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Settlements Issues Forum

Q1 2016 Meeting

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Market Analysis & Settlements



ISO-NE PUBLIC

Note: This presentation was last updated on 12/14/2016. Impacted slides are 2, 8, 11, 12, & 14.



Upcoming Settlement/Market Changes

- Winter Reliability Program
- Do Not Exceed Dispatch (DNE)
- Forward Reserve Market – Elimination of Price Netting
- Subhourly Settlements



Divisional Accounting Update

- Phases 7 & 8: Informational Billing Report & OATT, ISO tariff settlement



Informational Items

- Next meeting date

Upcoming Settlement/ Market Changes

- *Winter Reliability Program*
- *Do Not Exceed Dispatch (DNE)*
- *Subhourly Settlement*



Winter Reliability Program

December 2015 – February 2016



Joint ISO-NE/NEPOOL FERC Filing

- Objective is to maintain reliability during the cold weather months
- Filing contains 2 proposals: ISO and NEPOOL
- FERC order selected NEPOOL proposal
- Will be in effect for 3 seasons:
 - 2015/16
 - 2016/17
 - 2017/18
- Program ends with Forward Capacity Market Pay for Performance (FCM PFP) implementation in June 2018

Joint ISO-NE/NEPOOL FERC Filing
Winter 2014/15 Program

[ER15-2208-000](#)

[FERC Order - ER15-2208-000](#)

View the [Quarter 4 2015 SIF Presentation](#) for more details.

Winter Reliability Program

Program Details



- Offset carrying cost of unused firm fuel purchased by generators for winter period
 - Compensation for unused oil inventory
 - Compensation for unused LNG contract volume
 - Demand Response program
- Charges allocated pro-rata on Real Time Load Obligation (RTLO)*

Set Rates for 2015/16 Payments Market Rule 1, Appendix K Calculation Posting *

Oil: \$12.90/BBL

LNG: \$2.15/MMBTU

DR: \$1.29/kW-month

* [The Winter Program Payment Rate webpage has further details.](#) ❄️

* Excluding RTLO associated with Dispatchable Asset Related Demand pumping load and Coordinated External Transactions (CETs).

Winter Reliability Program

Program Settlement Calendar



CHARGES BILLING TIMELINE - OFFSET FOR UNUSED FUEL

Program Month	Program Charge Estimate Billing Month	Program Final Charge True-Up Billing Month
Dec 2015	Jan 2016	Apr 2016
Jan 2016	Feb 2016	Apr 2016
Feb 2016	Mar 2016	Apr 2016

CREDITS BILLING TIMELINE - OFFSET FOR UNUSED FUEL

Program Month	Program Credits Billing Month
Mar 2016	May 2016

CHARGES AND CREDITS BILLING TIMELINE - DEMAND RESPONSE

Program Month	Program Charges Billing Month	Program Credits Billing Month
Dec 2015	Jan 2016	Feb 2016
Jan 2016	Feb 2016	Mar 2016
Feb 2016	Mar 2016	Apr 2016

Payment to generators for unused fuel inventory will be in bill issued on May 16, 2016

Do Not Exceed (DNE) Dispatch

May 25, 2016



Joint ISO-NE/NEPOOL FERC Filings

- Improve dispatch of intermittent wind and hydro resources
 - Modified electronic dispatch method
 - DNE dispatch point; resource can operate between zero and DNE
 - Minimize manual curtailment
- Better price formation in local areas with limited transmission and high penetration of renewable resources
- Some Settlement MIS report revisions
 - Most changes will be updates to current data descriptions

Joint ISO-NE/NEPOOL FERC Filing

[DNE - ER15-1509-000](#)

Forward Reserve Market (FRM) Revisions

June 1, 2016



Joint ISO-NE/NEPOOL FERC Filings

- Eliminate FRM price netting and revise FRM auction offer cap
 - Current:
 - FRM auction offer cap: \$14.00/kW-month
 - FRM hourly payment rates are developed using a *price netting* calculation: subtract Forward Capacity Auction clearing price from FRM auction clearing prices
 - New:
 - Offer cap: \$9.00/kW-month
 - *Price netting* calculation eliminated; FRM hourly payment rates are calculated directly from FRM auction clearing prices
- Minor changes will be made to settlement Market Information Server (MIS) reports
 - Descriptions of new MIS reports will be published in April

Joint ISO-NE/NEPOOL FERC Filing

[FRM - ER16-921-000](#)



Slide updated on 3/31/2016.

