



# Enhanced Interregional Transaction Coordination: *Introduction to Phase 2 – Scheduling Ancillary Services*

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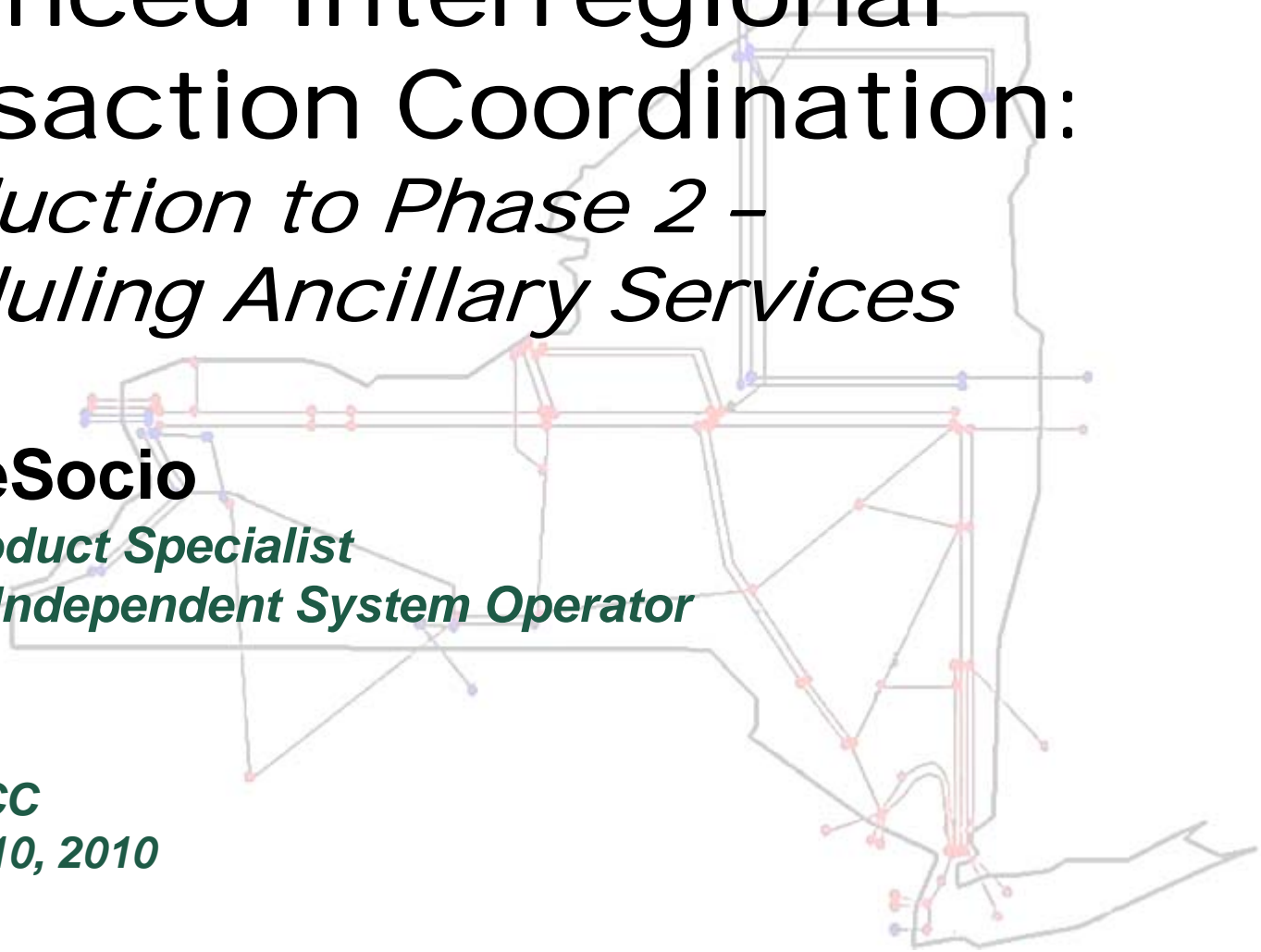
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# Agenda

- ◆ Operating Reserves & Regulation Service
- ◆ Market Concept
  - Reserve Product Qualification
  - Performance Management
  - General Concept
  - Scheduling (Optimization) Concept
  - Settlement Concept

# Operating Reserves

- ◆ Provides backup generation and/or demand response in the event that the NYISO experiences a real time power system Contingency requiring emergency corrective action
- ◆ Today, Operating Reserves must be available from Generators or Demand Side Resources located within the NYCA, as required by the NYSRC

