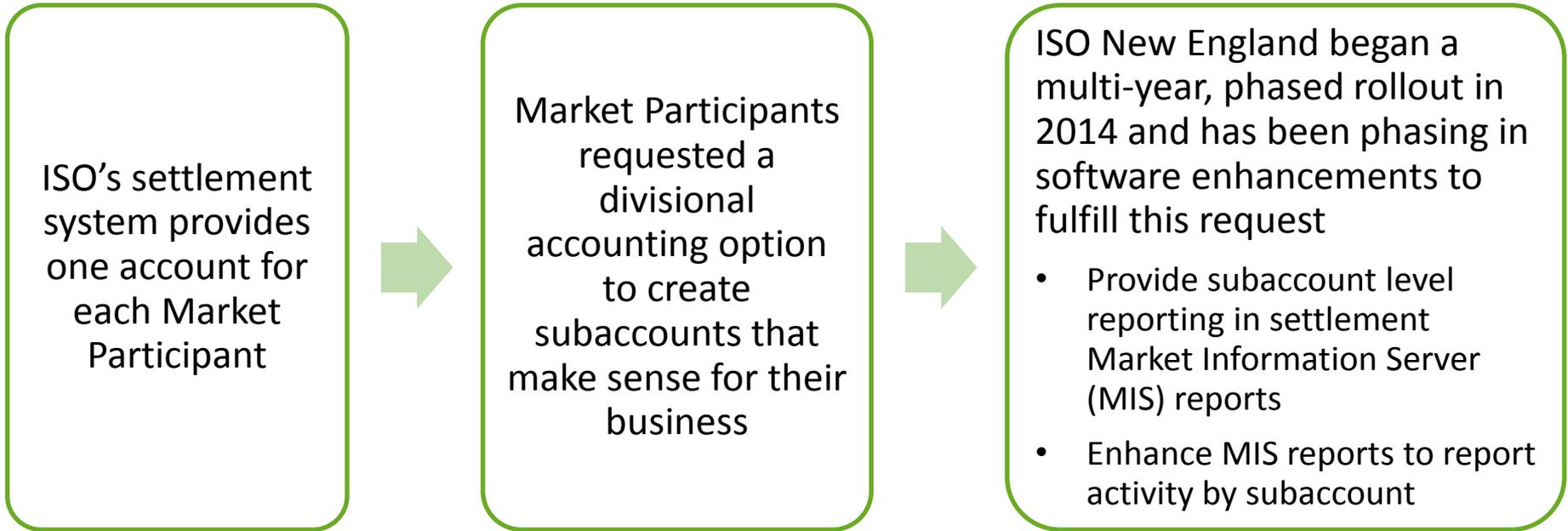
Divisional Accounting Project Update



Overview of Divisional Accounting Project



Divisional accounting is an optional feature that allows customers to assign market activity to a **subaccount** or division for settlement reporting.



View these materials for more information:

[*Divisional Accounting Phase 7 & 8 Webinar \(includes overview and guide\)*](#)

[*Quick Start Guide for Divisional Accounting*](#)

Further detail is provided on the [Divisional Accounting Project Page](#)

** Bills and Financial Assurance determination remain unchanged*



Divisional Accounting Implementation Plan - Projected Schedule

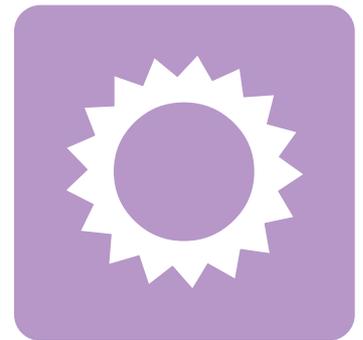
-  **Phase 1**
(Q1 2014) CAMS Subaccount Management available
-  **Phase 2**
(Q2 2014) Asset assignment to subaccounts in CAMS reflected in most Hourly Markets/Transitional Demand Response/Black Start Settlement reporting
-  **Phase 3**
(Q4 2014) Asset assignment to subaccounts in CAMS reflected in NCPC settlement reporting
-  **Phase 4**
(Q1 2015) Asset assignment to subaccounts in CAMS reflected in Regulation Market settlement reporting
-  **Phase 5**
Q3 2015 Most activity entry point assignments to subaccounts reflected in settlement reporting
-  **Phase 6**
Q3 2015 Subaccounts reflected in FCM settlement reporting
-  **Phase 7**
Q2 2016 Subaccounts reflected in OATT and ISO Self-Funding Tariff settlement reporting
-  **Phase 8**
Q2 2016 Informational reporting on billing amounts by subaccount
- Phase 9**
(TBD) Financial Transmission Rights/Auction Revenue Rights and External Transactions reflected in subaccounts.

