Do Not Exceed (DNE) Dispatch Impacts for Intermittent Resources

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Objectives

• Recognize markets in which intermittent resources can participate

• Describe the purpose of the do not exceed (DNE) dispatch project

• Perform basic eMarket tasks such as:
  – Set up a portfolio
  – Create a schedule
  – Submit an offer in the day-ahead or real-time market
  – Submit an hour intraday reoffer

• Recognize settlement impacts

• Locate DNE materials, market information, and training resources on ISO website
Topics

• ISO New England markets review
  – Energy
  – Capacity
  – Ancillary

• DNE dispatch project overview

• eMarket demonstration
  – Access and log-in
  – Setting up a portfolio in eMarket
  – Review schedule setup
  – Create and submit a new offer in eMarket

• Settlement impacts of DNE dispatch

• Additional Resources
# Frequently Used Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>DAM</td>
<td>day-ahead market</td>
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<tr>
<td>DDG</td>
<td>do not exceed dispatchable generator</td>
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<td>DDP</td>
<td>desired dispatch point</td>
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<tr>
<td>DNE</td>
<td>do not exceed</td>
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<tr>
<td>IPR</td>
<td>intermittent power resource</td>
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<tr>
<td>LMP</td>
<td>locational marginal price</td>
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<td>NCPC</td>
<td>Net Commitment-Period Compensation</td>
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<td>RT</td>
<td>real-time</td>
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<td>RTHOL</td>
<td>real-time high operating limit</td>
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<td>RTU</td>
<td>remote terminal unit</td>
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<tr>
<td>SS</td>
<td>self-schedule</td>
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<td>UDS</td>
<td>unit dispatch system</td>
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ISO New England Markets Review
Market Descriptions

New England’s Wholesale Electricity Market

- **ENERGY**: Daily market for wholesale customers to buy and sell electric energy
- **FORWARD CAPACITY**: Three-year forward market that commits capacity resources to meet system resource adequacy needs
- **ANCILLARY SERVICES**: Reserves and regulation provide support for system operations
Starting June 1, 2019

DDGs with CSO must offer into day-ahead market (DAM)

• Offer reflects participant estimate of expected generation in real time

Why?
Facilitate DAM solutions that resemble actual real-time requirements (improved DA/RT convergence)
Beginning on **June 1, 2019**, Market Participants with DNE Dispatchable Generators with a Capacity Supply Obligation must submit offers into the Day-Ahead Energy Market for the full amount of the resource’s expected hourly physical capability as determined by the Market Participant. Market Participants with DNE Dispatchable Generators having a Capacity Supply Obligation must submit offers for the Real-Time Energy Market consistent with the characteristics of the resource. For purposes of calculating Real-Time NCPC Charges, DNE Dispatchable Generators shall have a generation deviation of zero.
DNE Dispatch Overview
Who is affected?

Intermittent power resource (IPR)

• Defined as a resource without control of its net power output
• Includes wind and run-of-river hydro

IPR definition: Market Rule 1, [Section III.13.1.2.2.2]
Why is this needed?

Improved congestion management

- System facing more frequent localized congestion as additional intermittent/renewable resources come online
- Congestion now handled manually through curtailment instructions
  - System operators must take a conservative approach to ensure reliability
Manual Curtailments

Manual curtailments do not result in price separation

- Wind resources and other intermittent resources are non-dispatchable
- Unit dispatch system (UDS) is unable to manage congestion by sending dispatch instructions
- Create local economic incentives to maximize output when reliability requires reduced output
- Locational marginal prices (LMPs) are inconsistent with dispatch decisions to curtail zero-price resources
What is the solution?

**DNE dispatch to accomplish these goals:**

- Allow transmission reliability/congestion to be managed by dispatch software systems, not manually by system operators
- Improve utilization of existing transmission infrastructure, thereby reducing generation currently lost to curtailments
- Determine dispatch decisions that are consistent with participant economic preferences as expressed by market offers
- Allow market offers and dispatch decisions to be reflected in LMPs (congestion pricing)
Effective Dates

DNE project goes live

Hydro IPR without RTU must be capable of receiving and responding to electronic dispatch
Electing DDP Instead of DNE Limits

This election can be made by a lead market participant with a hydro intermittent power resource (IPR) with the following operating characteristics:

• Able to operate within a dispatchable range
• Capable of responding to dispatch instructions
  – Raise or lower output
Resources *Not* Required to be DDGs

Intermittent wind or hydro resources are not required to be DDGs if both of these conditions are met:

- Full output < 5 MW
- Not connected to transmission ≥ 115 kV
Resources Required to Respond to DNE Limits

Intermittent wind or hydro resources must be able to receive and respond to do not exceed (DNE) limits.

