CTS-New England Overview

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Training Topics

- CTS Overview
- Contracts vs Bids
  - Contracts
  - Submitting CTS Interface Bids in JESS
  - Confirmations and Trust Relationships
  - Evaluation of CTS Interface Bids by the Market
- Capacity considerations
- Settlement
- Upload/Download changes
- Sandbox testing information
- Informational Resources
See January-March 2015 Market Issues Working Group meetings for more information on reliability/congestion/capacity aspects, especially the 2/12/2015 MIWG CTS-ISO-NE Workshop
CTS-NE Overview

- Only at the Sandy Pond Proxy (NY’s proxy bus with ISO-NE)

- Transaction Bids
  - **15-min Transaction bids will require CTS Interface Bids** (i.e., “15-Min CTS” bids)
  - **Wheel-Through Transactions through New England beginning or ending at the Sandy Pond Proxy** (e.g. New Brunswick > ISO-NE > NYISO) **require CTS hourly offers only**
  - **CTS bids (Hourly & 15-Min) are restricted to single-point bid curves**
  - **Wheel-Through Transactions through NY** (e.g., OH > NYISO > ISO-NE), will **require Hourly offers (“Decremental Bids”) as before; there is no change! i.e., bid against sink minus source congestion**
CTS-NE Overview

- Day-Ahead Market Transactions

  - For NYISO MPs, all DAM (and RT) transaction offers will be entered into the Joint Energy Scheduling System (JESS)
    - The same process as is used today.

  - For ISO-NE MPs, all DAM transaction offers will be entered into ISO-NE EES
    - The same process as is used today.
Common Bid Platform—JESS

- RT Market Transactions: the Joint Energy Scheduling System (JESS) will now be the common (NY/NE MPs) bid platform at the CTS enabled proxy bus with ISO-NE

  - Instead of submitting separate bids to NYISO and ISO-NE, MPs will enter a single bid in JESS via:
    - Web based user interface (covered by this presentation)
    - Upload/Download file transfers
SHORT REVIEW OF CONTRACTS VS BIDS
## Contracts vs Bids

<table>
<thead>
<tr>
<th>Creating a <strong>Contract:</strong> “Transaction Type” choices are either:</th>
<th>Drop-Down <strong>Source</strong></th>
<th>Drop-Down <strong>Sink</strong></th>
<th>“Schedule Type” Drop-Down <strong>Bid types</strong></th>
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<tbody>
<tr>
<td><strong>External LBMP</strong> (import/export)</td>
<td>Proxies and NYISO Reference Bus</td>
<td>Proxies and NYISO Reference Bus</td>
<td>15-Min CTS Hourly LBMP Hourly CTS</td>
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<tr>
<td><strong>External Bilateral</strong> (import/export)</td>
<td>Proxies and NYCA Gens</td>
<td>Proxies and NYCA Load Buses</td>
<td>15-Min CTS Hourly LBMP Hourly CTS</td>
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</table>
CONTRACTS
Contracts Dashboard

- Shows user list of existing contracts associated with their organization
- Additional fields the user can display using “Show/Hide Columns” button
  - NYISO FRP (Financially Responsible Party for NYISO settlement)
  - Non-NYISO FRP (Financially Responsible Party for ISO-NE settlement)
  - GIS Identifier - optional
- Ability to search for contracts
# Contracts Dashboard

## Joint Energy Scheduling System

**Contract Search Results (31)**

<table>
<thead>
<tr>
<th>ID</th>
<th>Source</th>
<th>Sink</th>
<th>User Ref</th>
<th>Non-NYISO FRP</th>
<th>GIS ID</th>
<th>Assigned Contact User</th>
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<td>PMI3</td>
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<td></td>
</tr>
</tbody>
</table>

