

# Fully Integrated Price Responsive Demand (PRD-FI)

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## *Project Overview*

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# Presentation Notes

This presentation is intended to provide market participants and other stakeholders with a detailed overview of the PRD-FI project. It assumes knowledge of how demand response currently participates in ISO-NE markets and it covers aspects of PRD-FI that are impacted by the FCM pay for performance settlement construct that will be in place at the same time as PRD-FI.

A list of acronyms used is at the end of the presentation.

***Disclaimer :** As of the date of this presentation, some tariff changes expected to become effective for the project are pending before the FERC, so consult the relevant [filing](#). In addition, conforming Market Manual and Operating Procedures related to the project are still being developed. In case of a discrepancy between this presentation and the Tariff, Manuals, or Procedures, the Tariff, Manuals, and Procedures shall govern.*



## Background and Overview

- *Demand Response Asset and Resource Registration*
- *Metering, Baselines, and Curtailments*
- *Market Participation and Offers*
- *Commitment, Dispatch and Performance Measurement*
- *Capability and Reserve Auditing*

# Current Rules for Dispatchable Demand Resources

*Will be changing due to PRD Project*

- RTDR and RTEG
- Dispatched during a capacity deficiency based on real-time system conditions
- Located within a dispatch zone (19 zones)
- Limited ability for underlying assets to earn energy market revenues beginning in 2012
- Fully integrated with energy and reserves markets on June 1, 2018



# PRD-FI Implementation Date



Replaces the existing *Transitional Demand Response* program



[ER17-2164-000 Revisions to Implement Full Integration of Demand Response](#)

# FCM Pay-for-Performance

*Becomes effective coincident with PRD-FI on 6/1/2018*

## Significant change to how capacity resources will be paid

### Simple and uniform capacity product definition

- Ties payments to performance during scarcity condition

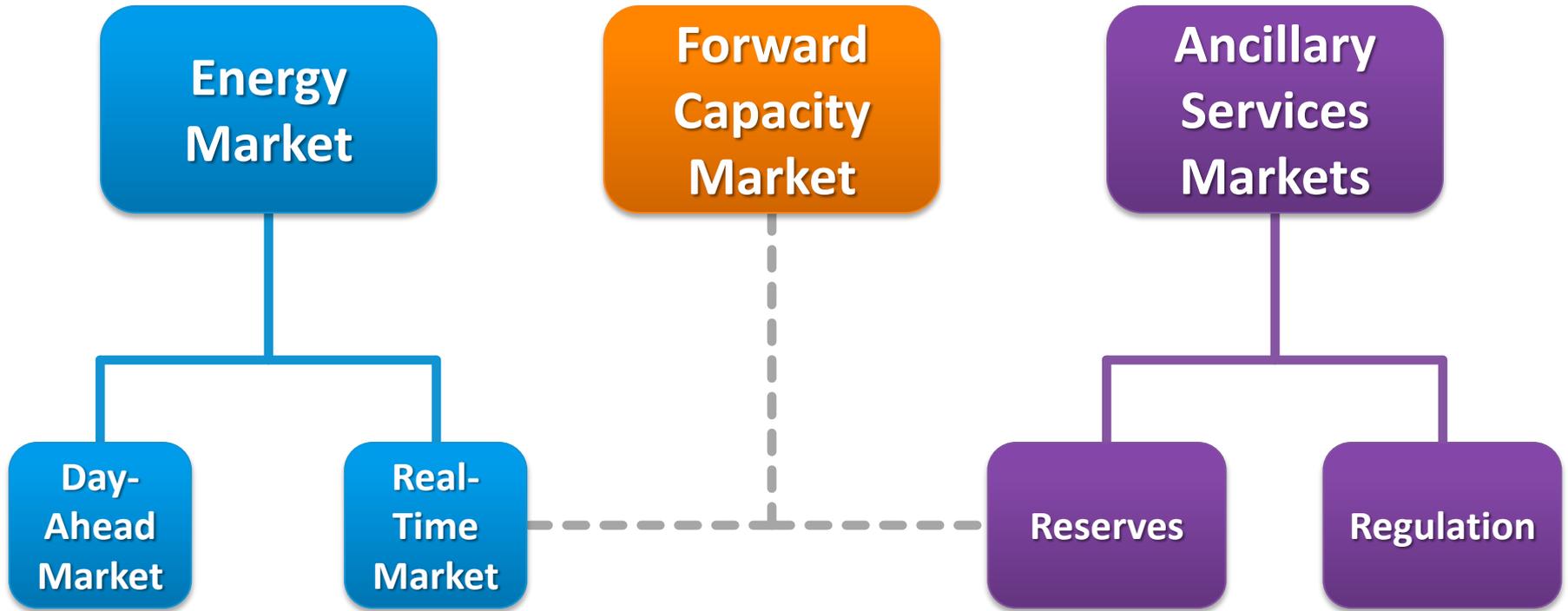
### Standard incentive structure (two settlement)

- Base payment set in forward auction
- Performance payment
  - Determined during delivery year
  - Based on delivery of energy & reserves during capacity scarcity conditions
    - PRD-FI Project enables DRRs to deliver energy and reserves
  - May be positive or negative (added to or subtracted from base payment)

*Tariff section III.13.7.2*



# New England Wholesale Markets



**PRD-FI will expand opportunities for demand response in the energy and reserves markets**

# High Level Scope of PRD-FI Project

## Model changes:

Add Demand Response Resources and Demand Response Assets

Convert RTDR Resources to Active Demand Capacity Resources

Eliminate RTEG

## Baseline and measurement changes

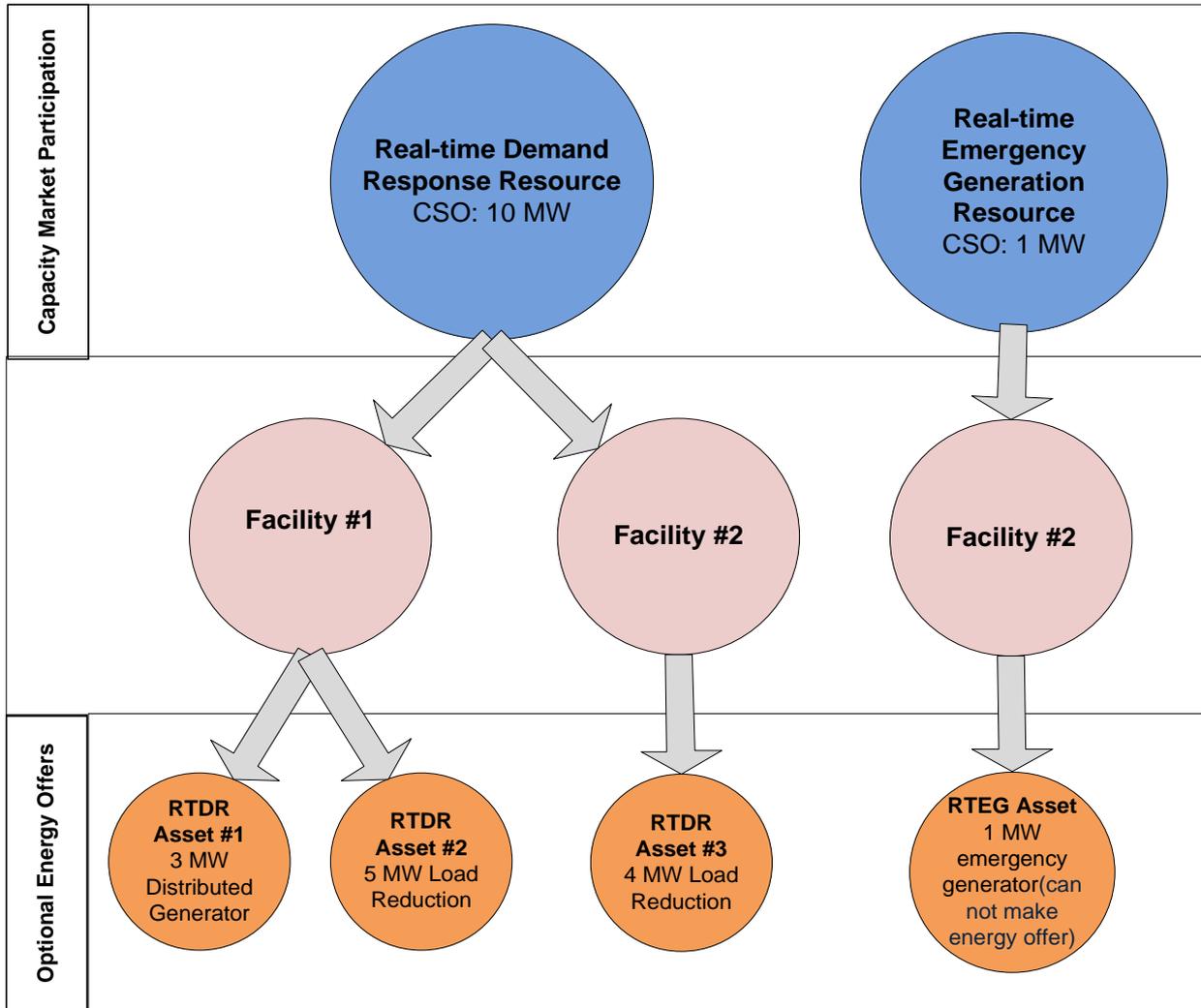
## Energy and reserve market participation