Subhourly Real-Time Settlement

December 2016 *



Key Project in Progress

- Settle Real-Time Markets at subhourly (5 minute) interval
- More accurate compensation, especially for flexible resources that respond quickly
- MIS Report revisions
 - Current hourly reports will continue to be published, with some revisions
 - New reporting will be issued to detail the subhourly calculations

Markets Committee Information

[View Subhourly information available on the ISO website.](#)

* Pending joint ISO-NE/NEPOOL FERC filing and subsequent FERC approval

Subhourly Real-Time Settlement

Current Subhourly Data Sources



- Energy and reserve prices
 - Currently determined at the 5-minute level
 - Integrated to hourly:
 - LMP
 - TMSR RMCP, TMNSR RMCP, TMOR RMCP*
- Hourly meter readings
 - Submitted by Meter Readers to the ISO
 - Submitted for generation and load assets

Meter readings will be **profiled** to the 12, 5-minute intervals in an hour



* Acronyms:

RMCP: Reserve Market Clearing Price

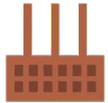
TMSR: Ten Minute Spinning Reserve

TMNSR: Ten Minute Non-Spinning Reserve

TMOR: Thirty Minute Operating Reserve

Sub-hourly Real-Time Settlement

ISO Will Use **Generator Telemetry** to Profile Generation



Generation Example:

① Generator submits meter reading value:
Hour 01: 50 MWh

Old Way

1 hour Interval	Gen MWh	LMP	Hourly Settlement Gen x LMP
01	50	\$36	\$1,800.00

Per generator telemetry, the generator is:

- Off line for first 30 minutes of the hour
- Online at 100 MW output level for the last 30 minutes of the hour

New Way

Sub-hour Interval Begin Time	Profiled Gen MWh	5" LMP	5 " Interval Settlement (Gen x LMP)/12
:00	0	\$25	\$0.00
:05	0	\$27	\$0.00
:10	0	\$29	\$0.00
:15	0	\$31	\$0.00
:20	0	\$33	\$0.00
:25	0	\$35	\$0.00
:30	100	\$37	\$308.33
:35	100	\$39	\$325.00
:40	100	\$41	\$341.67
:45	100	\$43	\$358.33
:50	100	\$45	\$375.00
:55	100	\$47	\$391.67

1 hour Interval	Gen	LMP	Hourly Settlement Roll-up
01	50	\$36	\$2,100.00

Telemetry profile example shown is conceptual.



Subhourly Real-Time Settlement

*Load Will Be Flat Profiled**



Load Example:

Old Way

1 hour Interval	Load MWh	LMP	Hourly Settlement Load x LMP
01	-50	\$36	-\$1,800.00

New Way

Sub-hour Interval Begin Time	Profiled Load MWh	5" LMP	5" Interval Settlement (Load x LMP)/12
:00	-50	\$25	-\$104.17
:05	-50	\$27	-\$112.50
:10	-50	\$29	-\$120.83
:15	-50	\$31	-\$129.17
:20	-50	\$33	-\$137.50
:25	-50	\$35	-\$145.83
:30	-50	\$37	-\$154.17
:35	-50	\$39	-\$162.50
:40	-50	\$41	-\$170.83
:45	-50	\$43	-\$179.17
:50	-50	\$45	-\$187.50
:55	-50	\$47	-\$195.83

(total of 12 intervals above)

Total for hour: (Integrated Load & LMP)	Load MWh	LMP	Hourly Settlement Roll-up
01	-50	\$36	-\$1800.00

* *Flat profile:* All 5 minute intervals will have the same load level.