**Actions for Selected:**
- Delete
- Reassign
Contract Actions

- Create new contract
  - May be done by either NY or NE FRP

- For an existing contract:
  - Create bid for this contract
  - View current day bids for this contract
  - Delete contract
  - Reassign (NYISO users only)
Contract Actions
Create Contract

To create a new contract a NYISO user must specify the following:

- **Source; select bus name from drop down**
- **Sink; select bus name from drop down**
- **User Ref; free text entry field**
- **Non-NYISO FRP; select org name from drop down**
- **GIS ID (Optional);** Allows user to type in identifier used in the New England Power Pool Generation Information System (NEPOOL GIS)

Transaction Type drop down

- **User selects “LBMP” or “Bilateral.”** When “LBMP” is selected source and sink drop down selections limited to proxy buses and NY Reference Bus only
Create Contract

Contract Details

Transaction Type: External LBMP
Multi-Hour Block Transaction: No
Source: NVISO_LBMP_REFERENCE
Sink: NE_LOAD_SANDY_PD
User Ref: Demo User Ref
Non-NVISO FRP:
GIS: MyGISID

New Bid

Submit Transaction Contract to continue...
Update Existing Contract at CTS-NE Proxy

- An existing contract at a CTS Enabled Proxy Bus with ISO-NE must be updated to include the Non-NYISO Organization (FRP) prior to submitting bids
  - The Non-NYISO Organization for the contract cannot be changed
  - GIS ID can also be added, but not changed
  - To update contract: go to the Contracts tab in the JESS UI and select the “Update” options in the actions drop down box
BIDS
Bid Curves at CTS-NE Proxy-Day-Ahead Market

- All DAM bids will continue to allow for an up to 11 point (price-quantity pair) bid curve.

- There is no change in the Day-Ahead Market.
Bid Curves at CTS-NE Proxy-Real-Time Market

- Both ‘15-Min CTS’ and ‘Hourly CTS’ type bids will be restricted to a single point bid “curve”

- ‘15-Min CTS’ type bids will have option to specify different (single point) bid “curves” for each quarter hour in RT
Bid Type Option at CTS-NE Proxy: NY Wheels & NE Wheels

- ‘Hourly LBMP’ imports/exports will no longer be allowed once CTS is activated
  - Transactions wheeling through NYCA sourcing or sinking at the CTS-NE proxy will continue to use ‘Hourly LBMP’ bid type

- ‘Hourly CTS’ bid type must be used to schedule imports/exports to NYISO associated with a wheel through ISO-NE
  - Bid validation will confirm via NERC e-Tag information specified in bid
Create Bid

- Following creation of a transaction Contract a transaction Bid can be created.

- To create a Bid, the user specifies:
  - **Bid Date/hour; date and hour for bid**
  - **Num Hours; number of hours to create bid for**
  - **Schedule Type; 15-min CTS/ Hourly CTS/ Hourly LBMP (Import-Export/NE Wheel/NY Wheel)**
  - **NERC tag**
  - **Energy Profile MW (Bids must be ≥ this value !)**
  - **Bid Curve; price/MW quantity pair(s)**
    - Option to specify individual bid curves for each quarter hour (see next slide)
Create Bid

Joint Energy Scheduling System

Contract Details

Transaction ID: 100000009
Source: NYISO_LBMP_REFERENCE
Sink: NE_LOAD_SANDY_PD
User Reference: FAKE_USER
NYISO FRP: (9999) Fake New York Org
Non-NYISO FRP: (0000) Fake ISONE Org
GIS: 123456789ABCDEFHIJKLMNOPQRSTUVWXYZ

New Bid

Bid Date: 
Num Hours: 1
Market: 
Schedule Type: None Selected

NERC Tag:

Curve Time Frame: n/a
Energy Profile MW:

Point 1 2 3 4 5 6 7 8 9 10 11
MW 
$ Prices:
Create Bid -15-minute Bid Curves

Joint Energy Scheduling System
Dashboard > Bidding

<table>
<thead>
<tr>
<th>Curve Time Frames</th>
<th>Energy Profile MW</th>
<th>Point</th>
<th>MW</th>
<th>$ Price</th>
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</thead>
<tbody>
<tr>
<td>00:00 - 00:14</td>
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<td>1</td>
<td>10</td>
<td>5</td>
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<tr>
<th>Curve Time Frames</th>
<th>Energy Profile MW</th>
<th>Point</th>
<th>MW</th>
<th>$ Price</th>
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<tbody>
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</table>

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<th>Curve Time Frames</th>
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<th>$ Price</th>
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<table>
<thead>
<tr>
<th>Curve Time Frames</th>
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<th>MW</th>
<th>$ Price</th>
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<td>7</td>
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</tr>
</tbody>
</table>
Create Bid – Results Window

- After successfully submitting a bid the user is presented with a window indicating that the bid has successfully been created.

- Window provides links allowing user to return to dashboard or make an edit to the bid.
Create Bid – Results Window
Create Bid – Error Messages

- When a bid submission violates a bid validation rule no bid is created
- User is presented with a window displaying an error message indicating why the bid failed validation
- After closing message window the user may revise the bid and re-submit
Create Bid – Error Message

Invalid Submission

JESS-10135 ERROR: First MW and $/MW values on Transaction Bid Curve 1 must contain data. Error occurred on Curve 1, Generator N.E._GEN_SANDY PD, pint = 24062 and Bus NYISO_LEMP_REFERENCE, pbid = 24068 for 03/14/2015 13:00 EDT.
Bids Dashboard

- Shows user list of current day bids (default)
- User can configure search parameters
- New fields the user can display using “Show/Hide Columns” button
  - NYISO FRP
  - Non-NYISO FRP
  - User Ref
## Bids Dashboard

![Bids Dashboard Image]

### Joint Energy Scheduling System

#### Bid Search Results (84)

<table>
<thead>
<tr>
<th>Transaction ID</th>
<th>Date Hr</th>
<th>Market</th>
<th>Source</th>
<th>Sink</th>
<th>Bid Status</th>
<th>Confiramations</th>
<th>Non-Confiramations</th>
<th>Buyer</th>
<th>Seller</th>
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<tbody>
<tr>
<td>1000009</td>
<td>03/04/2015 12:00 EST</td>
<td>HAM</td>
<td>N.E._GEN_SANDY PO</td>
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</tbody>
</table>

**Actions for Selected:** Delete, Confirm, Unconfirm

**Actions:** Action(s)

**Show/Hide Columns:**

**Search Bids**
- **Start Date:** 03/04/2015 00:00 EST
- **End Date:** 03/13/2015 23:00 EDT
- **Bid Schedule Type:** None Selected
- **NERC Tag:** None
- **Transaction ID:** None
- **User Ref:** None
- **Transaction Type:** None
- **Source:** None
- **Sink:** None

**Buttons:** reset, search
BID CONFIRMATIONS/TRUST RELATIONSHIPS
New Fields on the Transaction Contract

- **NYISO Organization**
  - Identifies NYISO MP responsible for the contract
  - Allows ISO-NE MP to specify NYISO MP who is counterparty to the transaction

- **Non-NYISO Organization**
  - Identifies ISO-NE MP responsible for the contract
  - Allows NYISO MP to specify ISO-NE MP who is counterparty to the transaction

- **All transactions at CTS Enabled External Proxy Bus with ISO-NE must identify both organizations**
  - DAM & RT bids
  - CTS & LBMP bid schedule types
Transaction Bid - Submission at NE CTS Enabled External Proxy Bus

- RT market bid can be entered by either NYISO MP or ISO-NE MP
  - DAM bids will continue to be submitted separately in each ISO market

- In order to pass bid validation, RT market bid must be confirmed by both the NYISO MP and the ISO-NE MP
  - Applies to all RT market CTS Interface Bids
  - Confirmation can be performed manually, or
  - CTS Confirmed Trust Relationships can be established to automate the confirmation process (see next slide)
CTS Confirmed Trust Relationships