This schedule may be modified to accommodate competing priorities.

Questions?



August 2016 Forward Capacity Market Shortage Event

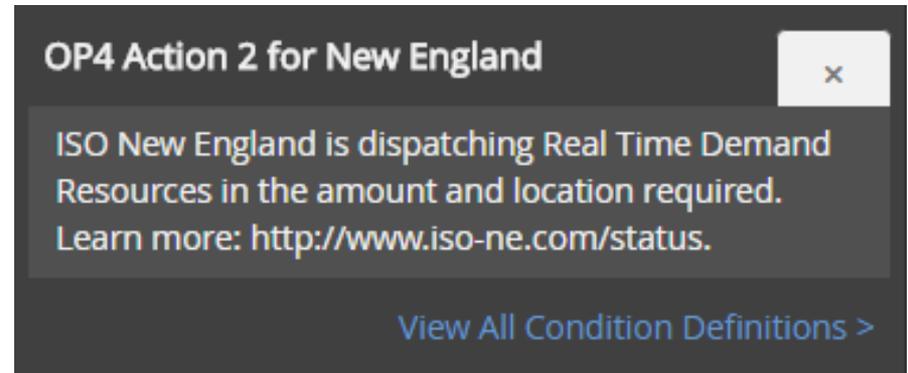


Forward Capacity Market Shortage Event

August 11, 2016

When? During what period?	August 11, 2016 HE 15 – HE 19
What happened?	There was an FCM shortage event for all of New England except Maine
What defined this FCM shortage event?	Periods of 30 or more contiguous minutes of Reserve Constraint Penalty Factor activation for Thirty Minute Operating Reserve during OP-4, Action 2 ⁽¹⁾

⁽¹⁾ *Market Rule 1, Section III.13.7.1.1.1 (b)*



OP4 Action 2 for New England

ISO New England is dispatching Real Time Demand Resources in the amount and location required.
Learn more: <http://www.iso-ne.com/status>.

[View All Condition Definitions >](#)

Screen clipping taken from ISO Express: 8/11/2016 3:05 PM

Availability Scores and Shortage Event Penalties

FCM Shortage Event – August 11, 2016

After a shortage event, the following applies to generators and imports:

- Availability score is calculated using a resource's available MW divided by its capacity supply obligation
 - A resource performing at less than 100% is assessed penalties
- FCM Shortage Event Penalty is:

$$\text{Annualized FCA payment} \times .05 \times [1 - \text{Availability Score}]$$

- The sum of all shortage event penalties is allocated pro-rata on available MW
→ Resources that perform are *credited* in the settlement

1

The Shortage Event penalty charges/credits will be included in the bill issued on Monday, September 12, 2016.

Relevant MIS reports (issued to Lead Market Participant):

Name	Description
SD_FCMPREAVAIL	Preliminary availability scores for generators and imports
SD_FCMAVAIL	FCM Shortage event availability penalty charges
SR_FCMAVAILSUM	FCM Shortage event availability penalty credits and charges
SD_FCMNSCDTL	FCM Net Supply credit, includes availability penalty credit and charges

* Market Rule 1, Section III.13.7.1.1.1 A – 13.7.1.1.4 and 13.7.2.7.1.2

Forward Capacity Market - Peak Energy Rent (PER)

The Peak Energy Rent (PER) is a value used to calculate the PER Adjustment*, which is a reduction to the FCM capacity payment based on high-priced hours in the Real-Time Energy Market

- A PER value is calculated each hour
- In most hours, PER is zero
- In hours where the RT LMP is elevated, the PER may be non-zero
- The hourly PER values are summed to a monthly value
- Capacity payments are adjusted using the average of the monthly PER values for the prior 12 months
- August 2016 PER will be part of the PER adjustment for twelve months, starting with the September 2016 FCM settlement

A detailed example of the PER calculation is available [here](#).

