Disclaimer for Customer Training: ISO New England (ISO) provides training to enhance participant and stakeholder understanding. Not all issues and requirements are addressed by the training. Consult the effective <u>Transmission</u>, <u>Markets and Services Tariff</u> and the relevant <u>Market Manuals</u>, <u>Operating Procedures</u> and <u>Planning Procedures</u> for detailed information. In case of a discrepancy between training provided by ISO and the Tariff or Procedures, the meaning of the Tariff and Procedures shall govern.

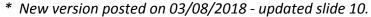
March 8, 2018 WebFx Broadcast

## **Settlements Forum**

2018 Q1

#### **Rachel Likover**

Market Analysis & Settlements



\* New version posted on 03/21/2018 - updated slides 33-35 (new)







#### **Upcoming Settlement/Market Changes**

- Forward Capacity Market- Performance Incentives
- Price Responsive Demand
- Net Commitment Period Compensation Cost Reallocation



#### Informational Items

Next meeting date

## **Upcoming Settlement/Market Changes**

- Forward Capacity Market Performance Incentives
  - Stop –loss mechanism
  - FCM capacity performance bilateral transaction
- Price Responsive Demand Full Integration
- NCPC Cost Reallocation



## **Forward Capacity Market – Performance Incentives**

June 1, 2018



## Joint ISO-NE/NEPOOL Filing

- Implement pay for performance design
  - Resources will get a capacity
     performance score during scarcity
     conditions (could be positive or negative)
    - Payments/charges are based on this score and the tariff rate
  - Includes stop loss provisions
  - New FCM bilateral transaction
  - Revisions to Settlement MIS reports
- Retire current performance provisions
  - Shortage events
  - Demand response
  - External transaction penalties

#### Joint ISO-NE/NEPOOL FERC Filing

ER14-1050-000 ER14-1050-001 ER14-2419-001

Links to FERC filings in .pdf version.



Watch a <u>short video</u> introduction to the FCM performance incentives.

#### Additional information:

- Customer Readiness web page
- Key Project web page

Forward Capacity Market Performance Incentives

## **FCM Stop-Loss Mechanism**

#### **Performance Incentives Overview**

## **Capacity scarcity event:**

A 5-minute interval when the system doesn't have enough capacity and reserves and the Reserve Constraint Penalty Factor is included in 5-minute LMP

## Steps to find a resource's payment/charge

- 1. Calculate the balancing ratio
- Determine each resource's actual capacity provided
- 3. Calculate each resource's capacity performance score
- 4. Calculate each resource's payment or charge

## For a detailed example, please see the Q4 2017 SF materials here:

- Presentation
- Webinar recording

What's the worst that can happen?

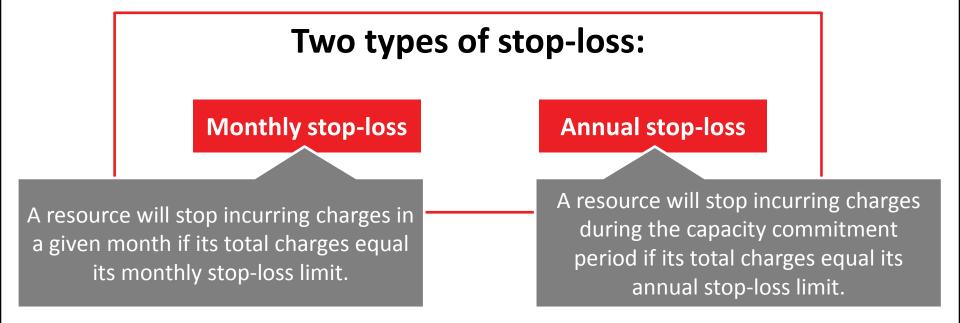
## **About the Stop-loss Mechanism**

Forward Capacity Market

Performance Incentives

#### What is the stop-loss?

- The stop-loss mechanism prevents unlimited financial risk to market participants with a capacity supply obligation (CSO).
- A resource stops incurring charges once it is charged an amount equal to its stop-loss limit



## **About the Monthly Stop-loss**

Forward Capacity Market

Performance Incentives

#### How do you find your resource's monthly stop-loss limit?

 Multiply your resource's CSO by the FCA starting price for the current capacity commitment period (CCP)

**FCA** starting price



**CSO** 

#### **Example:**

- 2018/19 FCA starting price: \$17.728/kW-month (\$17,728/MW-month)
- Resource's CSO (Rest of Pool capacity zone): 100 MW

\$17,728/MW-month



100 MW



-\$1,772,800

Monthly stop-loss limit \*

<sup>\*</sup> Displayed in settlement reporting convention; negative value is charge.