- A NYISO MP can extend a CTS Trust Relationship to an ISO-NE MP
  - *When this ISO-NE MP submits a bid with the NYISO MP as the counterparty, the NYISO FRP confirmation status will automatically be set to ‘Y’*

- An ISO-NE MP can extend a CTS Trust Relationship to a NYISO MP
  - *When this NYISO MP submits a bid with the ISO-NE MP as the counterparty, the Non-NYISO FRP confirmation status will automatically be set to ‘Y’*
Manage Trust Relationships

- To manage CTS Confirmed Trust Relationships select “Manage Trusts” link at the top of page
- Window displays list of trusted organizations
- To create a new Confirmed Trust Relationship select Organization from drop down list
- To remove a Confirmed Trust Relationship, select “remove” option
Manage Trust Relationships
CTS Confirmed Trust Relationships

- Non-NYISO FRP confirmation is not required for a DAM bid to reach VALIDATION PASSED status.

- Confirmation status of HAM bid is set based on any Trust Relationship in place upon DAM submittal (DAM to HAM via NYISO)

- Both NYISO FRP and Non-NYISO FRP confirmations are required for a HAM bid to reach VALIDATION PASSED status

- Changes to a Confirmed Trust Relationship after DAM submittal are not reflected in corresponding HAM bid (DAM to HAM via NYISO)
# CTS Trust Relationships Matrix

<table>
<thead>
<tr>
<th>Who’s Granting Trust Relationship</th>
<th>Logged in as NY MP (i.e., NY MP point-of-view)</th>
<th>Logged in as NE MP (i.e., NE MP Point-of-view)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neither Grants a TR to the other</td>
<td>Can change “NYISO FRP” confirmation only</td>
<td>Can change “Non-NYISO FRP” confirmation only</td>
</tr>
<tr>
<td>NY MP Grants TR to NE MP</td>
<td>Can change “NYISO FRP” confirmation only</td>
<td>Can change both “Non-NYISO FRP” and “NYISO FRP” confirmations</td>
</tr>
<tr>
<td>NE MP Grants TR to NY MP</td>
<td>Can change both “NYISO FRP” and “Non-NYISO FRP” confirmations</td>
<td>Can change “Non-NYISO FRP” confirmation only</td>
</tr>
<tr>
<td>NY and NE MPs Grant TRs to each other</td>
<td>Can change both “NYISO FRP” and “Non-NYISO FRP” confirmations</td>
<td>Can change both “NYISO FRP” and “Non-NYISO FRP” confirmations</td>
</tr>
</tbody>
</table>

Remember that changing Trust Relationships will not change the status of Confirmations.
CTS BIDS AND MARKET EVALUATION
How it will work

In Real Time,
- NYISO will incorporate ISO-NE’s forward looking prices into its existing scheduling process for the purpose of evaluating CTS bids.
- ISO-NE will incorporate advisory schedules from NYISO’s scheduling process for the purpose of determining its forward-looking prices.
CTS Import example

- This example includes the following assumption:
  - The marketer is assumed to be purchasing in ISO-NE at the ISO-NE price, importing energy from ISO-NE into NY and selling the energy in NY at the NY price.

