WEB CONFERENCE BROADCAST | MARCH 19, 2014

Settlements Issues Forum

Q1 2014 Meeting

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Settlements Topics and Issues

- Upcoming Settlement/Market Changes
  - Regulation Market
  - Energy Market Offer Flexibility (EMOF) & Net Commitment Period Compensation (NCPC) Redesign
- Implemented Market Changes – Update
  - Winter 2013/14 Reliability Program
- Divisional Accounting Update
- Informational Items – Forum dates for 2014
- Discussion, Q&A

UPCOMING MARKET CHANGES

- Regulation Market
- Energy Market Offer Flexibility
  & Net Commitment Period Compensation (NCPC) Redesign

Regulation Market Changes (Order No. 755)

*May 21, 2014**

- Joint ISO-NE/NEPOOL FERC Filing
- Objectives
  - Use separate, uniform prices for regulation capacity and service
  - Provide two-part compensation based on those uniform prices

Joint ISO-NE/NEPOOL FERC Filings
Regulation Market Changes

ER12-1643-001

ER12-1643-003

Markets Committee Presentation
ISO New England Manual M-REG

Mar 12-13 Markets Committee presentation Agenda Item 3

** Pending FERC approval*

Regulation Market Changes

Changes for Regulation Service Providers

- Market Participants will have the ability to submit two-part offers for generation or alternative technology regulation resources
  - Regulation Capacity (Includes opportunity cost)
  - Regulation Service
- Determination of separate uniform clearing prices
  - Regulation Capacity
  - Regulation Service (“mileage”)
- Regulation providers will be paid on the two clearing prices
  - Both payments subject to certain adjustments for performance
    - Performance evaluated within expected bandwidth tolerances
    - See ISO Operations presentation at Regulation Monitor Training
  - Make whole payment if applicable
  - Capacity to Service Ratio (“Q” factor) eliminated
- Regulation self schedule concept eliminated

Regulation Market Changes

Charges and Settlement Reporting

- Regulation charges allocated pro-rata on hourly Real-Time Load Obligation
  - Same as current market design
- Regulation payments and charges will be reported on new Market Information Server (MIS) Settlement reports
  - Current MIS reports will be retired
    - SD_REGDTLASM and SR_REGASM
  - MIS Report Descriptions for new reports will be issued at least 30 days in advance of market implementation
    - SD_REGDTL and SR_REGSUM
    - Divisional Accounting included

UPCOMING MARKET CHANGES

- Regulation Market
- Energy Market Offer Flexibility
  & Net Commitment Period Compensation (NCPC) Redesign

Energy Market Offer Flexibility & NCPC Redesign

Reliability and Resource Performance Market Changes

- Address concerns related to:
  - Reliability and market efficiency issues resulting from the increased reliance on natural gas
  - Resource performance during stressed conditions
- Previous market changes include:
  - Day Ahead Market Acceleration
  - Forward Reserve Market revisions
  - Generation Auditing requirements
  - Winter 2013/2014 Reliability Program
  - Forward Capacity Market Shortage Event Trigger

Energy Market Offer Flexibility & NCPC Redesign

December, 2014

- Joint ISO-NE/NEPOOL FERC Filings
- Allow Market Participants to submit hourly supply offers, and revise supply offers in Real-Time during the Operating Day
- Revise NCPC calculations to account for Energy Market Offer Flexibility

Joint ISO-NE/NEPOOL FERC Filing
Energy Market Offer Flexibility

Offer Flexibility – ER13-1877-000

NCPC Redesign – ER14-1147-000

Markets Committee Presentations
NCPC Redesign

10/8/2013 Agenda Item 2 presentations

Energy Market Offer Flexibility & NCPC Redesign

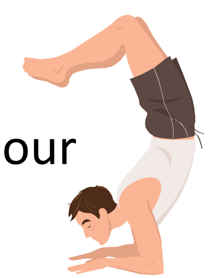
Day-Ahead Market (DAM) Supply Offers

Today:

- Supply Offer submittal is constant for 24 hours of the DAM
  - Identical values of Start-Up, No-Load, Incremental Energy (MW/Price pairs or Bid Slope) are offered for all 24 hours

Offer Flexibility:

- Supply Offer submittal can specify different values during the DAM
  - Up to 24 hourly values for Start-Up, No Load, Incremental Energy allowed
  - Dual fuel units can specify different fuel type by hour
  - Incremental Energy method can vary



Energy Market Offer Flexibility & NCPC Redesign

Real-Time Market (RTM) Supply Offers

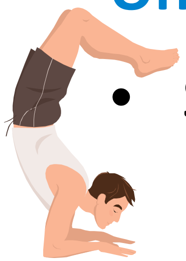
Today:

