

CTS with ISO-NE

How it will Work

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What is CTS?

- ◆ **Coordinated Transaction Scheduling (CTS)**

A new protocol that allows market participants to schedule energy based on projected price differences between market areas.

Benefits of CTS with ISO-NE

◆ Coordinated Transaction Scheduling (CTS)

The objective of CTS is to improve efficiency of energy scheduling with neighboring ISOs.

◆ Efficiency Impact

CTS will allow market participants to schedule based on the price difference between the NYISO and the neighboring ISOs, thereby:

- *improving the arbitrage opportunities available;*
- *improving the convergence of energy prices throughout the regions resulting in more efficient utilization of existing transmission capability; and*
- *allowing more efficient access to lower cost resources throughout the regions.*

In addition, the NYISO and ISO-NE will make quarter-hour scheduling available at the Sandy Pond Proxy Generator Bus when CTS is implemented.

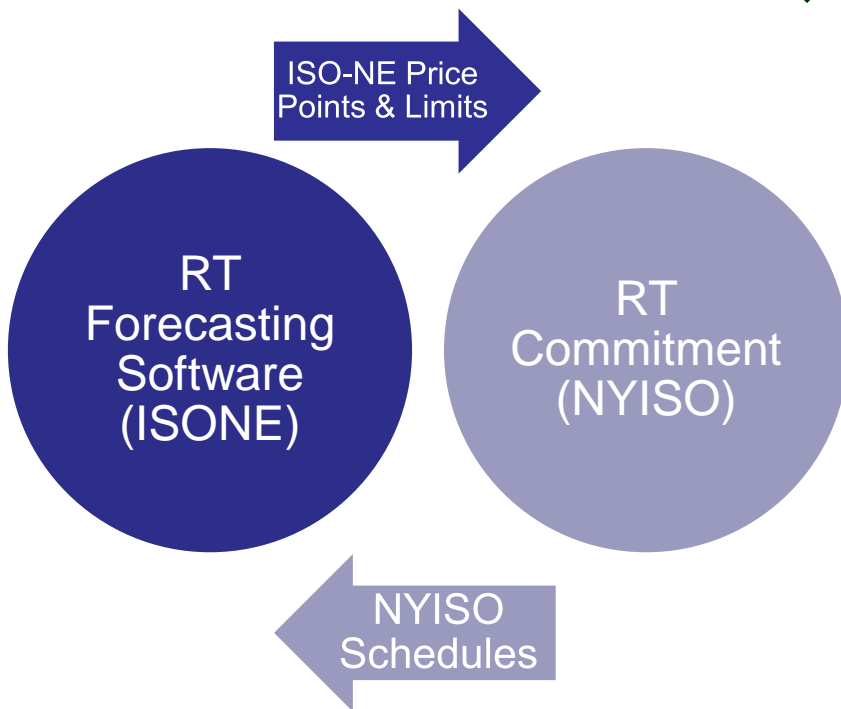
How CTS with ISO-NE will work

- ◆ **Only at the Sandy Pond Proxy**
- ◆ **Transaction Offers**
 - *CTS offers will be required for 15min Transactions offers*
 - *15min offers are single pt bid curves*
 - *CTS hourly offers are only permitted for Wheel-Through Transactions through NE beginning or ending at the Sandy Pond Proxy (e.g. New Brunswick -> ISO-NE -> NYISO)*
 - *Decremental or Sink Price Cap hourly offers will continue to be required for Wheel-Through Transactions through NY (e.g. OH -> NYISO -> ISO-NE)*
 - *All transaction offers will be entered into the Joint Energy Scheduling System (JESS)*
 - **The same process as is used today.**

