

Design Basis Document for NY/NE Inter-Regional Interchange Scheduling (IRIS)

April 28, 2011

This Design Basis Document (DBD) summarizes two mutually-exclusive conceptual design options for inter-regional interchange scheduling between New England and New York.

Option A: Tie Optimization

1. Concept

Under Tie Optimization, ISO-NE and NYISO seek to utilize the transmission ties that comprise the New York North (NYN) and Northport-Norwalk (NNC) external interfaces between the two regions in the same way, or as close as practically possible, as the ISOs utilize their internal transmission systems today. The ISOs will set real-time interface schedules using the market-based offers of all dispatchable resources to minimize total production costs for both regions.

2. Real-Time Energy Scheduling

2.1. *Schedules.* In real-time operations, ISO-NE and NYISO will determine the energy schedule across these external interfaces between the two regions. The ISOs common objective in determining the real-time interface schedule will be to minimize the expected bid production costs to meet combined inter-regional electricity demand and operating reserve requirements.

2.2. *Timing.* The real-time interface schedule will be updated every fifteen minutes, under normal operating conditions.

2.3. *Determinants.* The real-time interface scheduling algorithm will be based on bid production costs of dispatchable resources in both regions, transmission system conditions, and any real-time operating limits necessary to ensure reliable operation of the New England and New York transmission systems.

3. Day-Ahead External Transactions

3.1. *Separate DA Markets.* ISO-NE and NYISO will continue to administer separate Day Ahead (DA) markets.

3.2. *DA External Transactions.* Market participants may submit DA external transactions into either, or both, DA markets in a manner similar to today.

- 3.3. *DA LMP.* Each ISO's DA locational marginal price (LMP) for each external interface will include an energy component, congestion component, and marginal loss component. These components will be calculated considering all DA market participants' offers simultaneously and in the same manner as the calculation of each DA LMP component at internal nodes today.
- 3.4. *DA Clearing.* In each ISO's DA market, cleared offers to buy (export) at these external interfaces will continue to be settled based on the corresponding DA LMP. Cleared offers to sell (import) at these external interfaces will continue to be settled based on the corresponding DA LMP.
- 3.5. *DA Congestion Revenue.* In each ISO's DA market, the DA congestion revenue will accrue and be allocated to holders of Financial Transmission Rights (FTRs) / Transmission Congestion Contracts (TCCs) pursuant to the existing rules of each ISO's FTR/TCC market.

4. Real-Time Pricing and Settlements

- 4.1. *RT LMP.* Each ISO will calculate a RT locational marginal price (LMP) for each external interface will include an energy component, congestion component, and marginal loss component.
- 4.2. *RT Congestion Revenue.* If there is real-time congestion revenue (congestion residual) across these external interfaces, it will flow through to each ISO's real-time settlement process in equal measure and then in accordance with each ISO's existing treatment of real-time congestion revenue.
- 4.3. *RT-DA Schedule Difference.* If, for either ISO, the DA and the RT aggregate energy schedules at the external interfaces differ, each ISO will redispatch generation. Generation that is dispatched up in RT is paid the RT LMP at its location, and generation that is dispatched down in RT is charged the RT LMP at its location.
- 4.4. *RT Treatment of DA External Transactions.* A DA external transaction purchase (export) that clears at these external interfaces in one ISO's DA market, and corresponding DA external transaction sale (import) that clears the same MW in the other ISO's DA market, will be deemed to flow in real-time by each ISO. Such transactions will not incur energy balancing (deviation) charges associated with the DA external transaction in real-time settlements.
- 4.5. *Non-Applicability of Fees and Uplift Charges.* Real-time schedules at these external interfaces are not subject to allocations of uplift charges or ISO operating fees.