# Response Requirements: 10 Minute Operating Reserves

- ◆ NERC expects that the NYISO is able to utilize its Contingency Reserve\* to balance resources and demand to return Interconnection frequency within defined limits following a Reportable Disturbance\*\*
  - This rule is the NERC Disturbance Control Performance Standard
  
- ◆ Within ten minutes, the NYISO is expected to:
  - Return its ACE to zero if its ACE was positive or zero prior to the Reportable Disturbance
  - Return its ACE to its pre-Disturbance value if its ACE was negative prior to the Reportable Disturbance

\*for the NYCA, this is the combined Ten (10) Minute Spin and Ten (10) Minute Non-Spin Reserve

\*\* for the NYCA, this is a loss of at least of 500MW or 80% of the largest supply contingency

## Response Requirements: 30 Minute Operating Reserves

- ◆ NYSRC expects that the NYCA has sufficient **thirty (30) minute operating reserve\*** to replace half of the operating capacity loss caused by the most severe supply contingency observed under normal transfer criteria
- ◆ Following a contingency, the NYCA has thirty (30) minutes to restore the **ten (10) minute operating reserve.**

\*for the NYCA, this is the combined 30 Minute and 10 Minute Total Reserve

# Dealing with Operating Reserves supplied from External Control Areas

- ◆ The ability for the NYISO to comply with the NERC Disturbance Control Performance Standard (“DCS”) will become complicated when purchasing Operating Reserves outside the NYCA
- ◆ Today, the NYISO is able to monitor internal generator response to ensure compliance with DCS
- ◆ In order to continue to maintain reliability, the NYISO will need to enhance its operational tools to (1) ensure that the Operating Reserves purchased outside the NYCA can be monitored in real-time for availability and deliverability to the NYCA; and (2) determine in real-time that the external Operating Reserves are being delivered when call upon by the NYCA.
  - This is a gateway requirement for allowing the procurement of Operating Reserves from external control areas
- ◆ It is expected that the external control area providing Operating Reserve to the NYCA will increase its own Operating Reserve requirements by the amount of Operating Reserves scheduled to the NYCA

# Regulation Service

- ◆ Regulation Service is necessary for the continuous balancing of resources (generation and NYCA interchange) with load, and to assist in maintaining scheduled Interconnection frequency at 60 Hz.
- ◆ Today, Regulation Service is deployed from resources located within the metered boundary of the NYCA in order for the NYCA Automatic Generation Control (“AGC”) to follow moment-by-moment changes in load, as defined by the NERC AGC Standard

# Response Requirements: Regulation Service

- ◆ Within the NERC Real Power Balancing Control Performance Standards, NERC expects that the NYISO is able to deploy its Regulation Service to balance demand in real-time
- ◆ As a measure, NERC established CPS1 and CPS2 as a way for the NYISO to track ACE over various durations (rolling 12 month for CPS1 and calendar month for CPS2). By tracking ACE performance, NERC is able to gauge the ability of the NYISO to maintain Interconnection steady-state frequency