## Auditing changes

## Manual and operating procedure changes

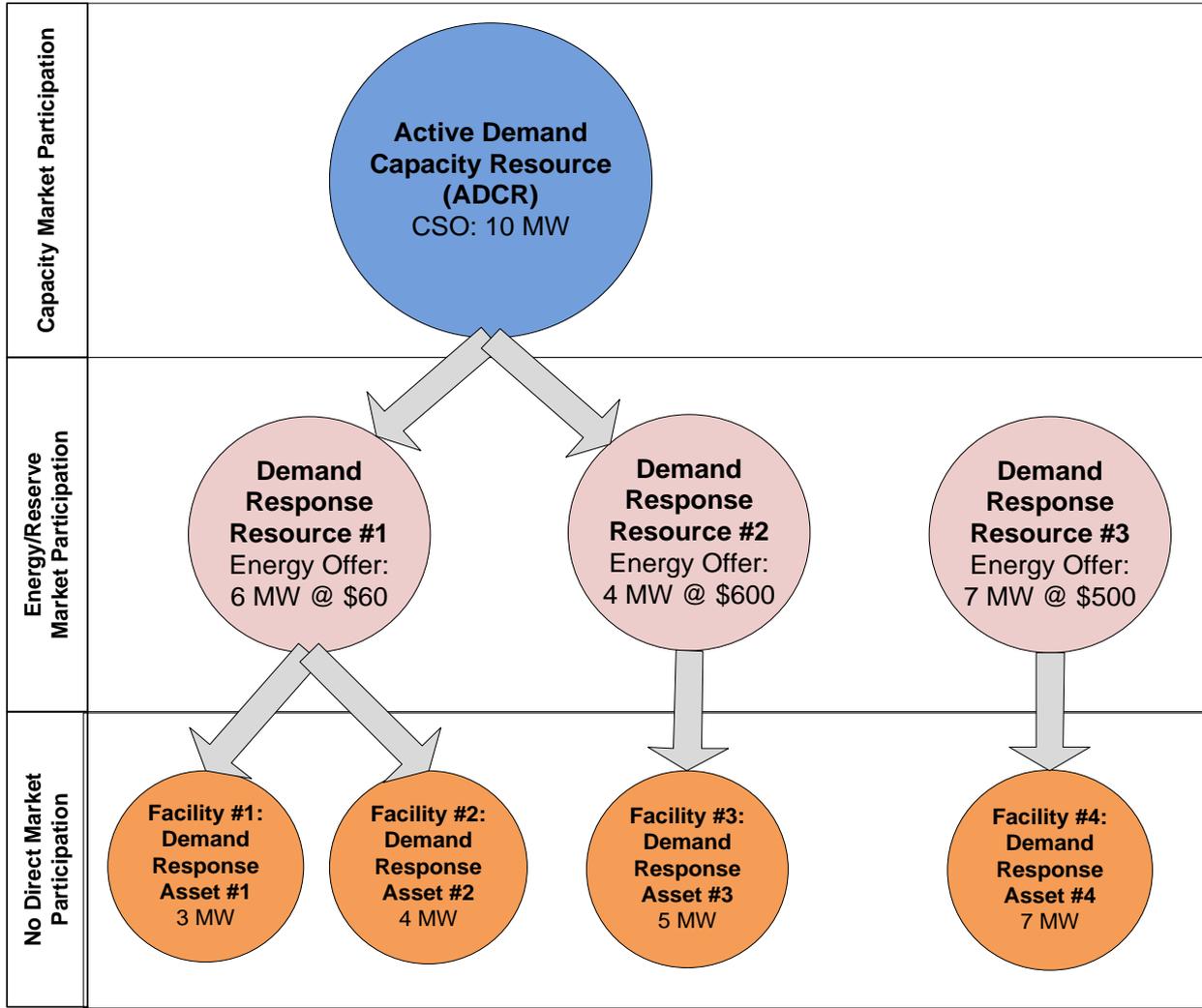


# Current Demand Response Model



Transitional PRD program allows an RTDR Asset to make an energy offer only if the asset is mapped to RTDR resource participating in the FCM

# PRD-FI: Fully Integrated Resource Structure



Can have an energy only resource not mapped to ADCR

# What are DRAs?

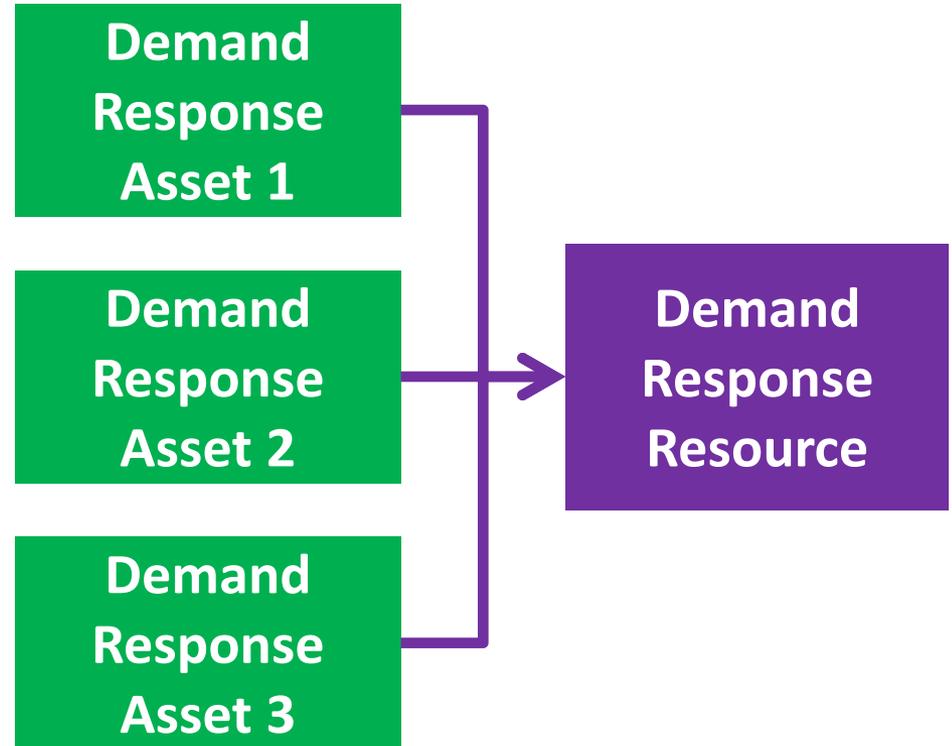
## Demand Response Assets

- Physical facilities at which demand reduction occurs
- Load measured at the retail delivery point (RDP) for the purpose of performance calculations
- Maximum interruptible capacity (MIC) must be  $\geq 10$  kW
  - If a facility can interrupt at least 10 kW, it becomes its own DRA
  - If not, it may be aggregated with other like facilities to form a DRA

# What are DRRs?

## Demand Response Resources

- Constructs that represent DRAs within the energy and reserve markets
- DRAs may be aggregated and mapped to a DRR
- DRR can consist of multiple assets in the same reserve and dispatch zones
- A DRA with a capability of 5 MW or greater must be mapped to its own DRR