- Supply Offer submittal is constant for 24 hours of the Operating Day
  - Identical values of Start-Up, No-Load, Incremental Energy (MW/Price pairs or Bid Slope) are offered for all 24 hours
  - Participant can update its RTM offer during the re-offer period after the DAM has cleared
    - Re-offer period usually concludes at 2:00 p.m. on the day before the operating day

Energy Market Offer Flexibility & NCPC Redesign

Real-Time Market Supply Offers

Offer Flexibility



- Supply Offer submittal can specify different values
  - Up to 24 hourly values for Start-up, No-Load, and Incremental Energy
  - Dual fuel units can specify different fuel type by hour
  - Incremental Energy method can vary
- In Real-Time, New Supply Offer for an hour can be submitted up to 30 minutes in advance of the hour
  - New RT offer can specify varying values for subsequent hours

Energy Market Offer Flexibility & NCPC Redesign

Supply Offers: Advantage of Flexible Offers

- Generator owners can reflect the true cost of fuel in the offers
- Today, supply offers are submitted one day before the operating day
- With offer flexibility, supply offers can reflect changes in the costs of procuring fuel in real time
- Locational Marginal Prices will reflect real cost of fuel, providing better market signals

Energy Market Offer Flexibility & NCPC Redesign

High Level Concepts – Settlement Considerations

- The Energy Market settlement rules and mechanics are not impacted by the Energy Market Offer Flexibility changes
  - All generation is still compensated at LMP
  - Supply offers are not considered in the settlement
- Today, the NCPC evaluation determines if a generator has recovered its costs through the energy settlement at LMP
  - NCPC provides "make whole" payment to a generator following ISO dispatch instructions, if revenue at LMP does not fully compensate the cost of generation based on the generator's supply offer

Energy Market Offer Flexibility (EMOF) & NCPC Redesign

NCPC Overview - Principles

- Existing NCPC rules are incompatible with Offer Flexibility
  - Existing rules based on one offer (Start Up, No-Load, Incremental energy) for all 24 hours of the operating day
- New Market Design for NCPC determination
  - Hourly Offers
  - Intraday hourly offers
  - Negative offers

Energy Market Offer Flexibility & NCPC Redesign

New Principle for NCPC Payments

- Replace “make whole” concept with “no worse off principle”
- Ensure Market Participants are compensated for an inappropriate financial loss, relative to the “best alternative”, when following ISO instructions

Energy Market Offer Flexibility & NCPC Redesign

New NCPC Concepts & Terms: NCPC Settlement Period

- Replaces operating day as the period for NCPC calculations
- Corresponds to commitment duration for non-fast start units
  - Commitments that are not contiguous will have separate settlement periods
- Credit calculation performed separately for each period; profitable periods do not subsidize losses
  - Market Participant is "not worse off" for following dispatch in unprofitable period
    - Profits don't net out losses in the different periods
- Fast Start Units are evaluated hourly; profits in any hour do not net out losses in another hour

Energy Market Offer Flexibility & NCPC Redesign

New NCPC Concepts & Terms: Cumulative Profit Determination

- Performed after Minimum Run Time has elapsed
- Determine hour in which cumulative profit is maximized. Calculate NCPC to recover forgone profit when generator is not shut down by the ISO at the end of this hour
  - The Market Participant will recover the foregone profit, thus “no worse off” for staying online

Example:

Hour	Revenue – Cost Calculation	Cumulative Profit
10	$1000	$1000
11	$500	$1500
12	-$100	$1400
13	-$200	$1200
Maximum Profit		$1500
Cumulative Profit:		$1200
NCPC Payment:		$300

Energy Market Offer Flexibility & NCPC Redesign

NCPC Overview - Principles

- More Precision in Cost Allocation
  - Replace hourly allocations based on total pool load with allocation to the generator’s unprofitable hours only