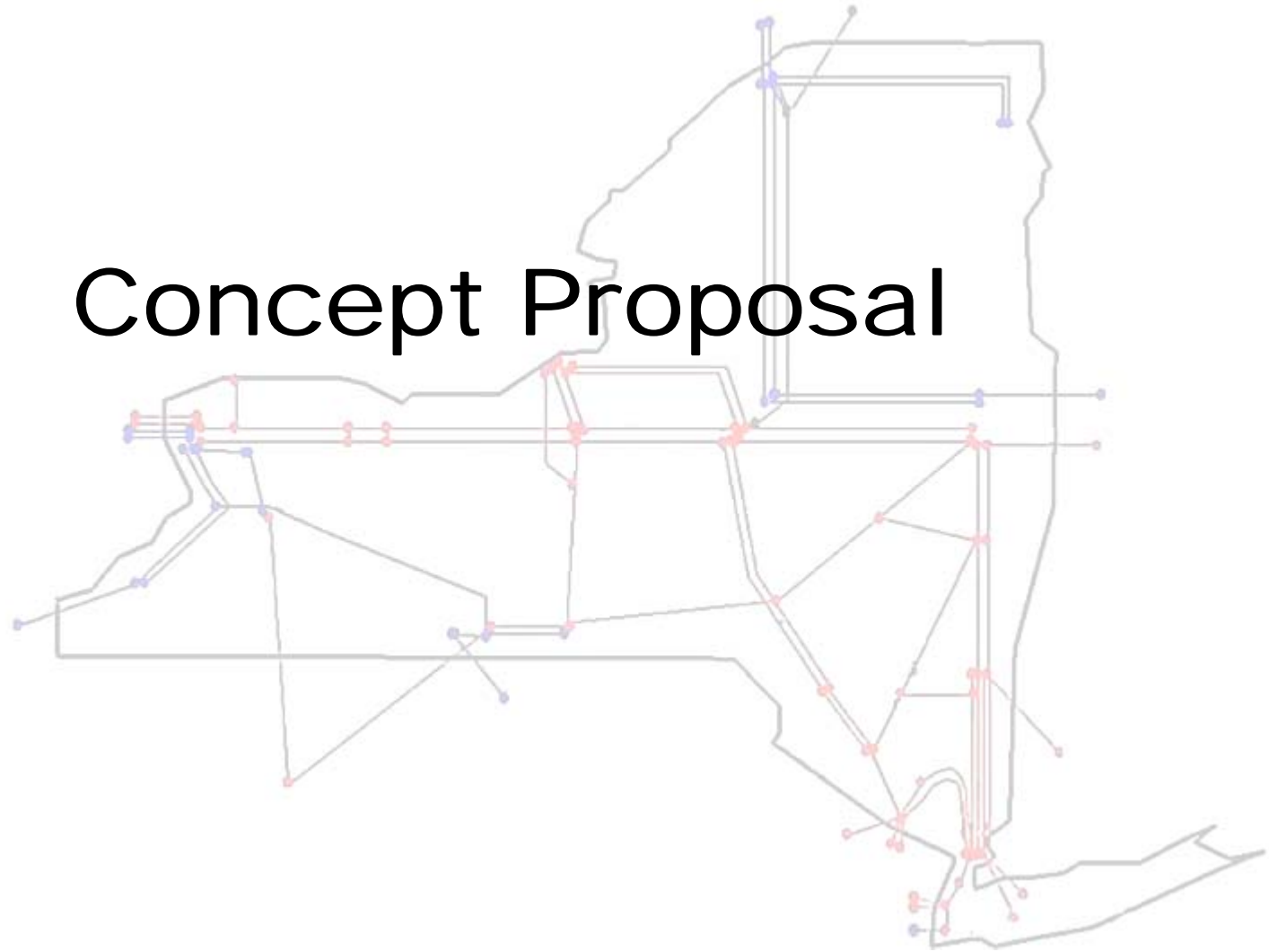
\*the NYISO reports CPS1 and CPS2 performance metrics within SOAS



# Dealing with Regulation Service supplied from External Control Areas

- ◆ The ability for the NYISO to comply with the NERC Real Power Balancing Control Performance Standards adds additional levels of complexity when deploying Regulation Service from resources outside the NYCA
- ◆ Today, the NYISO is able to monitor internal generator response to ensure compliance with CPS1 and CPS2 in real-time
- ◆ Additionally, the NYISO calculates a performance index ('PI') for each resource providing Regulation Service and uses it to adjust the real-time settlements. Additionally, the PI may be used to identify Resources that continuously under perform and take appropriate actions including but not limited to disqualification from participation in the NY Regulation Market.
- ◆ In order to continue to maintain reliability, the NYISO will need to enhance its operational tools to (1) ensure that the Regulation Service purchased outside the NYCA can be monitored in real-time for availability and deliverability to the NYCA, and (2) determine in real-time that the external Regulation Service is being delivered to NY when call upon by the NYCA.
  - This is a gateway requirement for allowing the procurement of Regulation Service from external control areas
- ◆ It is expected that the external control area providing Regulation Service to the NYCA will increase its own Regulation Service requirements by the amount of Regulation Service scheduled to the NYCA

# Concept Proposal



## Market Concept Objective

- ◆ Allow Market Participants to supply or purchase Regulation Service and Operating Reserves to or from the NYCA through external transaction bids in the Day Ahead and Real-Time Markets, where the Security Constrained Unit Commitment, Real-Time Commitment and Dispatch will co-optimize the energy and ancillary services offered by these external transactions

## Reserve Product Qualification

- ◆ Each Operating Reserve and Regulation Service product will be reviewed with the neighboring control area to determine which Operating Reserve or Regulation Service products will be offered at proxy buses associated with that neighboring control area.
- ◆ If an Operating Reserve or Regulation Service product cannot be supported by a neighboring control area, bidding for the product will be disabled for any transaction that has a source/sink at that proxy bus.