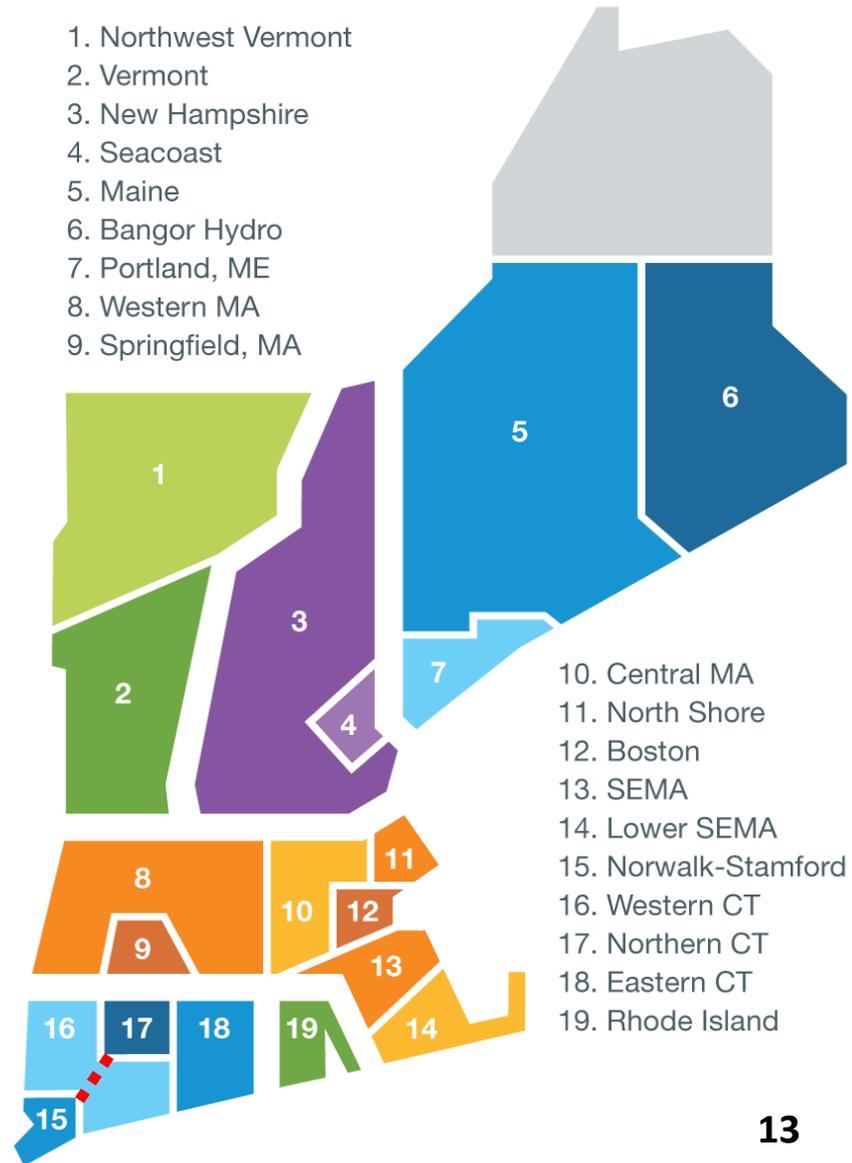
# Demand Resource Mapping

**DRAs may only be mapped to DRRs in the same dispatch and reserve zones**

**Currently, only the Western CT dispatch zone is split by a reserve zone boundary, making 20 total DRR aggregation zones**

## New England Dispatch Zones

1. Northwest Vermont
2. Vermont
3. New Hampshire
4. Seacoast
5. Maine
6. Bangor Hydro
7. Portland, ME
8. Western MA
9. Springfield, MA

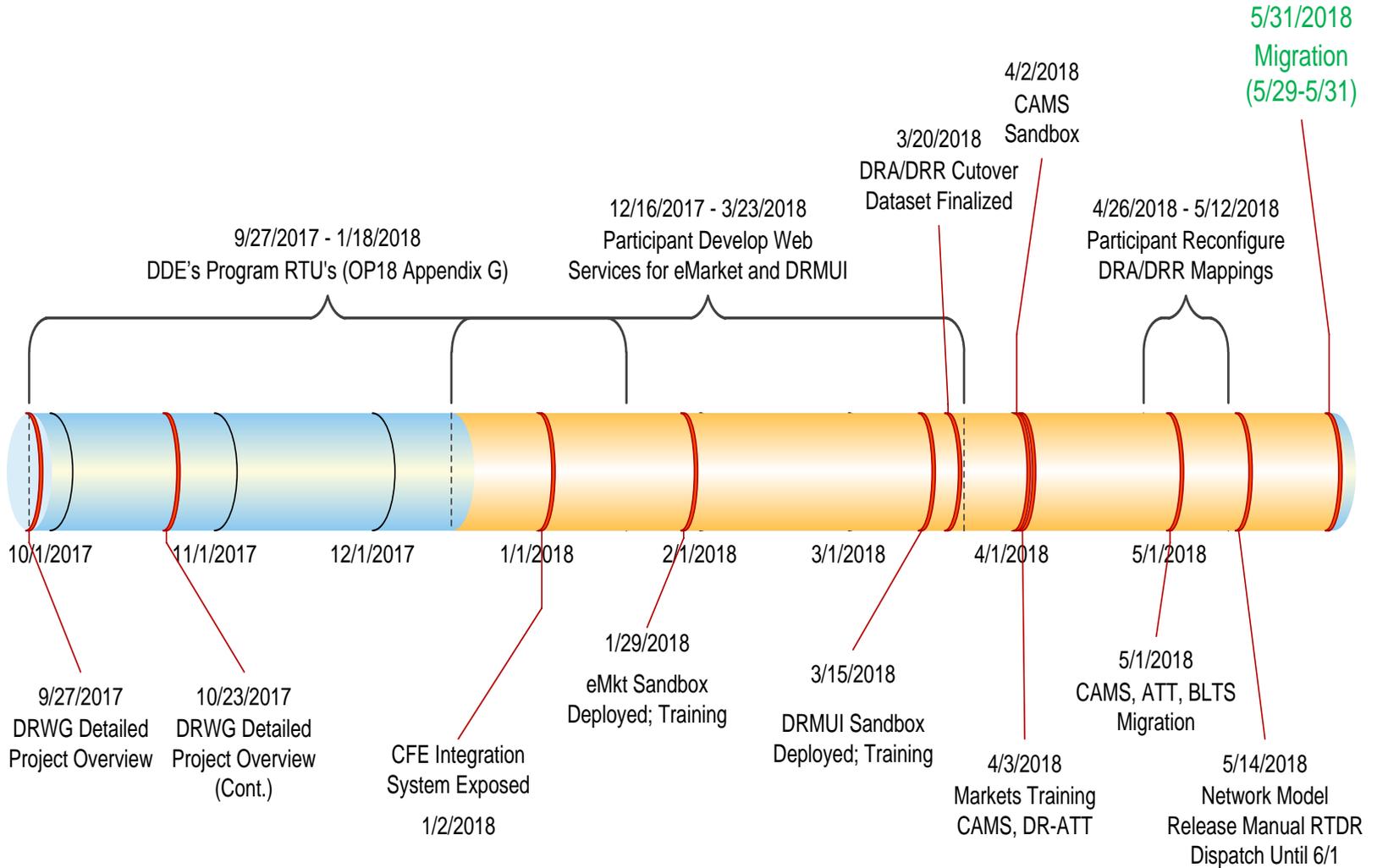


# Project Cutover Issues

- **Cutover activities will occur during Q1 and Q2 2018**
  - As details for the cutover are worked out they will be communicated
- **Registration data for RTDR Assets continuing after 6/1/18 will be copied to DRAs**
  - Participants will be asked to confirm registration parameters and add any new data that is required
- **DRRs will be created and associated with cutover DRAs and ADCRs**
- **The cutover may require a period of dual submittal of meter data (via DRMUI) so baselines can be established for cutover DRAs**
- **Current system functionality must be maintained through resettlement of May 2018 in October 2018**

# PRD Project Timeline

As of August 31, 2017



Dates are subject to change



# Questions?

- *Background and Overview*

## **Demand Response Asset and Resource Registration**

- *Metering, Baselines, and Curtailments*
- *Market Participation and Offers*
- *Commitment, Dispatch and Performance Measurement*
- *Capability and Reserve Auditing*