How CTS with ISO-NE will work

◆ ISO-NE Supply Price Points

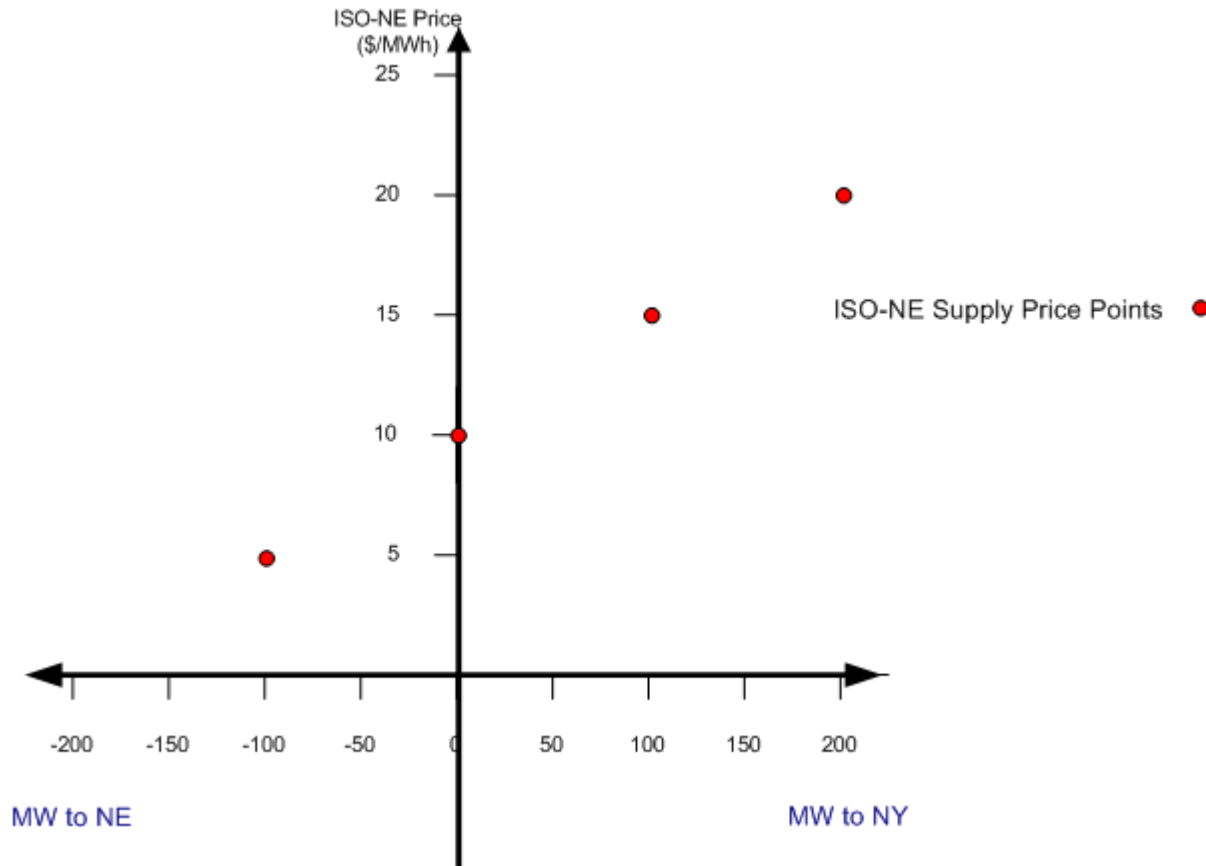
- *ISO-NE will provide Supply Price Points to NYISO to enrich CTS offers for evaluation by RTC*