## **Monthly Stop-loss Example**

How is the stop-loss applied?

Forward Capacity Market

Performance Incentives

#### System and FCA data:

FCA starting price: \$17,728/MW-month

Capacity zone (CZ): Rest of Pool (ROP)

ROP clearing price: \$9,551/MW-month



Green is the Rest of Pool zone

Resource's FCM base payment = CSO x CZ (ROP) clearing price

#### **Resource data:**

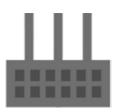
Capacity supply obligation: 100 MW

Monthly stop-loss limit:

-\$1,772,800

FCM Base payment:

\$955,100



#### Maximum monthly loss exposure\*:

Stop-loss limit -\$1,772,800



Base payment \$955,100



Max Loss Exposure -\$817,700

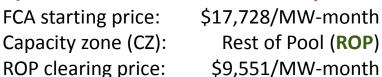
<sup>\*</sup>Remember, resources are paid in the FCM. This equation illustrates the net loss of the entire base payment and then a further charge up to the stop-loss limit.

## **Annual Stop-loss Example**

How is the stop-loss applied?

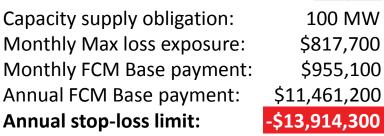
Forward Capacity Market Performance Incentives

#### **System and FCA data:**





#### **Resource data:**



No further charges incurred after a resource is charged the equivalent of:

Max CSO x (3 x (FCA Clearing Price - FCA Starting Price) - (12 x FCA Clearing Price))

In English: No further charges incurred once resource is charged an amount equal to the entire annual base payment, plus 3 months of "max loss exposure" incurred when monthly stop-loss applied

<sup>\*</sup> slide updated on 03/08/2018 - added "Max" to formula above.

Forward Capacity Market

Performance Incentives

## **FCM Capacity Performance Bilateral Transactions**

## **FCM Capacity Performance Bilateral**

Market instrument for addressing underperformance

Forward Capacity Market

Performance Incentives

## **New Contract Type for Trading Performance MW**

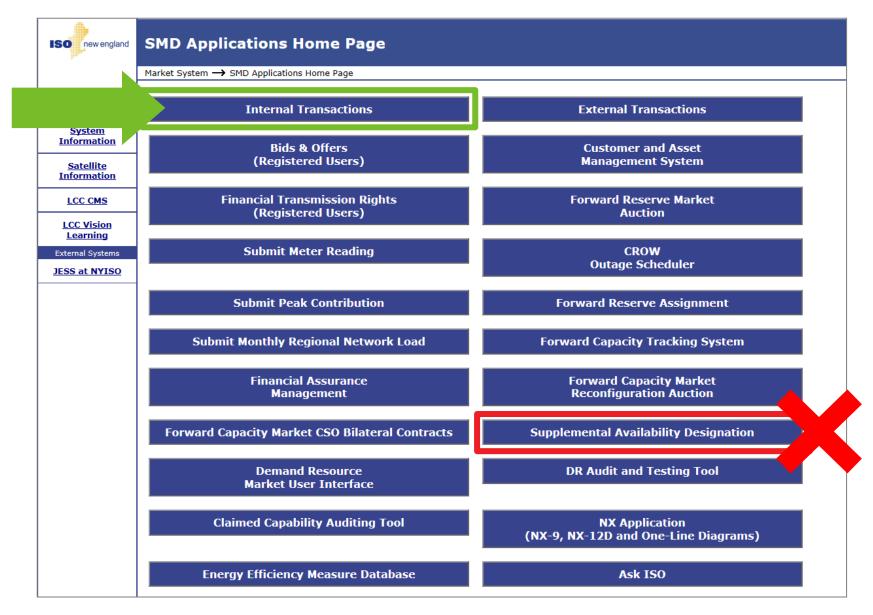
- Participants have ability to sell scarcity condition performance MW
- This contract type replaces the Supplemental Availability Bilateral, which will be retired on June 1, 2018
- The contracts are submitted to the ISO via the Internal Transactions interface on the SMD Application Home Page
- Contract deadline
  - Initial settlement: Noon on the second business day following the end of the month
  - Data Reconciliation Process Resettlement: 17:00 on the 101st day after the end of the month