# Demand Response Asset Registration

- Completed through the Customer Asset Management System (CAMS)
  - Accessed via SMD Applications home page (<https://smd.iso-ne.com/>)
  - Access requires a certificate be installed, and your company's security administrator provides you with appropriate access roles.
- New version of CAMS will be released around May 1, 2018
  - Some aspects of on-peak and seasonal peak asset registration will change
  - Training will be provided prior to the release
  - When CAMS is released the cutover DRA/DRR associations will be available to participants to make changes prior to the June 1, 2018 implementation

# Demand Response Asset Registration Process 1

- DRA can be either
  - A **single retail delivery point** (RDP)
  - An **aggregation of RDP's** that are all located in the same dispatch and reserve zone (called a DRR aggregation zone) if:
    - Load reduction at each RDP is < 10 kW and
    - RDPs represent a homogenous population such as a chain store or single family home
- If DRA is a **single RDP** locational information is required
  - Address
  - Distributed generation details
  - Distribution company
  - Retail account number and copy of bill etc.
- If the DRA is an **aggregation of RDPs**, this data will be collected via a CAMS service note attachment

# Demand Response Asset Registration Process 2

- For single RDP assets, location data is used by CAMS to determine the closest pnode in the same state
  - If the market participant registering the DRA suspects the system determined pnode is not the correct one that feeds the DRA the ISO will review and can assign a different pnode
  - Market participants must verify with the distribution company the actual pnodes for all DRAs with  $\geq 1$  MW capability
    - Proof of this verification will be required to be uploaded via a service note

# Demand Response Asset Registration Process 3

## Once the DRA pnode has been confirmed for single-facility DRAs:

- Meter data may be submitted via DRMUI to establish baselines
- The DRA can be mapped to an existing DRR in the same DRR aggregation zone, or a new DRR may be created for it to map to
  - DRAs  $\geq 5$  MW must be the only DRA associated with a DRR
    - These DRRs are modeled and priced at the pnode, not the DRR aggregation zone
  - DRAs  $< 5$  MW within an aggregation zone may be aggregated into a DRR
    - These DRRs are modeled and priced at a load weighted nodal average across the zone
  - Lead market participants are not allowed to create additional aggregated DRR's in a zone unless either
    - All existing aggregated DRRs in the zone have DRA capabilities of at least 1 MW or
    - The DRR has a different capacity resource mapping status than all other DRRs in the zone (LP can have a DRR that is mapped to a capacity resource and one that isn't, even if they are  $< 1$  MW)

# Demand Response Asset Registration Process 4

- Once the DRA is mapped to a DRR, the lead market participant may optionally associate the DRR with an active demand capacity resource (ADCR)
  - ADCR must be located within the same dispatch zone as the DRR
  - CAMS will provide a list of valid ADCRs available for mapping
- ISO will review and approve all DRA registrations and DRR and ADCR mappings
- Lead market participants will be able to modify registration data and resource mappings subject to ISO review
  - Most DRA level data can be modified on daily boundaries
  - Mappings between DRA and DRR may be modified on monthly boundaries
  - Any modifications that impact the monthly DR model cannot be modified less than 7 days before the new month starts

# Demand Response Resource Registration in CAMS

- Once a DRR is created, in order for it to become operational:
  - Participant maps DRR to a demand designated entity (DDE)
  - DDE must then map the DRR to an RTU
    - May be done automatically if the DDE only has one RTU
- A DRR can be created via the DRA registration process, or whenever a DRA is unmapped.
- Lead market participants can transfer DRAs, DRRs, and ADCRs to other lead market participants, subject to ISO review
  - Transfers will include all mappings as of the transfer date
    - ADCR transfers include all mapped DRRs and their mapped DRAs
    - DRR transfers include all mapped DRAs but and DRR to ADCR mapping will be broken
    - DRA transfers will cause DRA to DRR mapping to break

# PRD Monthly Communications and Dispatch Model

**Both DRAs and DRRs must be established in CAMS prior to 7 days before the operating month (T-7)**

- DRA can be in the monthly communications model if before T-7 it
  - Is approved
  - Has telemetry installed and operational
  - Is associated with a DRR eligible to be in the monthly model
- DRR can be in the monthly communications model if it
  - Is mapped to a DDE and RTU
  - Has at least one approved DRA with telemetry installed and operational prior to T-7



# Questions?

- 
- *Background and Overview*
  - *Demand Response Asset and Resource Registration*

## **Metering, Baselines, and Curtailments**

- *Market Participation and Offers*
- *Commitment, Dispatch and Performance Measurement*
- *Capability and Reserve Auditing*

# DRA Metering Requirements

- DRAs must be metered at the retail delivery point (RDP)
  - Must provide 5 minute interval meter data in real time
  - If the DRA is an aggregation of RDP's, aggregated meter data must be submitted in real time
- Totalized 5 minute interval metering is required for any controllable synchronized generators at the DRA
  - Can be submitted in real time and/or prior to correction deadlines
  - Used for analysis, not used for performance calculations
- For a DRR to be eligible for 10 minute reserves, additional metering requirements ( $\leq 1$  minute telemetry at RDP) are required of all associated DRAs
  - This is optional

# Submitting and Correcting Meter Data

- Meter data is submitted by the DDE via a remote terminal unit (RTU)
- 5 minute meter data corrections allowed via DRMUI web services
  - Initial corrections due 1.5 business days after operating day
  - Final corrections due 70 days following the operating month
  - Corrections of  $\leq 1$  minute telemetry are not allowed
- Corrections to the operating day data will not be used for evaluation of reserves
- Lead market participants are ultimately responsible for
  - Accuracy of the data
  - Ensuring data that fails validation is flagged as having bad quality

*Reference III.3.2.2, OP14 and OP18*

# DRA Baselines

- Unadjusted baseline (UBL) is calculated for each DRA every day
- Current methodology continues for non-holiday weekdays
  - Ten day average taken from past 30 non-holiday weekdays
  - Most recent non-performance days used first, then dispatch days, then curtailment days if needed
- Baseline methodology extended to two additional day types, Saturday and Sunday/Holiday
  - 5 day average, maximum lookback of 42 calendar days
  - Non-performance days prioritized over performance or curtailment days
- Baseline adjustment period shortened to 3 intervals that ended prior to the dispatch instruction, unless they were part of a prior dispatch

Market participant shall not take any action to create or maintain a Demand Response Baseline that exceeds the typical electricity consumption levels of its end-use metered customers expected in the normal course of business

# Forced and Scheduled DRA Curtailments

- Scheduled curtailments
  - Planned reductions in load, such as a planned factory shutdown for maintenance
  - Must be reported in CAMS at least 7 calendar days in advance
  - Limited to 14 days per FCM commitment period
- Forced curtailments are unplanned reductions in the load of a DRA outside the control of the facility
  - Ex: a power outage
  - Must be reported in CAMS prior to data correction deadlines
- All curtailments are managed on daily boundaries

# Impact of Curtailments

- Curtailment days are not used in baseline calculations unless there are insufficient other days within the look-back period
- DRA capability must be removed from DRR energy and reserve market offer
- DRA energy market performance is set to zero except on first day of a forced curtailment, when it is the difference between load and UBL
- Reserve market contribution cap for the asset is set to zero
- In the event of a scarcity condition, capacity market performance is set to the difference between load and UBL for curtailed DRAs of dispatched DRRs



- ISO-NE will manage all impacts from curtailments
- DDE should always submit actual meter data