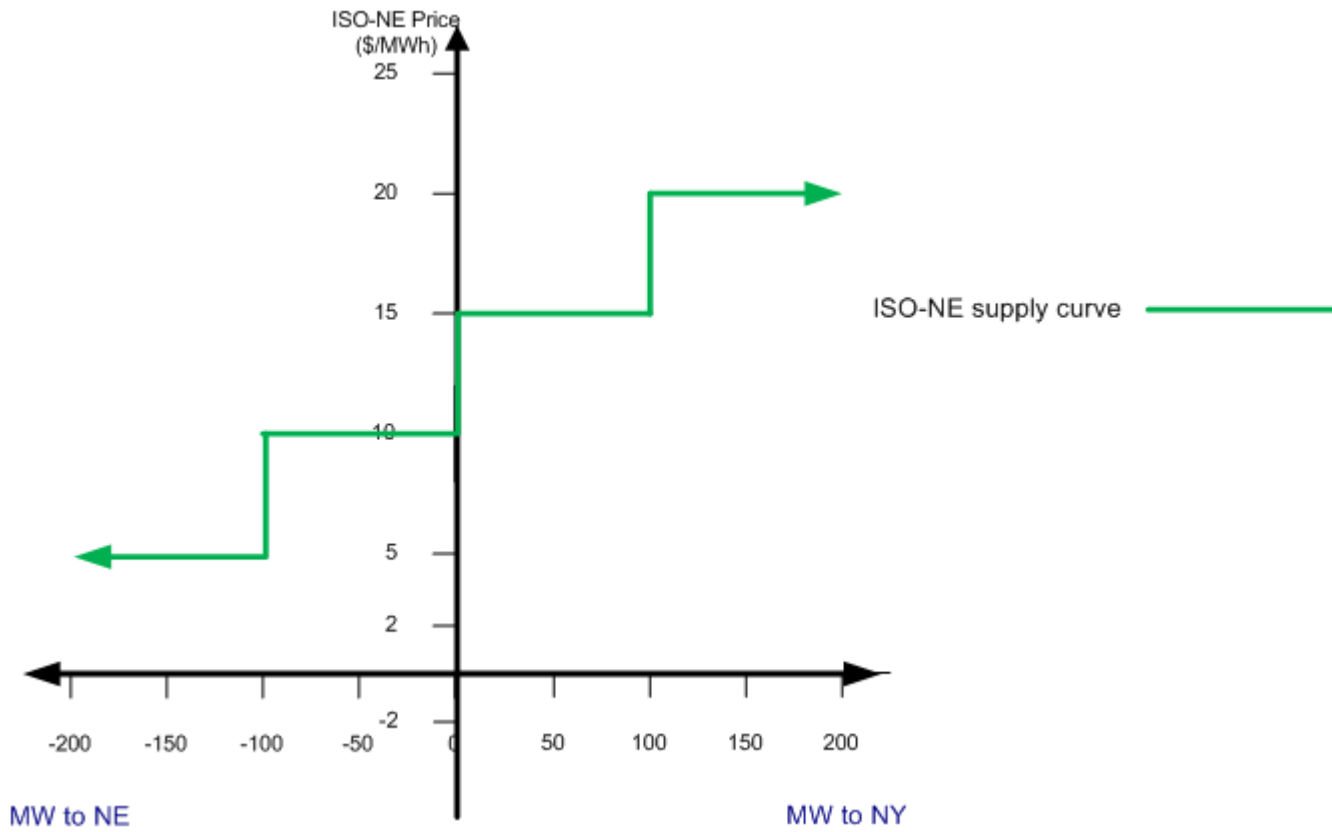
◆ ISO-NE Reliability Limits

- *ISO-NE will provide the NYISO with Transfer Limits to be used by RTC in it's evaluation of Transaction bids that reflect ISO-NE transfer limitations due to:*
 - **ISO-NE Minimum Generation**
 - **ISO-NE 30 minute Reserves**
 - **ISO-NE 10 minute Reserves**
- *These limits will restrict the interchange schedules between the NYISO and ISO-NE*