* PER formulas are presented in detail in the [Market Rule 1](#), Sections III. 13.7.2.7.1.1, III.13.7.2.7.1.1.1., III.13.7.2.7.1.1.2

Forward Capacity Market - Peak Energy Rent (PER)

Name	Description	Issued to?
WW_FCMHOURLYPER	Hourly PER Details	Public, ISO Express - Hourly PER
WW_FCMMONTHLYPER	Monthly PER	Public, ISO Express - Monthly PER
SD_FCMRESSTL	Resource credits, including PER Adjustment	Lead Market Participant
SR_FCMNRCPSUM	Net Regional Clearing Price calculation, includes total PER adjustment	All FCM Participants

* PER formulas are presented in detail in the Market Rule 1, Sections III. 13.7.2.7.1.1, III.13.7.2.7.1.1.1., III.13.7.2.7.1.1.2

Informational Items

- Settlements Information on ISO-NE Website
- Next Settlement Issues Forum Date
- Questions & Discussion



Settlement Information on the ISO Website

Where is option for selecting LMPs to display?

ISO new england

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SEARCH

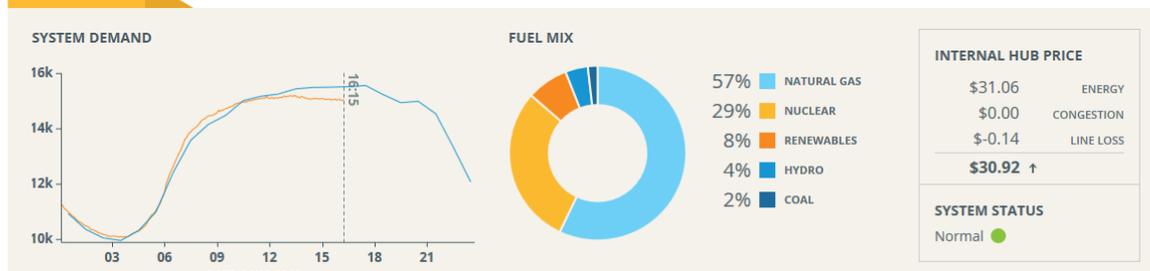
ISO Express
Real-Time Maps and Charts
Pricing Reports
Grid Reports
Energy, Load, and Demand Reports
Operations Reports
Billing, Settlements, and Tariff Reports
Auctions Reports
Retired Reports

Markets Data and Information
Day-Ahead and Real-Time Energy Markets
Forward Capacity Market
Financial Transmission Rights
Forward Reserve Market and Real-Time Reserve Pricing
Net Commitment-Period Compensation
Regulation Market
Voltage Support
Blackstart Service
Demand Resources
Winter Program Payment Rate

ISO Express has information to help you, including:

- Real-Time Maps & Charts
- Pricing Reports
- Operations Reports

Markets and Operations
Facilitating competitive markets and reliable wholesale electricity delivery in New England



Screenshots can be found in [Appendix A](#) of this presentation.