# Regulation Service and Operating Reserves Performance Management

- ◆ For each external proxy bus authorized to provide Regulation Service, NYISO will calculate a performance index for monitoring and settlement purposes
- ◆ NYISO will require the authorization perform Operating Reserve audits on external control areas (to test the external control area's response to reserve pickup requests)

# General Concept

- ◆ Allow purchases/sales of Operating Reserves from or to an external Control Area including:
  - 10 Minute Synchronous and Non-Synchronous Reserve
    - Requires the ability to co-optimize Energy and Operating Reserve sales/purchases on a 5 minute basis
  - 30 Minute Reserve scheduled through RTC only
    - Requires the ability to co-optimize Energy and Operating Reserve sales/purchases on a 15 minute basis
- ◆ Allow purchases/sales of Regulation Service from or to an external control area
  - Requires a minimum of five minute Energy scheduling with the adjacent control area
- ◆ Allow participation in the Day Ahead and Real-Time Markets
- ◆ Precludes participation from Wheels Through and Multi-Hour Block Transactions

# Scheduling (Optimization) Concept

- ◆ SCUC will co-optimize the purchase/sale of Energy, Regulation Service and Operating Reserves using the costs for Energy, Regulation Service and Operating Reserves as indicated on the DAM bid
- ◆ RTC (or RTC15) will co-optimize the purchase/sale of Energy, Regulation Service and Operating Reserves using the costs for Energy, Regulation Service and Operating Reserves as indicated on the HAM bid
  - Energy, Regulation Service and Operating Reserve MWs will be explicitly reflected on the HAM bid
  - Energy, Regulation Service and Operating Reserve costs will be explicitly reflected on the HAM bid
  - Imports would be able to supply Regulation Service and/or Operating Reserves from an external control area to the NYCA
  - Exports would be able to procure Regulation Service and/or Operating Reserves from the NYCA to an external control area

# Scheduling (Optimization) Concept

- ◆ RTD will co-optimize the purchase/sale of Energy, Regulation Service and 10 minute Operating Reserves using the costs for Energy, Regulation Service and 10 minute Operating Reserves as indicated on the HAM bid
  - The 30 minute Operating Reserves awarded by RTC will offset the 30 minute reserve requirement to establish the 30 minute Operating Reserve requirements that RTD will need to secure from the NY generation fleet in real-time



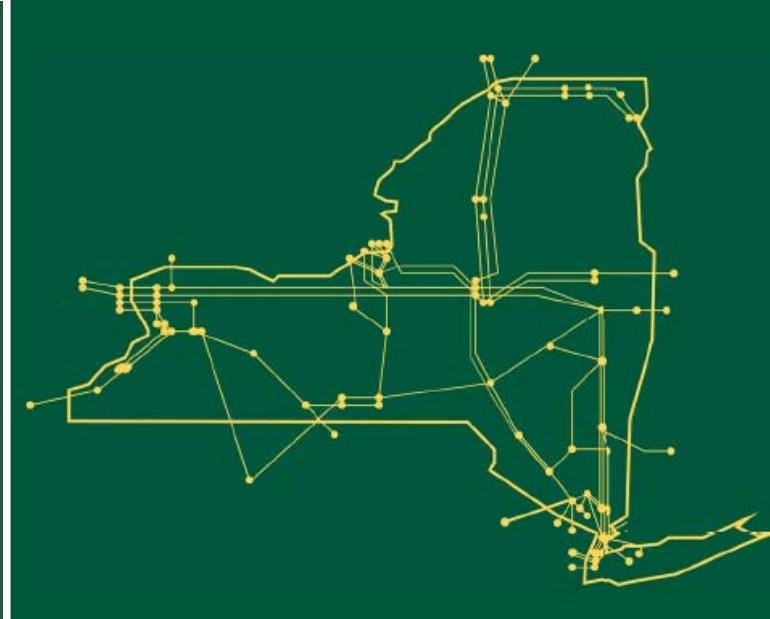
# Settlement Concept

- ◆ In the Day Ahead Market, the scheduled Energy, Regulation Service and/or Operating Reserves would be settled based on:
  - the Day Ahead LBMPs for Energy;
  - the Day Ahead prices for Regulation Service; and
  - the Day Ahead prices for Operating Reserves

# Settlement Concept

- ◆ In the Real-Time Market, the scheduled Energy, Regulation Service award and/or Operating Reserve awards would be settled based on:
  - the real-time LBMPs for Energy;
  - the real-time prices for Regulation Service; and
  - the real-time prices for Operating Reserves
- ◆ Any transaction that was scheduled in the Day Ahead Market would also have a balancing settlement for any Energy, Regulation Service or Operating Reserve scheduled in the DAM and not scheduled in the RT Market

The New York Independent System Operator (NYISO) is a not-for-profit corporation that began operations in 1999. The NYISO operates New York's bulk electricity grid, administers the state's wholesale electricity markets, and conducts comprehensive planning for the state's bulk electricity system.



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