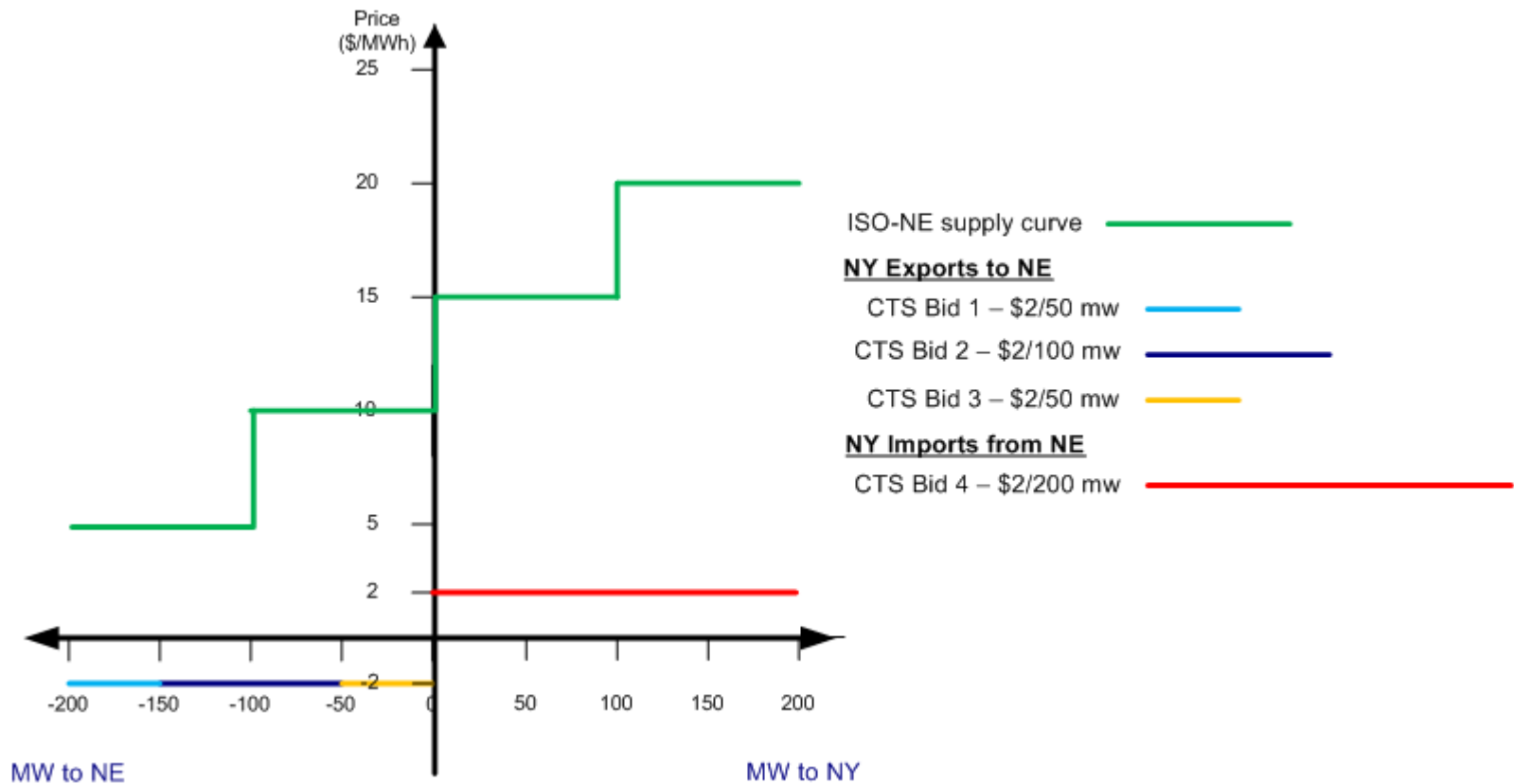
Enriched CTS Bid Curve Example



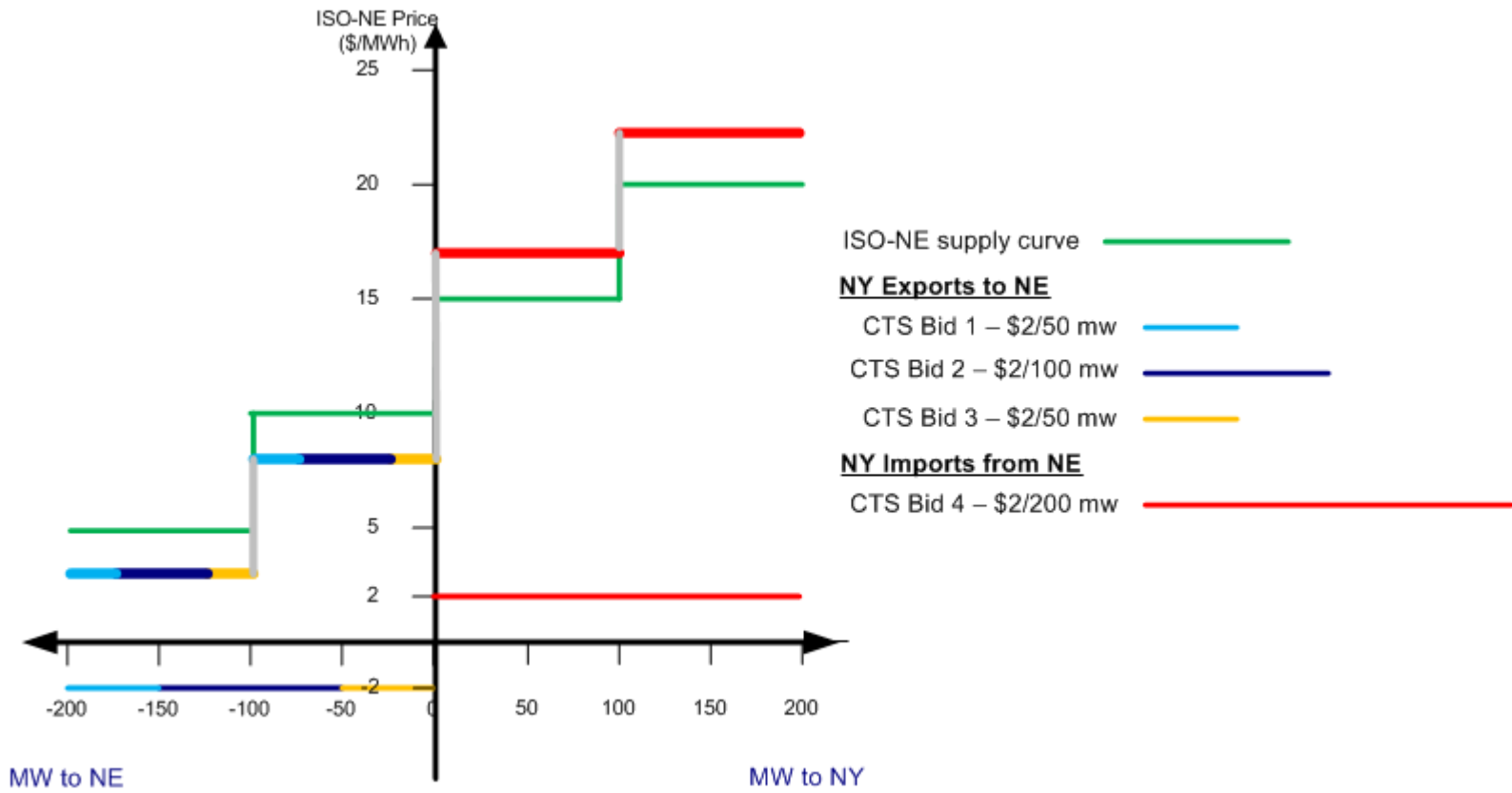
Enriched CTS Bid Curve Example



Enriched CTS Bid Curve Example



Enriched CTS Bid Curve Example



CTS Congestion Sharing

- *When RTC is attempting to enforce a set of limits based on defined ISO-NE reliability needs, congestion costs resulting from enforcing those limits will be borne solely by ISO-NE.*
- *When RTC is attempting to enforce a set of limits based on defined NYISO reliability needs or NYCA-wide ramp limits, congestion costs resulting from enforcing those limits will be borne solely by NYISO.*
- *The congestion costs associated with enforcement of all other limits will be borne by both ISOs equally using a 50%/50% split.*

How CTS with ISO-NE will work

◆ Ramp Limits

- *The NYISO does not expect changes to ramp limits to be implemented without mutual agreement. Any adjustments to the NY-NE AC ramp limits will require operations discussion and agreement before implementation.*
- *The NYISO and ISO-NE have agreed to implement a 200MW per quarter hour ramp limit and ISO-NE agrees to consider increasing that limit to 250MW per quarter hour after six months of real-time quarter hour scheduling.*
- *For hours when the NYISO Operator has selected the 'hourly scheduling' flag in RTC, the ramp for start of each hour being scheduled on an hourly basis will be existing NYISO hourly interface ramp values.*