Settlements Issues Forum Dates 2016



Thursday, March 10 at 10:00 AM



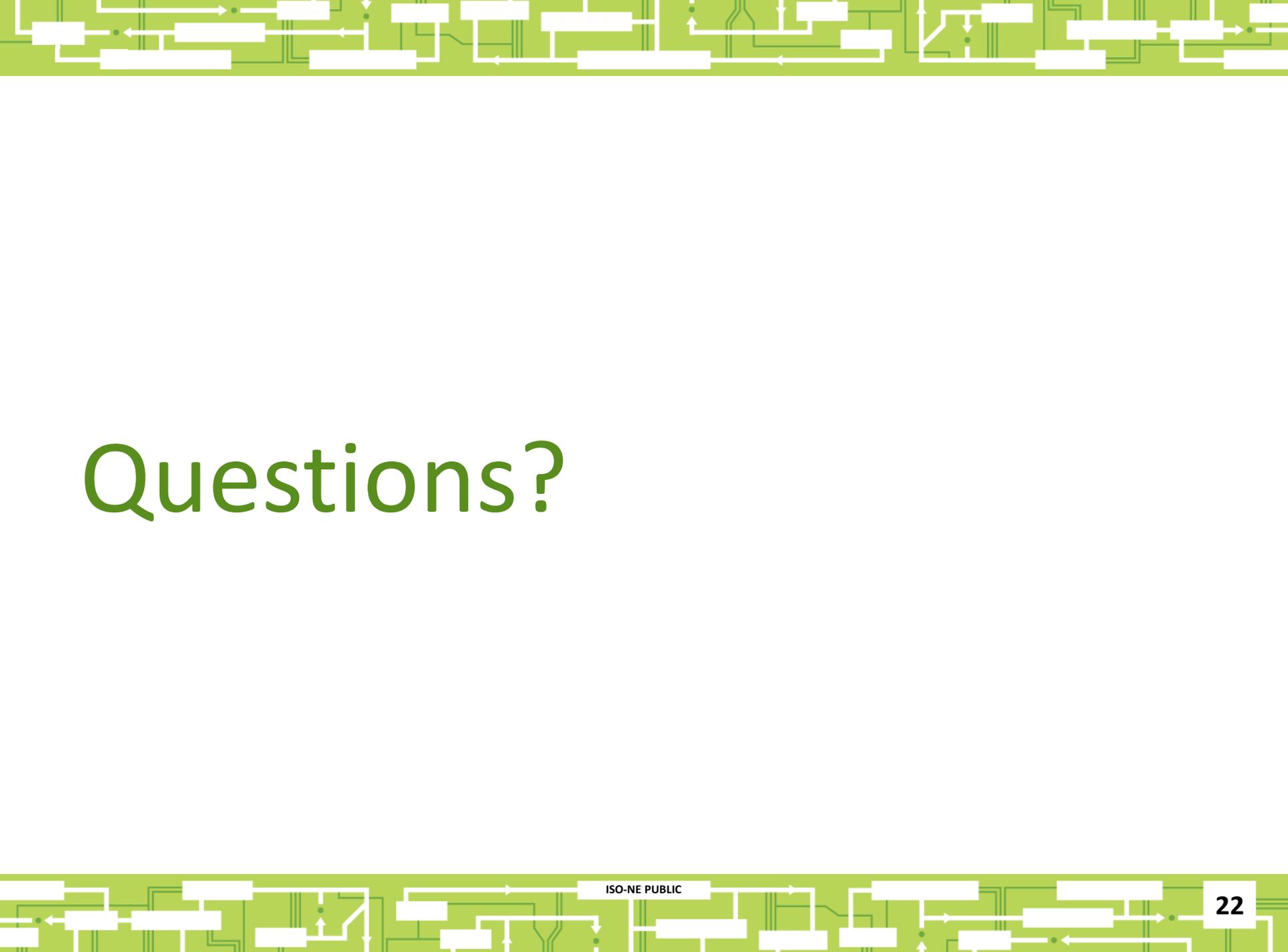
Thursday, June 9 at 10:00 AM



Thursday, September 8 at 10:00 AM



Thursday, December 8 at 10:00 AM



Questions?

APPENDIX A:

Settlement Information on the ISO Website screenshots

Settlement Information on the ISO Website

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About Us Participate Committees and Groups System Planning **Markets and Operations**

ISO Express
Real-Time Maps and Charts
Pricing Reports
Grid Reports
Energy, Load, and Demand Reports
Operations Reports
Billing, Settlements, and Tariff Reports
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Markets Data and Information
Day-Ahead and Real-Time Energy Markets
Forward Capacity Market
Financial Transmission Rights
Forward Reserve Market and Real-Time Reserve Pricing
Net Commitment-Period Compensation
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Voltage Support
Blackstart Service
Demand Resources
Winter Program Payment Rate

Power System Forecast and Status
Morning Report
Seven-Day Capacity Forecast
Three-Day System Demand Forecast
Current Power System Status

Market Performance
Market Performance Reports
Load Costs

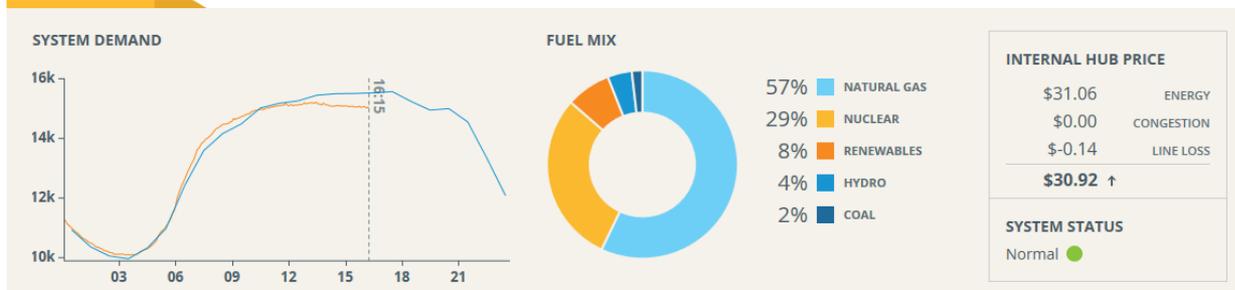
Market Monitoring and Mitigation
Internal Market Monitor
External Market Monitor