- Before T-75:
  - In JESS the marketer enters an import (from ISO-NE to NY) CTS Interface Bid of $5/MWh for the first fifteen minutes of hour T (and import CTS Interface Bids for the other three intervals of hour T)
CTS Import example

- Between T-75 and T-40:
  - *NYISO bid evaluation process begins, NYISO RTC sends schedules to ISO-NE*

- T-40:
  - *ISO-NE sends prices for T to NYISO RTC:*
    - ISO-NE projects a price of $17/MWh
CTS example with Timeline

- **T-30 to T-15:**
  - The NYISO RTC projects prices of $23/MWh for the first interval of hour T.
  - Since ISO-NE’s price projection was $17/MWh and RTC’s projected price is $23/MWh, the CTS Transaction is scheduled: ($17/MWh + $5/MWh = $22/MWh < $23/MWh).
  - NYISO RTC sends look-ahead schedules to ISO-NE

- Settlement is done with the RTD prices!
## Bid Options Comparison

<table>
<thead>
<tr>
<th>Feature</th>
<th>ISO-NE</th>
<th>PJM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hourly LBMP</td>
<td>Wheeling through the NYCA only</td>
<td>No</td>
</tr>
<tr>
<td>15-Min LBMP</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Hourly CTS</td>
<td>Wheeling through the NECA only</td>
<td>Yes</td>
</tr>
<tr>
<td>15-Min CTS</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Multi-point CTS Bid Curves</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>15-Minute Bid Curves</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>
CAPACITY
NYISO Capacity Requests

- The process will remain the same as today where NYISO will provide notification to ISO-NE MPs that they must get transactions scheduled for their ICAP obligations to NYISO

- The notification will be done via a web posting and email notification
Relevant Web Postings

Reminder: NYISO and Non-NYISO pricing data:

External RTO/ISO CTS prices (PJM and ISO-NE)
SETTLEMENT CHANGES
Settlements

- NYISO and ISO-NE will eliminate settlement fees allocated to external transactions at the NE External Proxy Bus on a reciprocal basis.

- This is a continuation of earlier efforts that resulted in the elimination of NTAC and TSCs fees for transactions at the NY-NE border implemented in 2004.
Fee Elimination

- Fees eliminated at the NE CTS Enabled External Proxy Bus:
  - NYISO Cost of Operations; both injections and withdrawals
  - Bid Production Cost Guarantees
  - Residuals
  - Margin Assurance Payments
  - Operating Reserves
  - Voltage Support
Make Whole Payments

- Transactions at the CTS Enabled Interface are ineligible for RT BPCG
  - RT BPCG for import transactions at all proxies was eliminated in April 2014

- Transactions at the CTS Enabled Interface are ineligible for Import Curtailment Guarantees
Background

- Revisions to JESS upload/download templates are required to support implementation of Coordinated Transaction Scheduling (CTS) with ISO-NE
  - Revised templates will impact all JESS upload/download users regardless of whether they plan use CTS with ISO-NE

- Deployment of the revised templates is targeted for October 2015
Background-continued

- Revised template specification document is posted with the March 30, 2015 MIWG meeting materials
New Template Fields

- **NYISO Organization**
  - Replaces a spare field in existing download files
  - Identifies NYISO organization responsible for bid

- **Non-NYISO Organization**
  - Replaces a spare field in existing download files
  - For bids at CTS Enabled External Proxy Bus, identifies ISO-NE organization responsible for bid, otherwise this field will be blank (null)

- **NYISO Organization ID**
  - Replaces a spare field in existing upload file
  - Used by an ISO-NE MP submitting bid at CTS Enabled External Proxy Bus to identify NYISO MP counterparty for transaction
  - NYISO MP must leave this field blank (null) when submitting bids (all proxies)

- **Non-NYISO Organization ID**
  - Replaces a spare field in existing upload file
  - Used by a NYISO MP submitting bid at CTS Enabled External Proxy Bus to identify ISO-NE MP counterparty for transaction
  - NYISO MP must specify a valid ISO-NE organization ID when submitting bid at CTS Enabled External Proxy Bus, otherwise must be blank (null)
New Template Fields - continued

♦ GIS Identifier
  - Replaces spare field in existing upload/download files
  - Allows user to provide identifier used in the New England Power Pool Generation Information System (NEPOOL GIS)
  - Must leave this field blank (null) when submitting bid that does not include CTS-NE proxy