How CTS with ISO-NE will work

◆ Reliability Flow Limits

- *The NYISO and ISO-NE have agreed that one area going short a reserve product should not drive the other area short of that same reserve product. However, when possible the software should support the area in need as much as possible without causing the supplying area to also become short reserves by allowing flows to be forced into the area of need.*

How CTS with ISO-NE will work

◆ Reliability Flow Limits

To effectuate this, the NYISO will attempt to enforce the most restrictive reliability limits provided by NE as is.

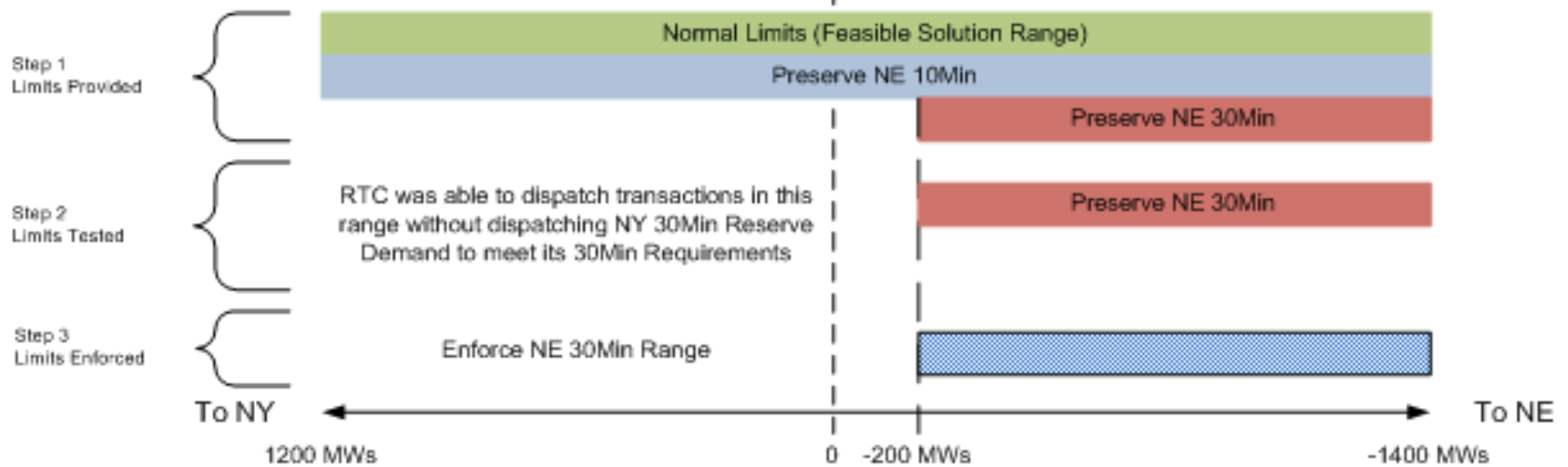
- *In the event that attempting to enforce these limits causes NY to go short 30 minute (Total) reserves then the software will relax the provided limits to the lesser of (i) preventing a NY 30 minute reserve shortage or (ii) a zero MW net interchange schedule.*
- *In the event that attempting to enforce these limits causes NY to go short 10 minute reserves and the most restrictive NE limit is a 30 minute limit, then the software will relax the provided limits to prevent a NY 10 minute reserve shortage.*
- *In the event that attempting to enforce these limits causes NY to go short 10 minute reserves and the most restrictive NE limit is a 10 minute limit, then the software will relax the provided limits to the lesser of (i) preventing a NY 10 minute reserve shortage or (ii) a zero MW net interchange schedule.*
- *In the event there is an ISO-NE Minimum Generation event, no further logic will be applied to the Low Limit and the software will use the provided Min Gen Low Limits. Min Gen Low Limits shall not require and interchange schedule greater than zero MW.*

All reserve limits are attempted to be enforced will first be adjusted to ensure that the agreed to ramp is not violated.