Energy Market Offer Flexibility & NCPC Redesign

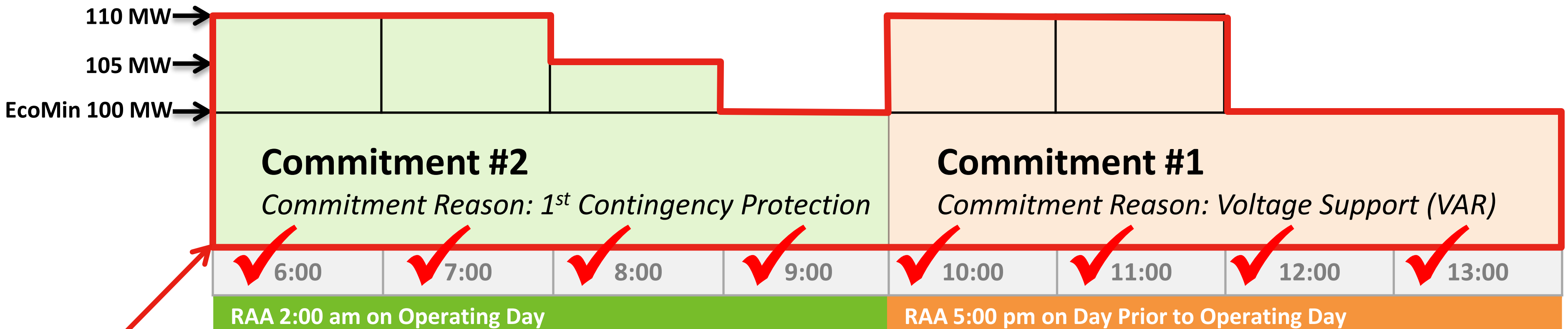
"High Level" Example

- Conceptual overview
  - Current NCPC methodology
  - NCPC redesign methodology
- Many new concepts and rules in NCPC redesign
- Overview today to illustrate broad differences using a single example
  - Commitment and Dispatch in Real-Time only
  - Provide context for upcoming changes in Settlement mechanics and Settlement MIS reporting

Generator XYZ Commitment and Dispatch

NCPC Calculations Today

Single Supply Offer for All Hours of Day
Start-Up/No-Load/Incremental Energy



Calculate NCPC Credit

- **Revenues at LMP**
- **Costs at Supply Offer**

All Hours of Day are Netted Together

If Cost > Revenue:

NCPC = Cost - Revenue

✓ Allocate Costs Based on Hourly Total Pool Load

Generator XYZ Commitment and Dispatch

NCPC Calculations – Offer Flexibility

EcoMin 100 MW

Commitment #2 *Commitment Reason: 1st Contingency Protection*				**Commitment #1** *Commitment Reason: Voltage Support (VAR)*			
6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00

RAA 2:00 am on Operating Day	**RAA 5:00 pm on Day Prior to Operating Day**
Commitment Decision 2 (CD #2)	**Commitment Decision 1 (CD #1)**
Effective Offer for Commitment (EOC)	Effective Offer for Commitment (EOC)
Startup / No Load / Incremental Energy at Economic Minimum	Startup / No Load / Incremental Energy at Economic Minimum

Generator XYZ Commitment and Dispatch

NCPC Calculations – Offer Flexibility

Effective Offer for Dispatch	EOD at 6:00	EOD at 7:00	EOD at 8:00	EOD at 9:00	EOD at 10:00	EOD at 11:00	EOD at 12:00	EOD at 13:00

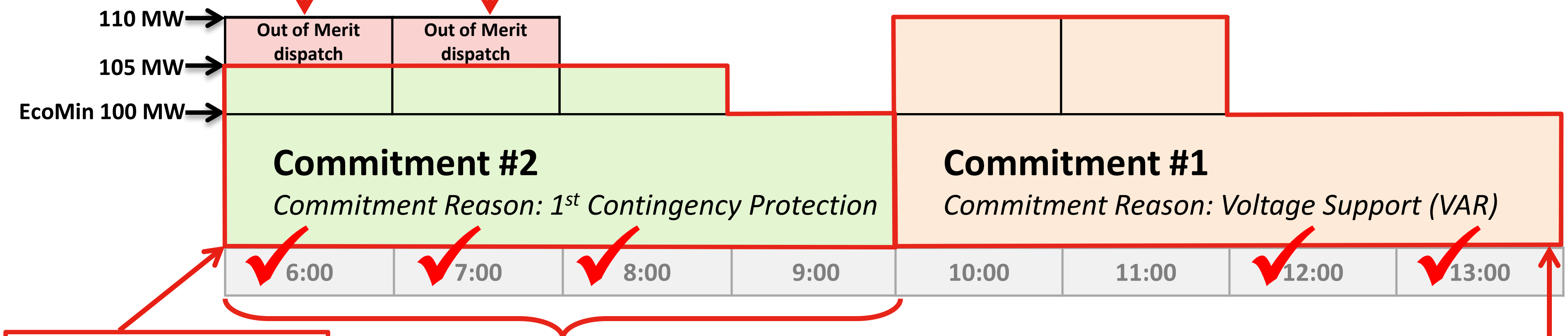
Calculate Hourly Dispatch NCPC Credit
- Revenue at LMP
- Cost using EOD