## **FCM Capacity Performance Bilateral**

Interface access through SMD home page

Forward Capacity Market

Performance Incentives



## **FCM Capacity Performance Bilateral**

New dropdown for FCM Performance Score contract

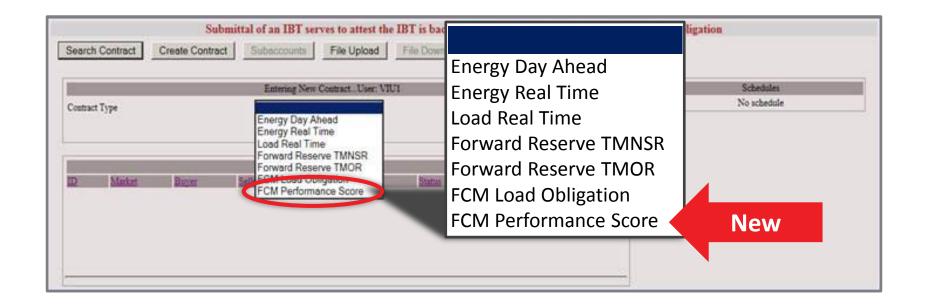
Forward Capacity Market

Performance Incentives

#### **April 2018:**

Sandbox environment will be available to test this interface.

An updated Internal Bilateral Transaction User Guide will be posted on the ISO website prior to the opening of the sandbox.



## **Fully Integrated Price Responsive Demand (PRD)**

June 1, 2018



## Joint ISO-NE/NEPOOL Filing

- Full integration of active demand response into the energy and reserves markets
  - 'Must offer' requirements for assets mapped to resource with Capacity Supply Obligation
- Demand reduction offers incur ISO
   Tariff Schedule 2 expenses
- Settlement MIS Report revisions
  - DA & RT Energy and Reserves
  - Additional new reports for DA & RT NCPC

#### Joint ISO-NE/NEPOOL FERC Filing

ER11-4336-000

ER15-257-000

ER16-167-000

ER17-2164-000

Links to FERC filings in .pdf version.



Watch the <u>DRWG web</u> page for PRD information

#### See this project's web pages:

- Key Project web page (includes training session link)
- Customer Readiness web page

#### High Level Overview

- Demand reduction offers can clear in day-ahead market
- Specific rules for energy settlement
  - Demand reduction is included in day-ahead energy settlement
  - Demand reduction is removed from real-time energy settlement
    - Instead, demand reduction has an independent real-time settlement
    - Any real-time deviation charge/credit is allocated to load obligation
- Demand reduction is eligible for NCPC evaluation
- Demand reduction may provide reserves

#### Day Ahead Market

- Demand Response Resource (DRR) demand reduction offers can clear in the Day
   Ahead energy market
- Cleared demand reduction is converted to demand reduction obligation
  - MW increased by average avoided peak distribution losses multiplier (currently 1.055)
- Demand Reduction Obligation (DRO) is included in DA adjusted net interchange
  - Settled at the DA LMP; same mechanics as other cleared DA quantities
- DRR eligible for DA NCPC evaluation and payments
  - Fast Start DRR
    - NCPC settlement period is hourly
  - Non-Fast Start DRR
    - NCPC settlement period is hours of contiguous operation

Real Time Market

DRR energy settlement is independent of RT energy balancing market settlement – how is this accomplished?