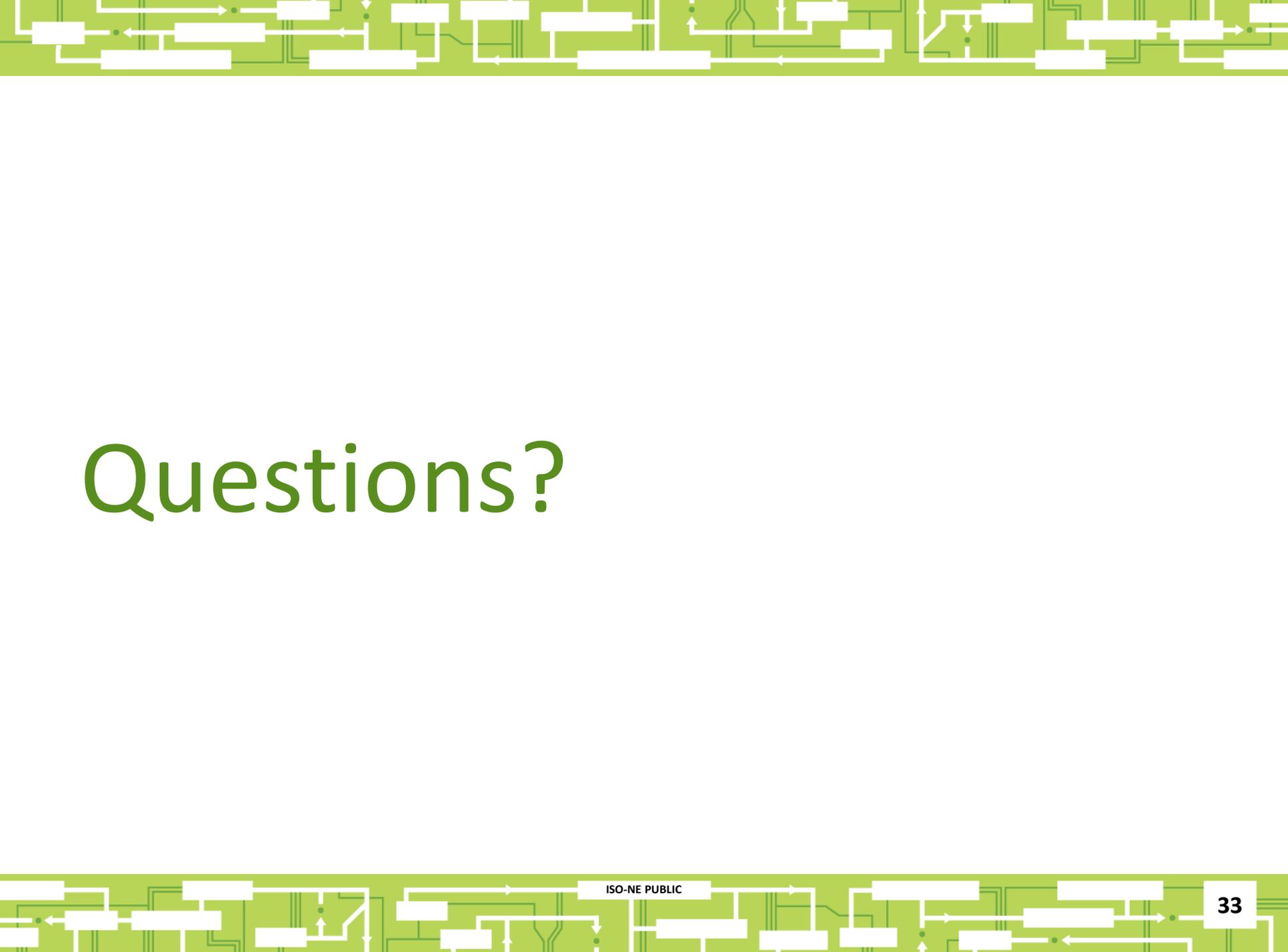
# DRA Operational Status

*Applies to DRA's in the monthly communications model*

**Operational status is a daily flag that will be set to non-operational if, as of 00:00 on the operating day, the DRA either**

- Has not established a baseline for the operating day type
- Is on a scheduled curtailment
- Has an unresolved metering or telemetry problem

**If a DRA is non-operational for a given operating day, its energy market performance is set to zero, it cannot contribute to reserve capability, and its capability should not be included in its associated DRR's offer**



# Questions?

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- *Background and Overview*
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## **Market Participation and Offers**

- *Commitment, Dispatch and Performance Measurement*
- *Capability and Reserve Auditing*

# Market Participation

- All DRRs can participate in the Day-Ahead and Real-Time Energy Market and Real-Time Reserve Market via offers made in the eMarket system
  - See [eMarket User Guide](#) and [Manual M-11](#)
- DRRs can participate in the Forward Reserves Market (see [Manual M-36](#))
- DRRs support an obligation in the Forward Capacity Market's base payment if they are mapped to an ADCR with a CSO
  - DRRs mapped to an ADCR with a non-zero CSO are required to offer in the Day-Ahead and Real-Time Energy Market at the minimum of their availability or net CSO
- DRRs support a pay for performance incentive or charge for its associated ADCR based on the energy and/or reserves provided by a DRR during a scarcity condition
- If a DRR is not associated with an ADCR, it can earn FCM incentives through pay for performance

# DRR Offer Parameters

Parameter	Description
<b>Available/Unavailable</b>	Flag to indicate if the resource is available to reduce load on the day/hour
<b>Notification Time</b>	Time needed between dispatch instruction and when load begins to reduce
<b>Start-up Time</b>	Time following Notification Time to ramp from zero to Minimum Reduction
<b>Minimum Reduction</b>	Minimum MW the DRR offers to reduce (must be at least 0.1 MW)
<b>Maximum Reduction</b>	Maximum MW the DRR offers to reduce
<b>Price/Quantity Pairs</b>	Up to 10 price/Demand reduction pairs (monotonically increasing)
<b>Interruption Cost</b>	Fixed amount required by DRR to be able to respond to a dispatch
<b>Minimum Reduction Time</b>	Minimum time the DRR must interrupt for if dispatched
<b>Min. Time Between Reductions</b>	Minimum time the DRR must be left in a non-dispatched state following the end of a dispatch
<b>Ramp Rate</b>	The MW/minute rate at which a DRR can vary its performance
<b>Offered Claim 10</b>	The demand reduction that can be achieved within 10 minutes of a dispatch
<b>Offered Claim 30</b>	The demand reduction that can be achieved within 30 minutes of a dispatch

Parameters in blue cannot be modified after the re-offer period

## DRR Offer Parameters (Cont.)

- Due to the prohibition on self-scheduling for DRRs, certain offer parameters (in **blue** on previous slide) cannot be changed following the re-offer period on the day before an operating day
- Shaping offer parameters to hourly granularity can reflect varying economics and capabilities of a DRR
- If a carried forward offer price becomes lower than the demand reduction threshold price (DRTP), it will be treated as if it is at the threshold price



**Most daily offer parameters carry forward and can be updated with hourly values via web services**

# Day-Ahead Energy Market Timing

- Day-ahead offers are due by 10:00 on operating day minus 1
  - Results are posted between 12:00 and 13:30
- Re-offer period begins when the day-ahead results are posted and ends at 14:00
- Resource adequacy assessment (RAA) process runs from 14:00-17:00
  - Resources that did not clear day ahead may be committed as a supplemental commitment for the operating day if needed for reliability
- Intraday re-offer period runs from 14:00 on operating day minus 1 to 23:59 on operating day
  - Applies only to physical offer parameters (those not in blue on slide 39)

# Fast Start DRR

- All DRRs are considered to be fast start capable but must offer as fast start DRR in order to get fast start treatment
- DRR is offering as fast start if:
  - (Notification time + start-up time)  $\leq$  30 minutes
  - Minimum time between reductions and minimum reduction time  $\leq$  1 hour
- DRR offering as fast start:
  - Day-ahead commitment is financially binding but is not a dispatch order
    - Real time dispatch algorithm will be the same whether it clears day-ahead or not
  - Can be designated for reserves even if not dispatched

# DRR Not Offering as Fast Start:

- Can only provide reserves when it is dispatched and has begun to reduce load based on its offer
  - It will not be designated for reserves unless it is dispatched below maximum reduction
- Day-ahead clearing (or RAA) becomes a real-time commitment and 'dispatch'
  - Physical offer parameters at time of commitment are 'locked down'
  - Real time dispatch will be between offered minimum and maximum reduction
- If DRR does not clear day-ahead and is not committed during RAA, it can only be committed as a result of manual control room action (phone call)

# Reserve Designations for DRRs

**DRR may be designated for reserves based on its registration and offer parameters as well as its past performance**

- DRRs may be designated to provide 30 minute operating reserves (TMOR) if offering as fast start or dispatched below Max Reduction
- All DRAs associated with the DRR must provide  $\leq 1$  minute telemetry to provide 10 minute reserves (TMSR or TMNSR)
- If any DRA associated with a DRR have controllable generation, the DRR cannot be designated to provide 10 minute synchronized reserves (TMSR)
- Audits and past performance may limit DRR reserve designations
- TMSR will not be designated for a DRR that is not dispatched