Market Development
Wholesale Markets Project Plan

Settlements
Understanding the Bill
Billing Disputes
Settlement and Metering Holidays
Quarterly Settlements Forum
Metering and Resettlement Deadlines
Tariff Rates
Rate Development of Regional Transmission Charges
Generation Information System
Emergency Power Sales and Purchases
FERC Electric Quarterly Reporting
Pricing-Node Table

Transmission Operations and Services
Transmission Service Types
Transmission Outage Scheduling
OASIS Materials
Operational Transmission Limits

Facilitating competitive markets and reliable wholesale electricity delivery in New England



Go to Pricing Reports page: <http://www.iso-ne.com/markets-operations/iso-express/pricing-reports>

Settlement Information on the ISO Website

Where is option for selecting LMPs to display?

Markets and Operations > ISO Express

Pricing Reports

IN THIS SECTION

▼ Energy

- Hourly Day-Ahead LMPs
- Hourly Day-Ahead with Preliminary Real-Time LMPs
- Preliminary Real-Time Five-Minute LMPs
- Preliminary Real-Time 15-Minute LMPs
- Preliminary Real-Time Hourly LMPs
- Final Real-Time 15-Minute LMPs
- Final Real-Time Hourly LMPs
- Selectable Day-Ahead and Preliminary Real-Time Hourly LMPs
- Selectable Final Real-Time Hourly LMPs
- Weekly LMP Indices
- Monthly LMP Indices
- Zonal Information

▼ Offers, Bids & Threshold Prices

- Price Responsive Demand Offers

Energy

Recently Published Energy Markets Data

Download the latest reports on locational marginal prices (LMPs) and other data related to New England's energy markets, load zones, and interchanges with other power systems. [Learn more about the Day-Ahead and Real-Time Energy Markets.](#)

▼ Download Selected Files

ENERGY			
<input type="checkbox"/>	DESCRIPTION	▼ TIMESTAMP	DOWNLOAD
<input type="checkbox"/>	Preliminary Real-Time Five-Minute LMPs Current Interval	09/07/2016 03:35 PM EDT	CSV
<input type="checkbox"/>	Hourly Day-Ahead LMP with Preliminary Real-Time LMPs	09/07/2016 03:06 PM EDT	CSV

Settlement Information on the ISO Website

Where is option for selecting LMPs to display?

ts/pricing/-/tree/lmp-by-node

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About Us Participate Committees and Groups System Planning Markets and Operations

Markets and Operations > ISO Express

Pricing Reports

IN THIS SECTION

- Energy
 - Hourly Day-Ahead LMPs
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 - Daily Offer Threshold Price
 - Day-Ahead Energy Offer Data
 - Real-Time Energy Offer Data
 - Real-Time and Day-Ahead Import Offer and Export Bid Data
 - Day-Ahead ARD Bid Data
 - Real-Time ARD Bid Data
 - FCM Annual Reconfiguration Auction Offers and Bids
 - FCM Monthly Reconfiguration Auction Offers and Bids
 - CCP Information Releases and FCM Delist Bids
 - Forward Reserve Daily Threshold Price Report
 - Demand-Response Threshold Price Summary
 - Demand-Response Threshold Price Details
 - Aggregated Demand-Response Threshold Price Report

Selectable Day-Ahead and Preliminary Real-Time Hourly LMPs

Download a customizable report on hourly day-ahead and real-time locational marginal prices (LMPs) broken into their various cost components: energy, congestion, and losses. [Learn more about LMPs](#). The data is selectable by pnode, Hub, load zone, or interface, and date and hour.

Reports are available from the past seven years. Downloads are provided as .zip files.

OPTION 1: ENTER A LOCATION ID NUMBER

OPTION 2: CHOOSE A GROUP BASED ON THE FIRST LETTER OR NUMBER OF THE LOCATION NAME

0-9 A B C D E F G H I J K L M
 N O P Q R S T U V W X Y Z

CHOOSE A LOCATION

Select a group above

SELECT A DATE RANGE OF ONE TO 45 DAYS

From:

To:

ENTER CAPTCHA TEXT FROM IMAGE BELOW

Click the captcha box to request a new captcha image.

~~1234~~

[Download](#)