Subhourly Real-Time Settlement

Changes to Coordinated Transaction Scheduling (CTS) Location Reporting



When subhourly settlements are implemented:

- 15 minute interval reporting will be retired
- No change to Coordinated External Transaction (CET) 15 minute interval scheduling
- CTS locations included in the 5 minute reports
 - Roseton, Location ID =4011
- 15 minute interval reported as three, 5 minute intervals

Old Way

Sub hour Interval	CTS Location	15 " LMP	15 " Interval Settlement (CET x LMP)/4
:15	100	\$27	\$675.00
:30	0	\$33	\$0.00
:45	100	\$39	\$975.00
:00	0	\$45	\$0.00
TOTAL			\$1,650.00

Today's Settlement MIS hourly reports for Real-Time Energy Market include 15-minute interval reporting for CTS location only

Subhourly Real-Time Settlement

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- CTS locations included in the 5 minute reports
 - Roseton, Location ID =4011
- 15 minute interval reported as three, 5 minute intervals

New Way



Sub-hour Interval Begin Time	CTS Location	5 " LMP	5 " Interval Settlement (CET x LMP)/12
:00	100	\$25	\$208.33
:05	100	\$27	\$225.00
:10	100	\$29	\$241.67
:15	0	\$31	\$0.00
:20	0	\$33	\$0.00
:25	0	\$35	\$0.00
:30	100	\$37	\$308.33
:35	100	\$39	\$325.00
:40	100	\$41	\$341.67
:45	0	\$43	\$0.00
:50	0	\$45	\$0.00
:55	0	\$47	\$0.00
TOTAL			\$1,650.00



Slide updated on 12/14/2016.

Subhourly Real-Time Settlement

Overview of Reporting Changes



Reporting Changes for Subhourly Settlements:

- Energy Market
- Reserve Market
- Net Commitment Period Compensation
- Regulation

- Changes include:
 - Adding new, 5 minute level reports that roll up to hourly values (majority of changes)
 - Addition/deletion of data fields in current reports
 - Structural changes to current NCPC payment reports
- Updated report descriptions will be issued well in advance of the December implementation date

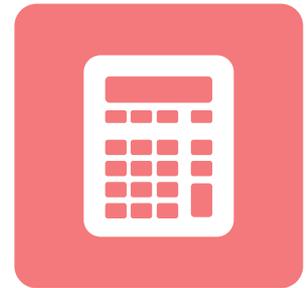
*Subscribe to the **MIS Report Issues** mailing list on the ISO Website!*

<http://www.iso-ne.com/participate/support/mailing-lists>

Questions?