# Reserve Designations for DRRs (Cont.)

- Dispatched DRR is assumed to be following its dispatch (DDP) for the real time designation of any remaining reserves
- DRRs can meet forward reserve obligations in the same manner as generators
- Real time reserve designations may be reduced based on final meter data if that data shows that a portion of the reserves were unavailable
  - DRAs cannot provide more reserves than their load plus any potential they have to provide net supply

# Forward Capacity Market Participation

- DRRs mapped to ADCRs can contribute to the performance of the ADCR if during a capacity scarcity condition they provide energy reduction, net supply, and/or reserves
- Energy reduction and any reserve designations that could come from additional energy reduction are subject to gross-up for T&D loss savings
  - Note that for energy and reserves markets, the gross-up is for distribution losses only
- DRAs on forced or scheduled curtailments mapped to DRRs that have been dispatched during a capacity scarcity condition will get performance as measured between load and UBL



# Questions?

- 
- *Background and Overview*
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  - *Market Participation and Offers*

## **Commitment, Dispatch, and Performance Measurement**

- *Capability and Reserve Auditing*

# DRR Commitment

- DRR's may be committed in five ways:
  - Non fast start DRR can clear day-ahead
  - Non fast start DRR can be committed via RAA day ahead or in-day
  - Fast start DRR can be committed in real time based on economics and optimization engines
  - Lead market participant or ISO requested audits
  - Manually committed by the ISO control room operator via phone
- All commitments respect then-current offer parameters
- Non fast start DRRs will not be committed or dispatched in real time except via a manual action by an ISO control room operator
- DRRs offering as fast start will be electronically committed based on their offer parameters
  - If the fast start DRR cleared day-ahead or was committed via RAA, its commitment is not a dispatch instruction

## DRR Commitment (Cont.)

**Day-ahead or RAA commitment of a non fast start DRR is a dispatch instruction unless cancelled by ISO**

- Physical offer data is 'locked down' when DRR is committed
- DRR expected to be at minimum reduction at commitment time and follow DDP within submitted parameters
- Baseline adjustment startup instruction time is:  
(commitment time) – (startup time + notification time)

*Note: no electronic start-up signal is sent to non fast start DRRs*

- Baseline adjustment may skew performance if the DRR begins reducing during or before the baseline adjustment period
- System operators may cancel a commitment for a reliability need

# DRR Dispatch

- DRRs may be re-dispatched based on the timing of the control room system runs and offer parameters
- Energy reduction dispatch and reserve designations assume dispatched DRRs are following their dispatch instruction
- Any dispatch will be between minimum reduction and maximum reduction and will respect offer parameters

# Performance Measurement

- DRR performance is the sum of the performance of each associated DRA
- Performance calculations are separated into demand reduction and net supply components for application of the appropriate gross-up values
- DRA performance is calculated separately for energy and capacity markets if the DRA is on curtailment
- When a DRR is dispatched, associated DRA baselines are adjusted by the difference between actual load in the three intervals immediately prior to the start up instruction and the unadjusted baseline, to account for weather based loads etc.

# Performance Measurement (Cont.)

- Performance in each dispatch interval is the difference between the actual load and the adjusted baseline
  - Performance calculations begin for the interval when the 'notification time' ends
  - Performance calculations end for the interval after a dispatch instruction to provide a demand reduction of 0 MW is sent

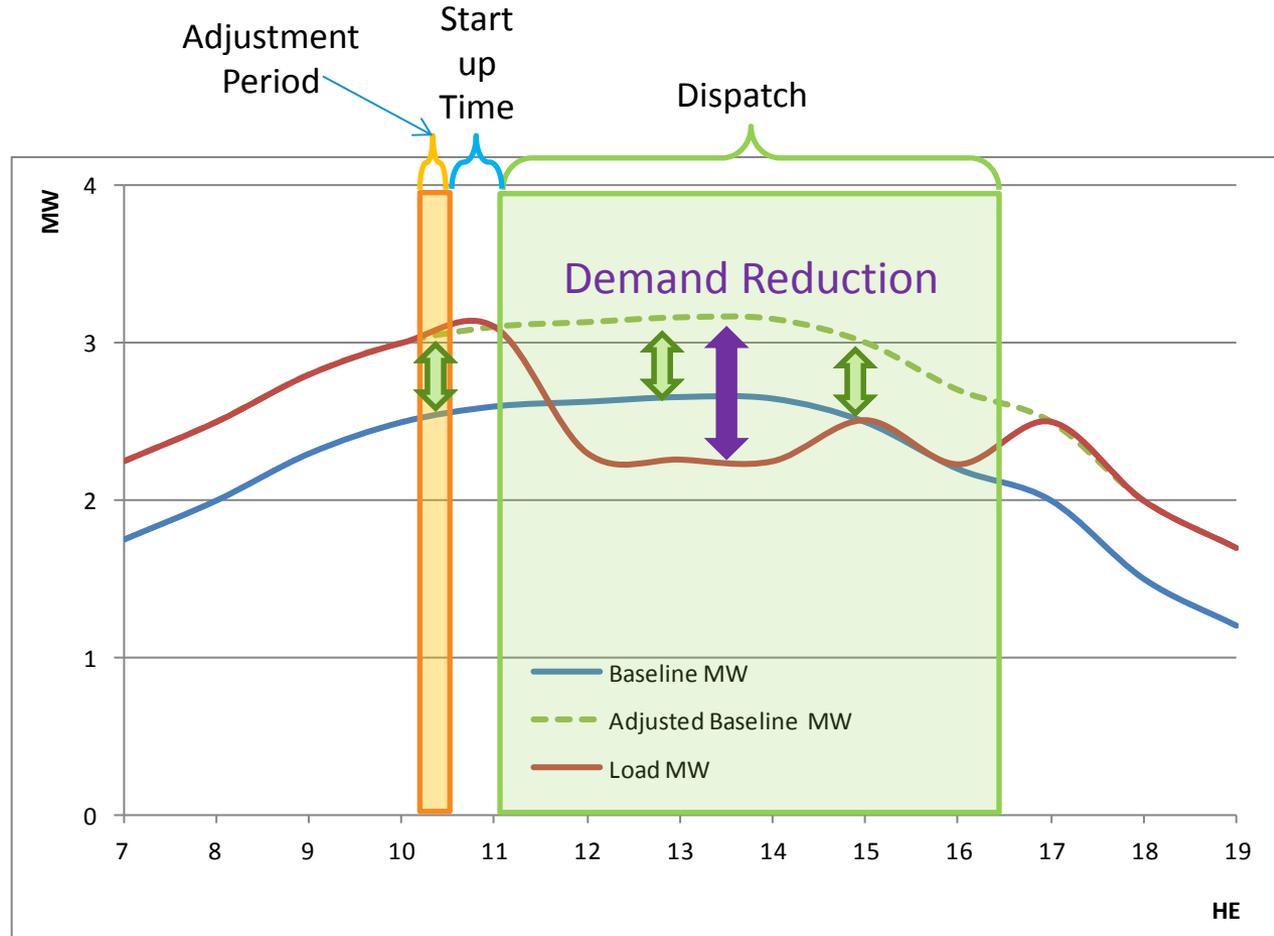
# Performance Measurement Example

Dispatch instruction received at 10:29 with a 0 minute notification and 30 minute startup time

Adjustment period 10:10 to 10:25

Actual load is much higher than the baseline during the adjustment period

Baseline adjustment will increase the baseline to accurately calculate the demand reduction MW



Note that at the 30 minute point in this example (10:59), the load = the adjusted baseline, so based on this dispatch, this asset was not capable of providing 30 minute reserves.