#### **FIRST:**

The RT adjusted net interchange deviation is calculated excluding any DA demand reduction obligation from the DA adjusted net interchange.

- Like today, the RT energy settlement will have no DRRs settled in it
- The result of the RT energy settlement balancing calculations will be unchanged for PRD

# DRR energy settlement is independent of RT energy balancing market settlement – how is this accomplished?

#### **NEXT:**

- A separate calculation of the DRR energy deviation is performed
- For each DRR dispatched by the ISO in real time, the DRR's real time demand reduction obligation (DRO) is derived from metered demand reduction and, if applicable, metered net supply
  - Demand reduction increased by average avoided peak distribution losses (1.055)
  - Net supply is not adjusted
  - → RT DRO is the total of these two quantities
- For DRRs not dispatched by ISO, the DRO is zero
- The deviation between the RT and DA DRO values is multiplied by the real-time LMP
- This credit/charge is allocated pro-rata to Real Time Load Obligation, excluding load at external nodes and DARD pumps

#### DRR are eligible for RT NCPC evaluation and payments

- Fast Start DRR: NCPC settlement period is hourly
- Non-Fast Start DRR: NCPC settlement period is hours of contiguous operation

## **DRR** are eligible for Reserve Market

- Forward Reserve & Real Time
  - Fast Start DRR
  - Non-fast start that have been dispatched

What's New in PRD and PFP

Updates in timelines and user interface functionality

#### **Meter Data Submittal**

- Demand response meter data submittal deadline revised for June 1, 2018
  - Daily meter data due at 1:00 pm on the second business day after operating day
  - Matches deadline for all other energy market meter data (generation/load/ties)
- Demand Response Market User Interface (DRMUI) some new functionality
  - Updated user guide will be posted ~ March 15<sup>th</sup>
  - Note that asset level information is available for inspection using the DRMUI
  - PRD settlement reporting will be at the Demand Response Resource (DRR) level
    - DRRs are composed of assets
- Passive demand response with distributed generation 24x7 meter reads
  - Currently, calculations are performed only on meter data for on-peak hours
  - Under FCM Pay for Performance evaluation, scarcity events are possible in any hour
  - Calculations may be performed on meter data for any hour
    - Hourly generation output must be submitted for all hours starting June 1
  - Some changes in Meter Reading User Interface; updated guide will be posted soon

## **MIS Report Changes**

Overview and Report List

#### **PRD and PFP MIS Report Changes**

- Summary of additions to reporting for DA and RT
- Complete lists of new and modified reports
- MIS report changes shown in the Appendix!

Please see <u>Appendix</u> for complete MIS Report Changes information

## Fully Integrated PRD; NCPC Cost Reallocation

June 1, 2018



## Joint ISO-NE/NEPOOL Filing

- Compliance with FERC Order 719, included in PRD implementation
- Real-time NCPC cost allocation during scarcity events
- Load deviations that are reductions from day-ahead commitments will be relieved of NCPC uplift charges
  - These charges reallocated to all Real
     Time Load Obligation
- New settlement MIS Report

Joint ISO-NE/NEPOOL FERC Filing

ER17-2164-000\*

Link to FERC filings in .pdf version.



<sup>\*</sup> See filing letter, pages 38-40 (Section G.2 of the letter).

## **Informational Items**

- Settlements Forum Dates
- Questions & Discussion



#### **Settlements Forum Dates 2018**





Thursday, March 8 at 10:00 AM

Q2

Thursday, June 7 at 10:00 AM

Q3

Thursday, September 6 at 10:00 AM

Q4

Thursday, December 6 at 10:00 AM

## Questions

## **APPENDIX**

MIS Reporting Changes for PRD and PFP



## **FCM Performance Incentive MIS Report Changes**

#### **New Reports**

- SD\_FCMNSCDTL2 FCM Net Supply Credit Details Report
- SD\_FCMPFPACP FCM Pay for Performance Actual Capacity Provided Report
- SD\_FCMPFPACPPRELIM FCM Pay for Performance Actual Capacity Provided Preliminary Report
- SD\_FCMPFPCPSBT FCM Market Pay For Performance Capacity Performance Score Bilateral Transactions Report
- SD\_FCMPFPRESPYMT FCM Pay for Performance Resource Payments Report
- SD\_FCMPFPSCORE FCM Pay for Performance Capacity Performance Score Report
- SD\_FCMPFPSCOREPRELIM FCM Pay for Performance Capacity Performance Score Preliminary Report