Settlement-only intermittent resources are not impacted by this program since they don’t have an RTU.
Forecast Requirements

DNE dispatch requires accurate short-term forecasts of maximum potential generation for each DDG

**Wind resources**

Provided by ISO New England’s existing short-term wind power forecast system

**Hydro resources**

Plant operator provides information by redeclaring ecomax to new forecasted value

- Ecomax must be redeclared whenever maximum potential generation changes due to water conditions, license restrictions, recreational requirements, public safety, maintenance requirements, equipment outage or any other reason
How is DNE limit calculated?

• Determined using a *high confidence* forecast of potential unconstrained output of each DDG for the next dispatch interval

• Lesser of:
  – Max output at which resource would operate based on an offer curve and real time prices
  – Reliability limit representing max output that is consistent with reliability constraints
Receiving and Responding to a DNE Limit

- Dispatch signals are normally transmitted every five minutes
- DDG may operate between ecomin and DNE limit
- If in Min Gen, DDG must operate between emergency min and DNE limit
- Respond per offer parameters
  - Ramp rate
- **DDG MUST NOT EXCEED DNE LIMIT**
  - Unless ramping down to a new output < DNE limit

A DDG operating above a DNE limit may be contributing to a transmission system limit violation!
IPR: What do I do if something goes wrong?

Contact ISO Control Room if:

• Unable to immediately respond to DNE limit
• Problem with remote terminal unit (RTU)
• Change in intraday offer data such as
  – Ecomin
  – Ecomax
  – Ramp rate
  – Real-time high operating limit (RTHOL)
  – Minimum run time
  – Minimum down time
Questions
Section Disclaimer
This section of the presentation is informational only and does not constitute advice regarding bidding practices. Please note that past market performance is no guarantee of future results. Be sure to review the relevant portions of the Market Rule and related documents before bidding.

eMarket Demonstration

• Set up a portfolio
• Create a schedule
• Submit an offer in the day-ahead or real-time market
• Submit an intraday reoffer
Instructions are found in the eMarket Users Guide
Section 2: Interface Basics
Section 3: Manage Portfolios
Section 4: Generation Tab
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Section 2: Interface Basics
Section 3: Manage Portfolios
Section 4: Generation Tab
WebEx: Regaining Chat When in Full-screen Mode
Up Next...

eMarket Demonstration
Questions
Settlement Impacts of DNE Dispatch
Settlement Impacts

- Negative prices are now more likely in export-constrained areas
- IPRs are now eligible for Net Commitment Period Compensation

Reports that will change:

- Unit Operation Report (OI_UNITOPER)
- Day-Ahead Generator Commitment Report (SD_DANCPCCGEN)
- Day-Ahead Net Commitment Period Compensation Payment Report (SD_DANCPCCPYMT)
- Real-Time Generator Commitment and Dispatch Report (SD_RTNCPCCGEN)
- Real-Time Net Commitment Period Compensation Payment Report (SD_RTNCPCCPYMT)
- RT NCPC Hourly Shortfall Payment Report (SD_RTNCPCHS)
Questions
Additional Resources
For more information, visit:

- OP-14
- Transmission, Markets, and Services Tariff
- MR-1 Sections III.13.6.1.6.1 and 2., III.1.11.3
- eMarket Users Guide
- Web Services Data
- eMarket Data Exchange Specification

DNE Project on www.iso-ne.com
Training

For additional training information, visit Upcoming Courses webpage

Click the links below to access course material available on ISO website

- WEM101
- FCM101
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)

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<tr>
<th>Other Methods of Contacting Customer Support</th>
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<tr>
<td><strong>Method</strong></td>
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<tr>
<td>Email</td>
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<tr>
<td>Phone*</td>
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<tr>
<td>Pager (emergency inquiries)</td>
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</tbody>
</table>

* Recorded/monitored conversations
Evaluations