# Reserve Market Performance

- Real time reserve designations are determined based on offers and caps that are established based on historic DRR performance at the 10 or 30 minute point following a dispatch
- Reserves will not be designated above:
  - Offered claim 10/30 values
  - Claim 10/30 values
  - Offered maximum reduction
- Every fast start qualified dispatch is evaluated towards updating the claim 10/30 values

# Resource Obligations for Providing Reserves

- Reserve energy must be sustainable for at least 60 minutes
- Resources activated for reserves will operate without relief until ISO determines they are no longer needed
- Certain offer parameters are utilized in real time to calculate reserves available on a resource
- Because these offer parameters are used to calculate reserves, these parameters must be kept up to date in real time

# Real Time Reserve Calculations

**TMNSR** is calculated as the minimum of:

- Maximum reduction
- Claim 10 value
- Offered claim 10 value

**TMSR** is the minimum of:

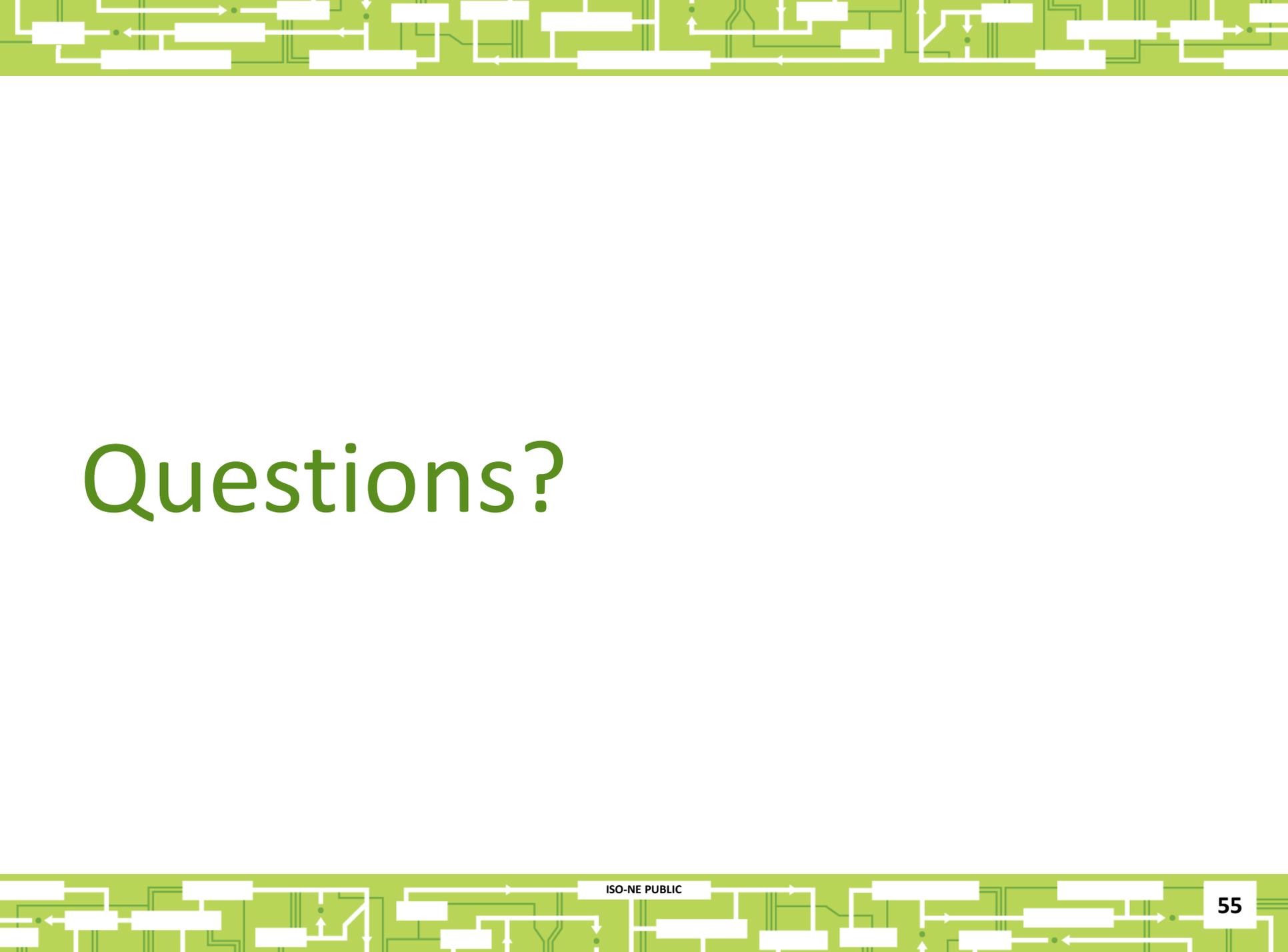
- (Maximum reduction – current reduction)
- $10 \times$  (response rate)

**TMOR** for a *dispatched* DRR is the minimum of:

- (Maximum reduction – current reduction)
- $30 \times$  (response rate)

**TMOR** for a DRR that is *not dispatched* is the minimum of:

- Maximum reduction
- Claim 30 value
- Offered claim 30 value



# Questions?

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## Auditing

# Audit Types

- Seasonal
- Claim 10 & claim 30 audits
  - Performance factors
- ISO-initiated
  - Parameter audit
  - Capability

# Claimed Capability Audits (CCA)

## Seasonal DR audits for DRRs

- Required to be conducted in each season of the capability demonstration year (September through August)
  - summer is April-November; winter is December-March
- Can be used to demonstrate commercial capability
- Claim 10 or claim 30 audit that meets the requirements of a seasonal DR audit may be used to meet the requirement
- Can be performed at the request of the market participant in advance or by designating an hour of a prior dispatch
- Any valid audit values from RTDR or RTEG assets that were converted to DRAs as of June 1, 2018 remain valid until their expiration date

# Claimed Capability Audits

- Audits are effective the business day following approval
  - Approvals will occur after both initial and final meter data corrections are received and validations are complete
- Summer or winter audit contribution for a DRA is set to zero on September 1 if the DRA was not audited in that season during the prior capability demonstration year

# DRR CCA Performance

**DRR performance = (load reduction) + (net supply) from mapped DRAs**

- Each DRA is evaluated and retains a current audit value
- If a DRA is on a curtailment, the performance = 0
- Audits do not include loss savings gross-up



# Participant-Requested Audits

- Unannounced and conducted within 5 non-NERC holiday weekdays between 0800 and 2200
- Dispatch is maximum reduction and will contain an audit flag
- Audit period begins the interval after the DRR should be at maximum reduction (based on offer parameters) and ends after 12 intervals (60 min)
- May be cancelled by the market participant prior to the dispatch
- DRR will be paid LMP and is ineligible for uplift
- If the dispatch is fast start, it will be counted towards claim 10/30 calculations

# May designate a past dispatch as a Seasonal DR Audit

- Market participant must notify the ISO by 1700 on the 5th business day following the dispatch
- Notification must include the date and time
- Audit can begin in any interval after the completion of notification time so long as there are 12 intervals of performance

# DRA to DRR Mapping Changes

## DRR seasonal capability is adjusted to account for mapping changes

- If a DRA is unmapped from a DRR, the DRR capability is reduced by that asset's contribution in the most recent audit for each season
- If a DRA is mapped to a DRR and it has currently valid audit results, the DRR capability will be reflected to include the new DRA's contribution
- Mapping changes can occur only on monthly boundaries

# Offline reserve calculation (III.9.5.3.1)

- Claim 10/30 Values
- Set upper limit for the designation of reserves for a fast start DRR that has not been dispatched
- Initial values on June 1, 2018 and October 1, 2018 (first month of winter capability period for the FRM)
  - Claim 10: 0 MW
  - Claim 30: Seeded with prior values derived from audits or RTDR/RTEG audits in CCP 2017-2018
    - Expire after ~1 month (July 2, 2018 for summer and October 28, 2018 for winter) unless replaced earlier by a qualifying dispatch or audit

**Claim 10 values will be zero for any DRR that has a mapped DRA that does not provide  $\leq 1$  minute telemetry**

# Offline Reserve Calculation (Cont.)

- Claim 10/30 values are based on historic performance
- All fast start dispatches are evaluated
- Reserve performance is the sum of the demand reduction plus any net supply from each DRA mapped to the DRR at precisely 10 or 30 minute point after receipt of start up instruction
  - Adjusted baselines, 5 minute telemetry, and any  $\leq 1$  minute telemetry will be interpolated to the 10 or 30 minute point
  - Claim 10/30 calculations are based on current UBL and the initial version of the DRA's meter data that came in via RTU

# Offline Reserve Calculation (Cont.)

**Claim 10/30 values are equal to the maximum reduction level measured at the 10 or 30 minute point from the receipt of an initial startup dispatch instruction multiplied by the DRR's performance factor**

- Calculated and distributed weekly
- Become effective at 00:01 on the following Monday

## **Maximum demand reduction level**

- Lookback period is the current and preceding like-season forward reserve procurement period
- Does not include dispatches in which the resource became unavailable within 60 minutes
- Reduction level is capped at the highest desired dispatch point