Calculate Hourly Dispatch NCPC Credit
- Revenue at LMP
- Cost using EOD

*Note: If any of the values in an EOD supply offer are less than the values in the EOC supply offer in that hour, **the lesser value is used***

Effective Offer for Commitment (EOC)
Startup / No Load / Incremental Energy

EOD at hour x



Calculate Commitment NCPC Credit
- Revenue at LMP
- Costs, using:
  - a) EOC (CD #2): Start-Up, No-Load, Incremental Energy up to EcoMIn
  - b) EOD: Incremental Energy Above EcoMin

✓ Allocate Costs Based on Hourly Negative Net Revenue

Calculate Maximum Accumulated Profit NCPC Credit
- Revenue at LMP
- Costs, using:
  - a) EOC (CD #1): No-Load, Incremental Energy up to EcoMIn
  - b) EOD: Incremental Energy Above EcoMin

***EOC**: Effective Offer for Commitment*
***EOD**: Effective Offer for Dispatch*

Energy Market Offer Flexibility & NCPC Redesign

"High Level" Example – Calculation Information

- To augment the high level concepts, a table of calculations is provided for review purposes
- Calculations are presented in an informal format, tailored specifically for this example

Commitment #2

Effective Offer for Commitment	
Start-Up Cost	$1000
No-Load Cost	$500
Incremental Energy to Economic Minimum	$48

Commitment #1

Effective Offer for Commitment	
Start-Up Cost	$2000
No-Load Cost	$1000
Incremental Energy to Economic Minimum	$54

MIN RUN TIME (MRT)	6:00	7:00	8:00	9:00
LMP ($/MWh)	51	51	50	60
EOD to 110 MW ($/MWh)	52	52	52	62
EOD to 105 MW ($/MWh)	50	50	50	61

Start-Up Cost(1)	$250	$250	$250	$250
No-Load Cost	$500	$500	$500	$500
Incremental Energy to Economic Minimum	$4,800	$4,800	$4,800	$4,800
Incremental Energy to Economic Dispatch Point	$250	$250	$250	$0
Total Cost	$5,800	$5,800	$5,800	$5,550
Revenue at Economic Dispatch Point	$5,355	$5,355	$5,250	$6,000
Profit/Loss	-$445	-$445	-$550	$450
Net Profit/Loss				-$990
Commitment NCPC				$990
Incremental Energy to Dispatch Point	$260	$260	$0	$0
Revenue for Out of Merit Dispatch	$255	$255	$0	$0
Profit/Loss	-$5	-$5	$0	$0
Dispatch NCPC				$10

Commitment NCPC Cost Allocator	30.9%	30.9%	38.2%	0.0%
Commitment NCPC Cost Allocation	$306	$306	$378	$0
Dispatch NCPC Cost Allocation	$5	$5	$0	$0
Total MRT Cost Allocation	$311	$311	$378	$0

POST MIN RUN TIME	10:00	11:00	12:00	13:00
LMP ($/MWh)	85	75	44	49
EOD to 110 MW ($/MWh)	58	58	59	59
EOD to 105 MW ($/MWh)	55	55	56	56

Start-Up Cost	$0	$0	$0	$0
No-Load Cost	$1,000	$1,000	$1,000	$1,000
Incremental Energy to Economic Minimum	$5,400	$5,400	$5,400	$5,400
Incremental Energy to 105 MW	$275	$275	$0	$0
Incremental Energy to 110 MW	$290	$290	$0	$0
Total Cost	$6,965	$6,965	$6,400	$6,400
Revenue at Dispatch Point	$9,350	$8,250	$4,400	$4,900
Profit	$2,385	$1,285	-$2,000	-$1,500
Cumulative Profit	$2,385	$3,670	$1,670	$170
Maximum Profit		$3,670		
Post MRT NCPC				$3,500

Post MRT Cost Allocator			57.14%	42.86%
Post MRT Cost Allocation			$2,000	$1,500

(1) Start-Up amortized through the end of the Commitment Decision period in which the MRT ended.