#### **Modified Reports**

- SD\_FCMCLOSTLDTL FCM Capacity Load Obligation Settlement Details Report
- SD\_FCMPRECAPREQ FCM Preliminary Capacity Requirement
- SR\_FCMSTLSUM FCM Settlement Summary Report
- SR\_FCMNRCPSUM FCM Net Regional Clearing Price Summary Report

#### **Retired Reports**

- SD\_DRCHGDETAIL Demand Response Settlement Charges Detail Report
- SD\_DRSTLDETAIL Demand Response Settlement Detail Report
- SD\_FCMAVAIL FCM Availability Settlement Detail Report
- SD\_FCMIMPORTPENALTYCHG FCM Import Penalty Charge Settlement Detail Report
- SD\_FCMIMPORTPENALTYCRD FCM Import Penalty Credit Settlement Detail Report
- SD\_FCMNSCDTL FCM Net Supply Credit Details Report
- **SD\_FCMPERFORMSTLDTL** FCM Performance Settlement Detail Report
- SD\_FCMPREAVAIL FCM Preliminary Availability Report
- SD\_MONTHLYEPOH Monthly Equivalent Planned Outage Hours Settlement Detail Report
- SR\_DRSTLSUM Demand Response Settlement Summary Report
- **SR\_FCMANNUALEPOH** FCM Annual Equivalent Planned Outage Hours Allotment Report
- SR\_FCMAVAILSUM FCM Availability Penalty & Credit Summary Report

ISO. NE DUBLIC

Additions to Day Ahead Reporting

What's New in PRD Settlements

## **DA Energy Market**

- New location type for demand response added: DRR Aggregation Zone
- Cleared demand response reduction offer
- DA Demand Reduction Obligation (DRO)
  - Cleared demand response reduction offer X 1.055\*
- DA Adjusted Net Interchange value includes the DRO
  - DRO is settled at DA LMP, in same manner as all other DA activity

#### **DA NCPC**

- DRR Aggregation Zone location type
- Settlement period definition

<sup>\*</sup> Average avoided peak distribution losses multiplier

## **PRD MIS Report Changes**

Day Ahead

What's New in PRD Settlements

Modified Reports	
DA ENERGY	<ul> <li>SR_DALOCSUM         <ul> <li>Day Ahead Energy Market</li> <li>Locational Settlement Report</li> </ul> </li> <li>SD_DACLEARED         <ul> <li>Day-Ahead Locational Cleared</li> <li>Energy Market Settlement</li> <li>Report</li> </ul> </li> </ul>
DA NCPC	<ul> <li>SD_DANCPCPYMT         <ul> <li>Day-Ahead Net Commitment</li> <li>Period Compensation</li> <li>Payment Report</li> </ul> </li> <li>SR_DANCPCSTLMNTSUM</li> <li>DA NCPC Settlement Summary</li> <li>Report</li> </ul>

#### **New Reports**

DA NCPC

SD\_DANCPCDRR
 Day-Ahead NCPC Demand Response
 Resource Commitment and Dispatch
 Report

## **Other PRD MIS Report Changes**

Additions to Real Time Reporting

What's New in PRD Settlements

#### **RT Energy Market**

- New location type for demand response added: DRR Aggregation Zone
- RT adjusted net interchange deviation is calculated to exclude any DA DRO
- RT Demand Reduction Obligation (DRO)
  - Metered Energy Quantity Reduction X 1.055 \*
  - Net Supply, if applicable
  - Note that DRO is only calculated if DRR was dispatched by ISO
- RT Demand Reduction Obligation Deviation; standalone calculation which compares RT DRO to DA DRO
  - Settled at RT LMP at the DRR aggregation zone or network node
    - DRR > 5 MW are settled at network node LMP
- Allocator for demand reduction obligation deviation settlement
  - Real time load obligation, excluding external nodes and DARD pump load