# Claim 10 and Claim 30 Performance Factors

- Based on 10 most recent ISO-issued dispatches
  - Within last 3 years
  - Not before June 1, 2018
- Calculated weekly
- Determines the extent to which the DRR meets its target value at the 10 or 30 minute point, which is the lesser of:
  - Greater of:
    - Minimum DDP during 10 or 30 minute duration
    - Offered minimum reduction
  - Claim 10 or claim 30 value
  - Resource's offered claim 10 or offered claim 30

# Determining the Target Value

Target value is the minimum of these values



Find the **minimum** of these two numbers

Find the **maximum** of these two numbers

CLAIM10	Offered CLAIM10	Desired Dispatch Point (DDP)	Offered Minimum Reduction
4	5	6	3

Next Start:



# Performance Factor Calculation

- Participant requested claim 10/30 audit: target value is set to the DRR's demand reduction at 10 or 30 minutes
- More recent dispatches are weighted higher
- DRR that becomes unavailable within 60 minutes of dispatch: reduction = 0
- Performance is actual reduction/target



For more information about Claim 10 and Claim 30 calculations, please see the [Claim 10 and Claim 30 Auditing Changes webinar](#).

# Claim 10 and Claim 30 Audits (III.9.5.3.2)

- Market participant may request a claim 10 or 30 audit
  - Not more than 1 audit request per week allowed unless
    - DRR becomes unavailable during the audit, or
    - Additional audits may be allowed at ISO discretion
  - Will be unannounced and performed within 5 business day window of the request during forward reserve delivery period (weekdays from 0700-2300)
  - Will receive LMP but no uplift

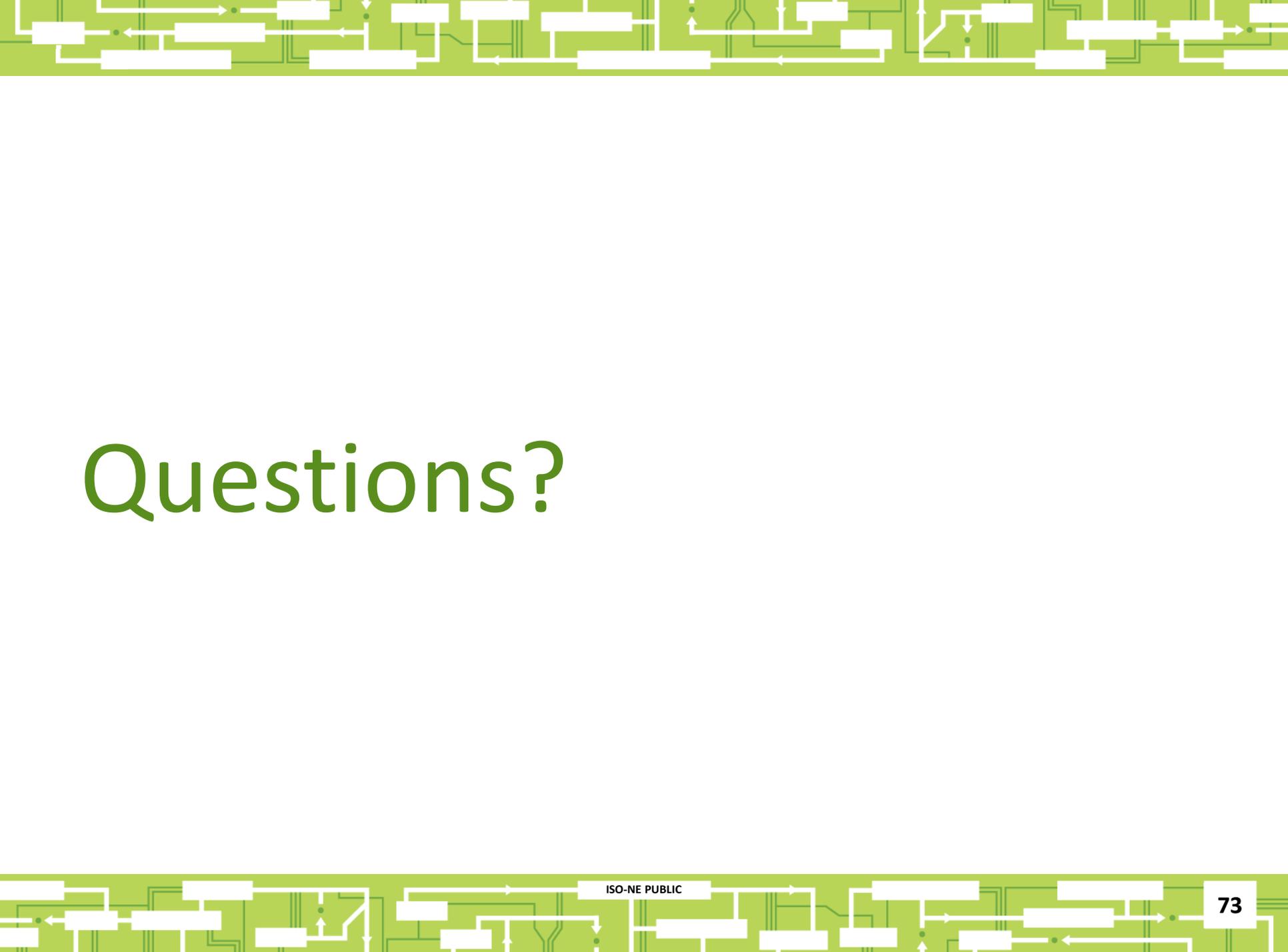
# ISO-Initiated Parameter Auditing

## ISO audits DRR parameters by analyzing past or current dispatch

- If offer parameters don't represent the actual capability, parameter values may be restricted to those supported by the audit
- If restricted, lead market participant may submit a restoration plan, with an explanation, plan for correction, timeline, and verification testing
- The ISO will then:
  - Accept the restoration plan if it is likely to support the proposed removal or modification of the restriction
  - Coordinate any required testing
  - Modify the parameter restriction based on verified results
- DRR may receive NCPC (uplift) for ISO-initiated audits

# ISO-Initiated Claimed Capability Audit

- May be used to verify the DRR's seasonal audit value
- May fulfill the Seasonal DR auditing requirement if it otherwise meets those requirements
- Results will replace any currently valid audit values for the season
- Can be conducted anytime without notice
- The dispatch instruction will order the DRR to maximum reduction and will contain an audit flag
- DRR will be paid based on its offer
- If the dispatch is fast start, it will be counted towards claim 10/30 calculations



# Questions?

# Customer Support Information



## Ask ISO (preferred)

- Self-service interface for submitting inquiries
- Accessible through the SMD Applications Homepage
- Requires a valid digital certificate with the role of Ask ISO/External User (Contact your security administrator for assistance)

### Other Methods of Contacting Customer Support

Method	Contact Information	Availability
Email	<a href="mailto:custserv@iso-ne.com">custserv@iso-ne.com</a>	Anytime
Phone*	(413) 540-4220	Monday through Friday 8:00 a.m. to 5:00 p.m. (EST)
Pager (emergency inquiries)	(877) 226-4814	Outside of regular business hours

\* Recorded/monitored conversations

# Acronyms

**ADCR – active demand capacity resource**

**ATT – auditing and testing tool**

**BLTS – baseline telemetry system**

**BTM – behind-the-meter**

**CAMS – Customer Asset Management System**

**CFE – communications front end**

**DDE – demand-designated entity**

**DDP – desired dispatch point**

**DRA – demand response asset**

**DRATT – demand response auditing and testing tool**

**DRR – demand response resource**

**DRMUI – demand response market user interface**

## Acronyms (Cont.)

EE – energy efficiency

FCM – Forward Capacity Market

FI – full integration

FRM – Forward Reserve Market

LMP – locational marginal price

NCPC – net commitment period compensation

PFP – pay for performance

PRD – Price-responsive demand

RDP – retail delivery point

RTDR – Real-time demand response

RTEG – Real-time emergency generation

RTU – remote terminal unit

# Acronyms (Cont.)

**T&D – transmission and distribution**

**TMSR – 10-minute synchronized reserves**

**TMNSR – 10-minute non-synchronized reserves**

**TMOR – 30-minute operating reserves**

**UBL – unadjusted baseline**