♦ Non-NYISO FRP Confirmation Status
  - Replaces spare field in existing upload/download files
  - Flag (Y/N) indicating the confirmation status of the Non-NYISO Organization associated with the bid (if applicable)
  - For bids that do not include a CTS Enabled External Proxy Bus this field will be blank (null) in the response file
Template Field Revisions

♦ NERC Priority
  ■ Non-Firm transmission service for external transactions in the NYISO markets eliminated in October 2014. As a result, all transactions use the Firm (7) NERC priority
  ■ For upload files the NERC priority field will no longer be required. This field will become a ‘spare’
  ■ For response files NYISO will continue to provide the NERC priority in the existing field

♦ Updated field names used in upload/download documentation for:
  ■ ‘FRP Confirm Status’ changed to ‘NYISO FRP Confirm Status’
  ■ ‘Last Update User’ changed to ‘Assigned Contact User’
Sandbox Testing

- Sandbox testing sessions are planned for the following:
  - July 28 – 30
  - August 25 - 27
  - September 23 – 25
  - October 7 – 9
  - November TBD

- All JESS users are urged to participate in Sandbox testing!
Informational Resources:

- **Joint Energy Scheduling System User’s Guide** *(includes Upload/Download info, be sure to use the “Draft” version in the Guides Under Review folder for the post-deployment changes)* at:
  

- JESS training at *(under Miscellaneous)*:
  

- **Market Services Tariff (MST) - Section 17**

- **Open Access Transmission Tariff (OATT) – Att. J**
Questions?
The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.

www.nyiso.com
Addendum:
JESS Enhancements
CTS Bidding at the Sandy Pond Proxy
(NY’s proxy bus with ISO-NE)

December 9, 2015
DAM and RTM bids at the Sandy Pond Proxy

Day-Ahead Market (DAM)

- NYISO DAM Market Import and Export bids are always evaluated as LBMP Imports or LBMP Exports, regardless of the bid schedule type chosen.
- LBMP Exports: +$1000 is the highest economic priority that an MP can offer an LBMP export, and -$1000 is the lowest economic priority.
- LBMP Imports: -$1000 is the highest economic priority that an MP can offer an LBMP import and +$1000 is the lowest economic priority.

Day-Ahead Conversion to Real-Time (RTM)

- All accepted NYISO DAM Imports and Exports will automatically be converted to Real-Time offers.
  - **NYISO DAM bids must include a Real-Time Bid Price to be used for Real-Time CTS offers. No default RT bid is automatically inserted in this situation. The Real-Time Bid Price should be provided in the form of a CTS Interface Bid value (**RTM Bid Price field**).**
  - RT Market Import and Export bids are always evaluated as CTS Interface Bids to Import or Export at this proxy (**Schedule Type field**).
**Join Energy Scheduling System**

**Dashboard > Bidding**

**Contract Details**

- **Transaction ID:** 123456
- **Source:** NYISO_LEMPREFERENCE
- **User Reference:** TESTFORBILL
- **NYISO FRP:** Fake NY Org
- **Non-NYISO FRP:** Fake ISONE Org
- **G1S:**

**New Bid**

- **Schedule Type:** None Selected
- **Energy Profile MW:**
- **RTM Bid Price:**

<table>
<thead>
<tr>
<th>Point</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
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<tbody>
<tr>
<td>MW</td>
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<tr>
<td>$ Price:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You are receiving curtailment notifications for this Contract.
Your Organization is a Financially Responsible Party (FRP) for this Contract.