Divisional Accounting Project Update



Divisional Accounting

Quick Overview of Divisional Accounting Project



ISO's current settlement system provides one account for each Market Participant



Market Participants requested a Divisional Accounting option



ISO New England is phasing in software enhancements to fulfill this request

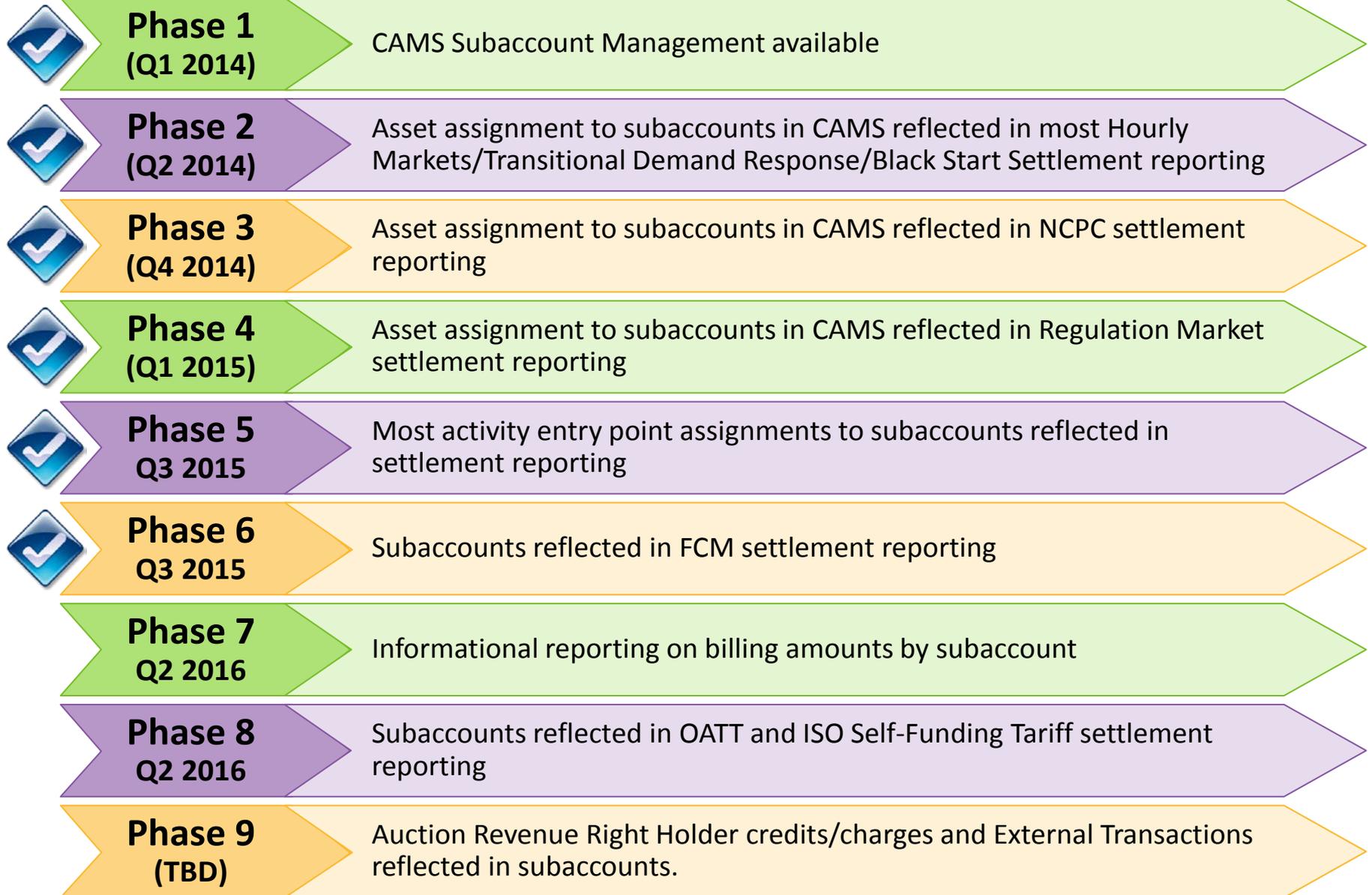
- Settlement MIS reports augmented to show activity in Participant defined subaccounts
- Subaccount activities *roll-up* and total to the same values published in the current settlement reports



For more information, download materials from the
[September 2012 \(Q3\) Settlement Issues Forum](#)
[September 2015 \(Q3\) Settlement Issues Forum](#)

* Bills and Financial Assurance determination remain unchanged

Divisional Accounting Implementation Plan - Projected Schedule



This schedule may be modified to accommodate competing priorities.

Upcoming Divisional Accounting Training

Phases 7 & 8 Informational Reporting



- Informational reporting on billing amounts by subaccount
 - New MIS report
 - Informational only
- Settlement MIS reports for Open Access Transmission Tariff (OATT) and ISO Self Funding Tariff will include subaccounts

Billing DOES NOT change!



Registration coming soon!

ISO is hosting a webinar
detailing these changes:

April 28, 2016 at 10:00am

Questions?



Additional Information

- Next Settlement Issues Forum Date
- Questions & Discussion



Settlements Issues Forum Dates 2016



Thursday, March 10 at 10:00 AM

Q2

Thursday, June 9 at 10:00 AM

Q3

Thursday, September 8 at 10:00 AM

Q4

Thursday, December 8 at 10:00 AM



Questions or Discussion?