In the event no reliability limits are provided, then normal interface TTC limits and Ramp limit will be used by RTC without adjustment

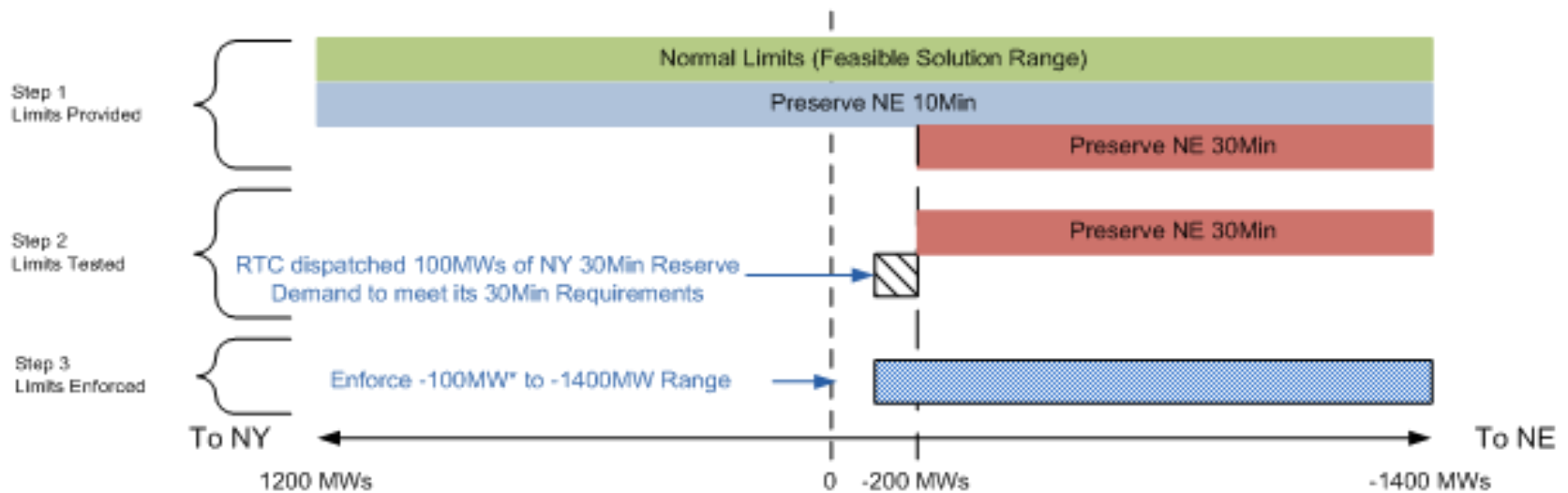
Reliability Flow Limits Example

Enforce Preserve NE 30Min (RTC Predicted no 10Min or 30Min Shortage)