**In Progress**

**Reset** | **Submit Bid**
CTS-NE: Bid Evaluation in the DAM

• NYISO DAM bids are evaluated as LBMP type bids regardless of Bid Schedule Type
• There is no change to NYISO DAM bid evaluation with CTS-NE
• The RTM Bid Price must be specified as a CTS Interface Bid – the spread between Sink and Source price

Examples of LBMP Import and Export bid evaluation:
N.E._GEN_SANDY PD DAM LBMP: $29

Import:

<table>
<thead>
<tr>
<th>Point</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW</td>
<td>10</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>$ Price</td>
<td>10</td>
<td>30</td>
<td>40</td>
</tr>
</tbody>
</table>

$10 < $29
Bid Accepted

30 > 29
Bid Rejected

40 > 29
Bid Rejected

• Bid evaluated as a Supply Bid, so it’s the minimum an MP is willing to be paid for the energy

• If Bid $< proxy (source) LBMP, the bid is economic.

N.E._GEN_SANDY PD DAM LBMP: $29

10 MW may be sold

Export:

<table>
<thead>
<tr>
<th>Point</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW</td>
<td>40</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>$ Bid Price</td>
<td>10</td>
<td>30</td>
<td>40</td>
</tr>
</tbody>
</table>

$10 < $29
Bid Rejected

30 > 29
Bid Accepted

40 > 29
Bid Accepted

• Bid evaluated as a Load Bid, so it’s the maximum MP is willing to pay for the energy

• If Bid $ ≥ proxy (sink) LBMP, the bid is economic.

NE_LOAD_SANDY PD DAM LBMP: $29

10 MW + 30 MW = 40 MW may be purchased

NOTE: For LBMP Exports, the HIGHER the bid value, the HIGHER the economic priority. For LBMP type imports, the LOWER the value, the HIGHER the economic priority.
CTS-NE: Bidding in the RTM at Sandy Pond proxies (NE_LOAD_SANDY PD, N.E._GEN_SANDY PD)

- RT Bids will be evaluated as CTS bids, the projected spread between Sink and Source prices

Example of CTS Import and Export bid evaluation:

<table>
<thead>
<tr>
<th></th>
<th>ISO-NE Price Projection</th>
<th>NY RTC Price Projection</th>
<th>Expected Spread</th>
<th>CTS Bid</th>
<th>Accepted?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import:</td>
<td>17</td>
<td>23</td>
<td>6</td>
<td>5</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>23</td>
<td>6</td>
<td>6</td>
<td>Marginal, partially accepted</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>23</td>
<td>6</td>
<td>7</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

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<th></th>
<th>ISO-NE Price Projection</th>
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<tr>
<td>Export:</td>
<td>23</td>
<td>17</td>
<td>6</td>
<td>5</td>
<td>Accepted</td>
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<td>17</td>
<td>6</td>
<td>7</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

NOTE: The LOWER the bid value is, the HIGHER the economic priority of scheduling. For CTS type bids this applies to both Imports and Exports.
ADDITIONAL SIMPLE CTS MARKET EXAMPLE: EXPORT*

*SEE SLIDE 40 FOR AN IMPORT EXAMPLE
CTS Export example

- This example includes the following assumption:
  - The marketer is assumed to be purchasing in NY at the NYISO price, exporting energy from NY into ISO-NE and selling the energy in New England at the ISO-NE price.

- Before T-75:
  - In JESS the marketer enters an export (from NY to ISO-NE) CTS Interface Bid of $5/MWh for the first fifteen minutes of hour T (and CTS Interface export bids for the other three intervals of hour T)
CTS Export example

- Between T-75 and T-40:
  - *NYISO bid evaluation process begins, NYISO RTC sends schedules to ISO-NE*

- T-40:
  - *ISO-NE sends prices for T to NYISO RTC:*
    - ISO-NE projects a price of $23/MWh
CTS example with Timeline

- T-30 to T-15:
  - The NYISO RTC projects prices of $17/MWh for the first interval of hour $T$.
  - Since ISO-NE’s price projection was $23/MWh and RTC’s projected price is $17/MWh, the CTS Transaction is scheduled: ($23/MWh - $5/MWh = $18/MWh > $17/MWh).
  - NYISO RTC sends look-ahead schedules to ISO-NE

- Settlement is done with the RTD prices!