#### RT NCPC

- Aggregation Zone location type
- Settlement period definition

#### **Reserve Market**

- Aggregation Zone location type
- Settlement period definition

<sup>\*</sup> Average avoided peak distribution losses multiplier

## **MIS Report Changes**

#### Real Time

What's New in **PRD Settlements** 

#### RT ENERGY • SR RTCUSTSUM Real Time Energy Market Summary Report SR RTCUSTSUM5MIN Real Time Energy Market Five Minute **Summary Report** • SR RTLOCSUM Real Time Energy Market Locational **Summary Report** • SR RTLOCSUM5MIN Real Time Energy Market Five Minute **Locational Summary Report** SD RTASSET5MIN Real-Time Asset 5-minute Energy Quantity RT NCPC SR RTNCPCSTLMNTSUM **RT NCPC Settlement Summary RESERVES** SD RSVASTDTL Reserve Asset Detail Report SD RSVDTL5MIN Reserve Detail Five Minute Report

#### **New Reports**

 SD RTNCPCDRR5MIN RT **NCPC** Real-Time NCPC Demand Response Resource **Commitment and Dispatch Report**  SD RTNCPCDRRCS Real-Time NCPC Demand Response Resource **Cancelled Start Credit**  SD RTNCPCDRRDLOC Real-Time NCPC Demand Response Resource **Dispatch LOC Report**  SD RTNCPCDRRPYMT5MIN Real-Time NCPC Demand Response Resource **Five Minute Payment Report** 

- SD RTNCPCDRRPYMTHR Real-Time NCPC Demand Response Resource Payment Report
- SD RTNCPCHSDRR Real-Time NCPC Demand Response Resource **Hourly Shortfall Payment**
- SD RTNCPCREALLOCATE\* Real-Time NCPC Positive Deviation Economic Charge Reallocation Details Report
- \* Report reflects FERC Order 719 implementation which is concurrent with PRD, described on slide 21

## Settlements Forum Q1 2018

#### Questions and Answers during the March 8, 2018 webinar

**1. Question:** If a generator is on a planned outage during a scarcity condition, will it get an exemption from the pay for performance charge?

**Answer:** No. There are no exemptions for non-performance during a capacity scarcity condition.

**2. Question:** If a generator has scheduled maintenance and there is a scarcity event, will it lose its capacity payment and get penalized?

**Answer:** The Forward Capacity Market (FCM) payments are made to the generator each month. If a period of scarcity events coincide with a generator's maintenance outage, it could be possible to incur pay for performance charges that exceed the monthly payment.

- **3. Question:** Is resource "availability" counted in the pay for performance score calculation? **Answer:** The pay for performance score is based on actual performance, not availability.
- **4. Question:** Is there a separate training on performance score calculations? **Answer:** The calculations are detailed in the Q4 2017 Settlement Forum presentation. The ISO also provides videos on related topics; please see the link shown on slide 4 of this presentation.
- **5. Question:** Will a resource without CSO that delivers MWh during a scarcity condition be paid on top of the energy delivered?

**Answer:** Yes. The resource would have a positive performance score, and would receive a pay for performance credit in addition to the energy market payment.

- **6. Question**: Is an import with a CSO eligible for the pay for performance credit/charge? **Answer:** Yes. We evaluate the net import at the Market Participant level to determine the performance score.
- 7. Question: Is an import without CSO eligible for the pay for performance credit?

  Answer: If a Market Participant has no import CSO, but is a net importer (in aggregate across all interfaces) during the scarcity condition, that net will get a pay for performance score and be paid.
- **8. Question:** Just to clarify, in the example shown on slide 9, the resource stops incurring charges when it reaches the monthly stop-loss limit of \$1,772,800, and not when it reaches its max loss exposure value of \$817,700?

**Answer:** Correct. The stop-loss limit value is used to determine when the resource stops incurring charges.

**9. Question:** In the monthly stop-loss example on slide 9, should the max loss exposure be \$1,772,800, and not \$817,700 as displayed on the slide?