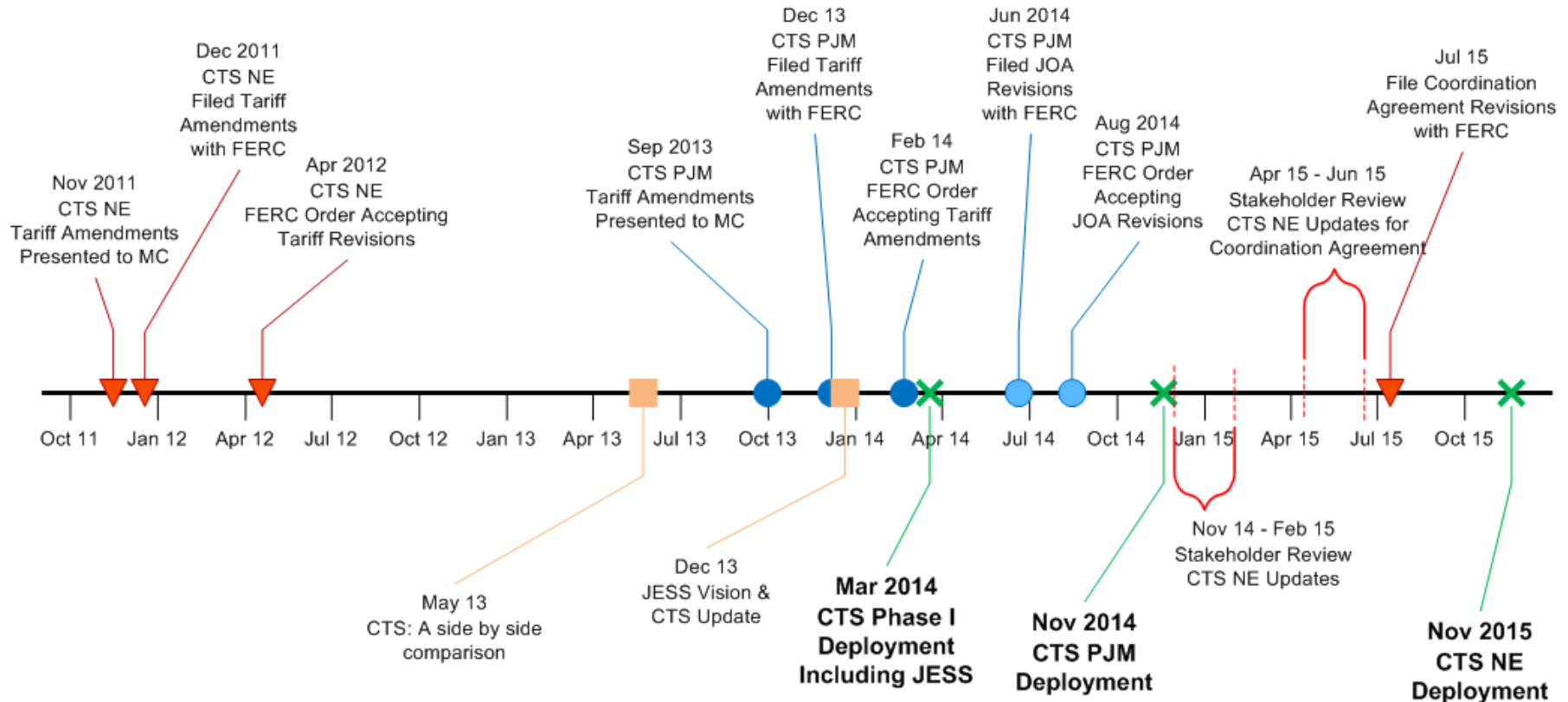
Reliability Flow Limits Example

Relax Preserve NE 30Min by NY Reserve Shortage



* -100MW comes from NE 30Min -200MW Limit + NY 30Min Shortage of 100MW

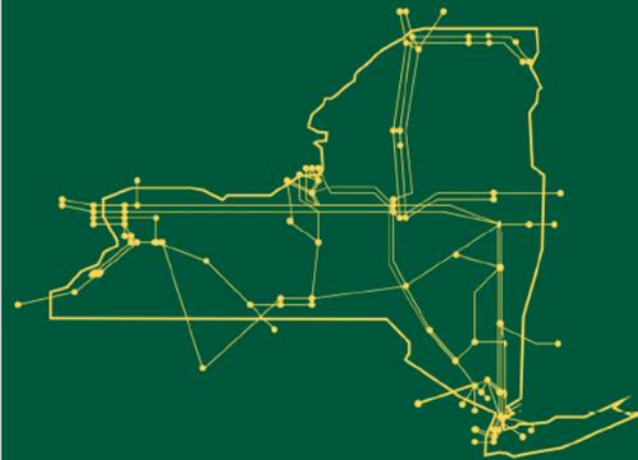
CTS with ISO-NE Timeline



Next Steps

- ◆ January MIWG
 - *JESS Update Presentation*
 - *Continue to discuss with Stakeholders*
- ◆ **April MIWG**
 - ***Present Tariff changes to Stakeholders***
- ◆ **June MIWG**
 - ***Present any final Tariff to changes Stakeholders***

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.



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