Energy Market Offer Flexibility & NCPC Redesign

"High Level" Example

- ISO will be providing training on Offer Flexibility and NCPC Settlement (Summer 2014)
- Note that every DA and RT NCPC Market Information Server (MIS) settlement report will be retired
  - All new MIS reports for NCPC redesign
  - Divisional Accounting included in new reports

Questions

RECENT MARKET CHANGES – UPDATE

- Winter 2013/14 Reliability Program

Winter 2013/14 Reliability Program

Settlement Schedule, including Resettlements

Program Operating Month	Program Charges Billing Month	Program Credits Billing Month	Penalty Settlements, As Applicable Billing Month	Data Reconciliation Process (DRP) Resettlement Billing Month
December 2013	January 2014	February 2014	February 2014	May 2014
January 2014	February 2014	March 2014	March 2014	June 2014
February 2014	March 2014	April 2014	April 2014	July 2014

- Program Charges are billed to Participants with Real Time Load Obligation (RTLO)
  - $25 Million/Month for each of the three Winter Reliability Program months (Dec – Feb)
- Program Credits are paid to Participants providing Winter Reliability Service
- Program Penalties are settled as follows:
  - If a Winter Reliability Service provider incurred penalties, provider is charged for those penalties
  - Penalties are paid to Participants who were charged for the program operating month
- DRP Resettlements will reflect any changes in RTLO values

DIVISIONAL ACCOUNTING

- *Project Recap*
- *Schedule*
- *Implementation Detail: Reserve Market Failure to Reserve Cost Allocation*

Divisional Accounting Recap

- ISO's current settlement system provides ***one*** account for each Market Participant
- Market Participants requested a Divisional Accounting option
- ISO New England is working on software enhancements to fulfill this request
  - Settlement MIS reports will be augmented with a new section detailing the report activity in Participant defined subaccounts
  - Subaccount activities will "roll up" and total to the same values published in the current settlement reports

Download materials from the September 2012 (Q3) Settlement Issues Forum *for a complete overview of this topic.*

Implementation Plan

Account management in CAMS

Phase 1 (Q1 2014)

CAMS Subaccount Management available

Implemented: March 6, 2014

WebEx training for
CAMS Subaccount Management

February 26, 2014 Session Materials

CAMS User Guide for Company and Affiliate Maintenance

Divisional Accounting

Notes on Implementation

- CAMS is now available for Subaccount management
- Phase 2 release for Divisional Accounting will include the subaccounts in some settlement reporting; asset assignment to subaccounts will be reflected in these reports
  - Energy/Regulation/Reserves
  - Transitional Demand Response
  - Black Start
- Note that Phase 2 settlement reporting does not include activity assignment to subaccounts
- Activities that will not be reflected in subaccounts include
  - Day Ahead Cleared Demand Bids
  - Day Ahead Cleared Virtual Transactions (Incremental Offers ("Inc's") and Decremental Bids ("Dec's")
  - Internal and External Transactions
  - Financial Transmission Rights (FTRs)
- Note that Participants can set up Subaccounts in CAMS without enabling reporting

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 (2015)	Activity entry point assignments to subaccounts reflected in settlement reporting; subaccounts included in FTR settlements
Phase 5 (TBD)	Subaccounts reflected in FCM settlement reporting
Phase 6 (TBD)	Subaccounts reflected in OATT and ISO Self-Funding Tariff settlement reporting

This schedule may be modified to accommodate competing priorities.

Divisional Accounting

Implementation Detail

- ISO will implement rules to ensure that cost allocation is not affected by Divisional Accounting
- Costs with tiered rates or netting across dimensions will be allocated among subaccounts using a pro-rata approach
  - NCPC Load Obligation Deviations
  - Forward Reserve Market Failure to Reserve
  - ISO Tariff tiered costs and non-zero ANI transaction units
- The rule for allocation of Forward Reserve Market (FRM) Failure to Reserve penalties will be reviewed today

Divisional Accounting

Implementation Detail: Forward Reserve Market (FRM) Failure to Reserve

- A Participant with an FRM obligation incurs Failure to Reserve penalties in any hour where FRM delivery is less than FRM obligation
- There are scenarios where the ISO would not be able to attribute the penalties to a subaccount
  - Participant did not assign enough MW to meet its obligation
    - Which Subaccount "at fault"? Unknown
  - Participant overassigns MW to meet its obligation; but delivery falls short
    - Which Subaccount "at fault"? Unknown
- Since the ISO cannot determine which subaccount is responsible for the Failure-to-Reserve penalties, all Failure-to-Reserve penalties will be reported in the Default Account
  - Participant can determine correct allocation in-house for these penalties

Questions

ADDITIONAL INFORMATION

Settlement Issues Forum Dates for 2014

Settlements Issues Forum Dates

- Q2 meeting: Friday, June 13 at 10:00 AM
- Q3 meeting: Friday, September 12 at 10:00 AM
- Q4 meeting: Thursday, December 11 at 10:00 AM

Questions
&
Discussion