5. Capacity Imports

- 5.1. *New England FCM Capacity Import Resources.* A New England import capacity resource physically located in NY shall participate in the NY (day-ahead and real-time) energy market, under the same market rules as a NY-listed capacity resource (thus committed and dispatched by NYISO). This requirement ensures the capacity resource, if committed, is part of the supply resources determining the IRIS real-time interface schedule between New York and New England.
- 5.2. *New York External Supplier Obligations.* The requirement for New York external capacity suppliers to submit an import transaction offer for the associated energy into the New York day-ahead market will remain in place. In the event that an external supplier is called upon to meet an SRE request the supplier will be responsible for bidding the resource associated with the capacity import in such a manner so as to ensure that it is on-line, per current practice. The existing penalty structure for failures to deliver energy will remain in place.
- 5.3. *No RT External Transaction Requirement.* A capacity resource that participates in the NY or NE energy market (under 5.1 or 5.2) is not required to submit a real-time external transaction at the NY/NE interface.
- 5.4. *Other Capacity Import Obligations.* All other obligations of an import capacity resource shall remain consistent with the requirements in place today.

6. Other Conceptual Design Elements

- 6.1. *REC/RPS energy.* ISO-NE and NYISO will work with administrators of states' REC and RPS programs to enable market participants to meet REC and RPS import scheduling requirements by being deemed to flow in RT pursuant to 4.4, and to enable conforming information (tagging and GIS) functionality for renewable energy tracking.

Option B: Coordinated Transaction Scheduling

7. Concept

Coordinated Transaction Scheduling (CTS) is a package of enhancements for external transactions at the New York North (NYN) and Northport-Norwalk (NNC) external interfaces. It features a new real-time external transaction bid format, called an interface bid, which is a simultaneous offer to buy and sell on each side of an external interface; and a clearing process at these interfaces that uses market-based offers of all dispatchable resources and interface bids.

8. Real-Time Energy Scheduling

8.1. *Schedules.* In real-time operations, ISO-NE and NYISO will determine the energy schedule across the external interfaces between the two regions. The ISOs will set the real-time energy schedule so that the expected RT LMP difference across the external interface equals the highest offer price of any cleared RT interface bid (the RT external transaction bid format, see 10.2) at that interface.

8.2. *Timing.* The real-time interface schedule will be updated every fifteen minutes, under normal operating conditions.

8.3. *Determinants.* The real-time energy scheduling algorithm will be based on bid production costs of dispatchable resources in both regions, interface bids of market participants, transmission system conditions, and any real-time operating limits necessary to ensure reliable operation of the New England and New York transmission systems.

9. Day-Ahead External Transactions

9.1. *Separate DA Markets.* ISO-NE and NYISO will continue to administer separate Day Ahead (DA) markets.

9.2. *DA External Transactions.* Market participants may submit DA external transactions into either, or both, DA Markets in a similar manner to today.

9.3. *DA LMP.* Each ISO's DA locational marginal price (LMP) for each external interface will include an energy component, congestion component, and marginal loss component. These components will be calculated considering all DA market participants' offers simultaneously and in the same manner as the calculation of each DA LMP component at internal nodes today.

9.4. *DA Clearing.* In each ISO's DA Market, cleared offers to buy (export) at an external interface will continue to be settled based on the nodal DA LMP. Cleared offers to sell (import) at an external interface will continue to be settled based on the corresponding DA LMP.

9.5. *DA Congestion Revenue.* In each ISO's DA Market, the DA congestion revenue will accrue and be allocated to holders of Financial Transmission Rights (FTRs) /

Transmission Congestion Contracts (TCCs) pursuant to the existing rules of each ISO's FTR/TCC market.

10. Real-Time External Transactions

- 10.1. *Format.* Real-time external transactions at the external interfaces will employ a new bid format called an interface bid.
- 10.2. *Interface Bids.* An interface bid is an offer to buy and sell simultaneously on each side of the external interface. It consists of an offer price, and quantity (in MW), and a direction.
- 10.3. *Clearing.* An interface bid will clear if the offer price is less than the expected RT LMP difference across the interface at the time the interface is scheduled. The expected RT LMP difference is calculated using the interface bid direction (sink minus source).