**Answer:** The maximum pay for performance charge during the month in this example is \$1,772,800. The max loss exposure is a defined quantity that reflects the net charge to the resource owner after it receives the FCM base payment. It is useful to identify this quantity by a name because it becomes part of the annual stop-loss determination.

10. Question: What IS the maximum loss exposure for the annual stop-loss example on slide 10?

**Answer:** The maximum loss exposure for the annual stop-loss is three times the monthly max loss exposure. In the example, the monthly max loss exposure is \$817,700.

- The annual max loss exposure =  $3 \times \$817,700 = \$2,453,100$
- Remember that this loss exposure is after the entire annual base payment has been netted out against the pay for performance charges.
- **11. Question:** To confirm, the annual stop-loss is the capacity commitment period of June to May, not the calendar year?

**Answer:** Correct. The annual stop-loss period is the capacity commitment period of June 1 through May 31.

- **12. Question:** What is the rationale for using "Max" CSO in the annual stop-loss equation? **Answer:** One of the goals of the stop-loss design is simplicity. Using the max CSO to date in the equation is simple, and it preserves a resource's economic incentives to perform and to only acquire additional capacity Supply Obligation MW if it expects to perform.
- **13. Question:** Can we assume that the sum of the monthly stop-loss is greater than the annual stop-loss amount?

**Answer:** The charges that are compared to the monthly stop-loss limit start at zero at the beginning of each month. The charges that are compared to the annual stop-loss limit are accumulated throughout the period. The annual stop-loss amount is much greater than any individual monthly stop-loss.

**14. Question:** For resources that have a multi-year obligation, what is the basis for determining the exposure?

**Answer:** For resources that acquired a multi-year obligation in a Forward Capacity Auction (FCA) prior to FCA 9, the monthly stop-loss limit is calculated using the initial year FCA clearing price, as modified by the Handy-Whitman index, in place of the FCA starting price. As a result, a resource can effectively lose up to its entire base payment, both monthly and annually. Multi-year obligations acquired in FCA 9 or later are evaluated for stop-loss limits per the description in slides 8-10.

**15. Question:** If a resource is paid \$2000/MWh for overperformance and another resource is charged \$2000/MWh for underperformance, why would they want to trade performance MWh through a bilateral transaction?

**Answer:** We expect that a market would develop where some Participants with CSO would pay for an upfront hedge for performance. The seller would receive some guaranteed revenue, and may have a different expectation on the capacity scarcity condition occurrence in the contract period.

**16. Question:** What is the timeline for submitting the performance bilaterals in relation to a capacity shortage condition?

**Answer:** The deadline for the initial settlement is noon on the second business day following the end of the month. The deadline for the Data Reconciliation Process resettlement is 17:00 on the 101st day after the end of the month.

**17. Question:** Could you please provide information on where or how the "peak distribution loss multiplier" value is calculated?

**Answer:** This multiplier is a constant, reflecting the ISO's determination of the system average avoided peak distribution loss factor of 5.5%. The current value was established as reported <a href="here">here</a>.

**18. Question:** Do you have more details how these new changes will affect Passive Demand Resource (energy efficiencies resources) if any?

**Answer:** Under the pay for performance design, if there is a scarcity condition during performance hours for the resource, an energy efficiency resource's Actual Capacity Value will be set equal to its reported value for the month. If a scarcity condition occurs in a non-performance hour, an energy efficiency resource will be assigned the neutral performance score of zero, where it will not be credited or charged during the interval. In addition, please see info <a href="here">here</a> on an upcoming webinar on passive demand response auditing.

**19. Question:** What does a cleared Demand Response Obligation in the Day Ahead market actually deliver in Real Time?

**Answer:** A demand response resource will reduce its consumption in the real-time market.

**20. Question:** With respect to the NCPC cost reallocation described on slide 23, will this only take place when NCPC payments are made during scarcity conditions?

**Answer:** The reallocation will only be performed for intervals in which there is a scarcity condition, or in which the ISO has declared Operating Procedure No. 4 (Action During a Capacity Deficiency) or Operating Procedure No. 7 (Action in an Emergency).