11. Real-Time Pricing and Settlements

- 11.1. *RT LMP.* Each ISO will determine a RT locational marginal price (LMP) for these external interfaces will include an energy component, congestion component, and marginal loss component.
- 11.2. *RT Congestion Revenue.* If there is real-time congestion revenue (congestion residual) across these external interfaces, it will flow through to each ISO's real-time settlement process in equal measure and then in accordance with each ISO's existing treatment of real-time congestion revenue.
- 11.3. *RT Interface Bid Settlement.* In RT settlement, a participant that submits and clears an interface bid will be paid by the sink-side ISO the cleared MW times the RT LMP at the sink-side external interface. The participant will be charged by the source-side ISO the cleared MW times the RT LMP at the source-side external interface.
- 11.4. *No RT Make-Whole Payments.* A participant submitting an interface bid will not be paid a 'make whole' payment if the RT LMP paid by, or paid to, the participant differs from the expected RT LMP at the time the ISOs determine the real-time external interface schedule.
- 11.5. *RT Treatment of DA External Transactions.* If a market participant with a cleared DA external transaction submits an interface bid in the same direction for the same quantity that clears in the real-time market, the participant will not incur energy balancing (deviation) charges in real-time settlements.
- 11.6. *Non-Applicability of Fees and Uplift Charges.* Interface bids at these external interfaces are not subject to allocations of uplift charges or ISO operating fees.

12. Capacity Imports

- 12.1. *New England FCM Capacity Import Resources.* A New England import capacity resource physically located in NY shall participate in the NY (day-ahead and real-time) energy market, under the same market rules as a NY-listed capacity resource (thus committed and dispatched by NYISO). This requirement ensures the capacity resource, if committed, is part of the supply resources determining the IRIS real-time interface schedule between New York and New England.
- 12.2. *New York External Supplier Obligations.* The requirement for New York external capacity suppliers to submit an import transaction offer for the associated energy into the New York day-ahead market will remain in place. In the event that an external supplier is called upon to meet an SRE request the supplier will be responsible for bidding the resource associated with the capacity import in such a manner so as to ensure that it is on-line, per current practice. The existing penalty structure for failures to deliver energy will remain in place.
- 12.3. *No RT External Transaction Requirement.* A capacity resource that participates in the NY or NE energy market (under 5.1 or 5.2) is not required to submit a real-time external transaction at the NY/NE interface.
- 12.4. *Other Capacity Import Obligations.* All other obligations of an import capacity resource shall remain consistent with the requirements in place today.

13. Other Conceptual Design Elements

- 13.1. *REC / RPS Energy.* ISO-NE and NYISO will work with administrators of states' REC and RPS programs to enable market participants to meet REC and RPS import scheduling requirements by submitting and clearing RT external transactions pursuant to 10.2, and to enable conforming information (tagging and GIS) functionality for renewable energy tracking.

Option C: Suppliers' Incremental Improvements

1. *Concept.* Implement incremental changes to greatly improve market structure while allowing full participation by and flexibility for all participants in both DA and RT markets. Fix the direct causes of inefficiencies to enable market participants to make better economic decisions at the seams.
2. *Shorten scheduling timeline.* Decrease 75 minute lead time to 15 minutes prior to the top of the hour for participant data entry for external transactions. The real-time interface schedule will be updated every fifteen minutes, under normal operating conditions.
3. *FTR and TCCs at external nodes.* Must match up in terms of type and duration. There must be peak/off-peak and, or, 24-hour products, for equal durations such as annual or monthly FTRs and TCCs.
4. *DA LMP.* Each ISO's DA LMP for each external interface will include an energy component, congestion component, and marginal loss component. These components will be calculated considering all DA market participants' offers simultaneously and in the same manner as the calculation of each DA LMP component at internal nodes today.
5. *DA Congestion Revenue.* In each ISO's DA market, the DA congestion revenue will accrue and be allocated to holders of FTRs / TCCs pursuant to the existing rules of each ISO's FTR/TCC market.
6. *RT LMP.* Each ISO will calculate a RT LMP for each external interface that will include an energy component, congestion component, and marginal loss component.
7. *RT Congestion Revenue.* If there is real-time congestion revenue (congestion residual) across the external interfaces, it will flow through to each ISO's real-time settlement process in equal measure and then in accordance with each ISO's existing treatment of real-time congestion revenue.
8. *Non-Applicability of Fees and Uplift Charges.* Real-time schedules at the external interfaces are not subject to allocations of uplift charges or ISO operating fees.