CTS Performance with ISO-NE Reliability Limits

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June 06, 2017, Rensselaer, NY

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Agenda

- Background
- ISO-NE Reliability Limits
- Review of CTS process with ISO-NE
- Experience with ISO-NE Reliability Limits
- Q&A

Background

- **The June 2015 Management Committee motion approving tariff changes for CTS with ISO-NE included a provision for NYISO to present the impacts of ISO-NE's reliability limits on the CTS process. The motion stated:**
  - The Management Committee hereby requests that the NYISO perform an evaluation and prepare an informational report after one year of experience with CTS with ISO-NE, or earlier as conditions require, that will (1) evaluate the impact of ISO-NE Reliability Limits on the efficiency of CTS pricing and dispatch and; (2) report the instances and amount to which Congestion Rents are not shared equally between the ISOs and in those instances whether Reliability Limits were invoked and if so by which ISO and to which party the Congestion Rents were paid.

Background, continued

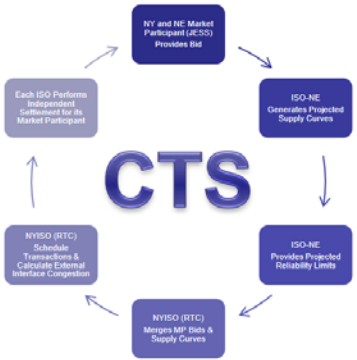
- **As part of the CTS process, when constraints occur at the NY-NE AC Interface, the congestion associated with those constraints may be shared with ISO-NE.**
  - Depending on the type and cause of the constraint, the congestion may be allocated to the NYISO Proxy LBMP either 100%, 50%, or 0%. Any congestion not included in the NYISO Proxy LBMP is included in the ISO-NE Proxy LMP.
  - Congestion is allocated to the NYISO Proxy Bus LBMP as follows:
    - 100% NYISO: NYCA internal constraints, NYCA ramp, external constraints at Proxys other than at the NY-NE AC Interface.
    - 50% NYISO: NY-NE AC Interface ramp, NE-NY AC Interface TTC from normal scheduling limit.
    - 0% NYISO: NY-NE AC Interface TTC from NE Reliability Limits (**see next slide for additional details on NE Reliability Limits).

ISO-NE Reliability Limits

- The snippet to the right is from the June 16th, 2015 Management Committee meeting materials, and it describes the inclusion of ISO-NE reliability limits into the CTS process.
- If a constraint is formed at the NY-NE AC Interface due to an ISO-NE reliability limit, the associated congestion is assigned 100% into ISO-NE's LMP (none to NYISO's LBMP).

Benefits of CTS with ISO-NE

- **Today**
  - *RTC schedules interchange without any knowledge of ISO-NE reliability limits.*
  - *Any reductions in the normal Reliability Limits after RTC has produced an interchange schedule can result in transaction cuts by operators during the checkout process, potentially resulting in a less economic interchange schedule.*



- **Tomorrow (post CTS w/ ISO-NE activation)**
  - *RTC will be supplied with reliability limits as inputs, allowing RTC to schedule the most economic interchange possible within the range of the limits.*
  - *Transaction cuts after RTC has scheduled interchange should be minimized.*

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Experience with ISO-NE Reliability Limits

- The ISO-NE Reliability limits have seldom impacted economic interchange schedules. Fewer than 0.05% of RTC Intervals were constrained by an ISO-NE Reliability Limit since the beginning of the program.
  - 22 out of 50,400 intervals were constrained by an ISO-NE Reliability Limit.
- The ISO-NE reliability limits remain as a backstop to protect against a scheduling outcome that results in ISO-NE reserve deficiencies.
- ISO-NE's supply curves have done an adequate job at accounting for ISO-NE reserve shortage costs, thus limiting the impact of the ISO-NE reliability limits on economic interchange.

Occurrences

- Intervals when ISO-NE reliability limits were binding since December 16th, 2016.
- In each instance, 0% of the congestion from the constraint was included in the NYISO RT Settlement LBMP.

Date	Constraint Cost	Flow Limit Direction	ISO-NE Reliability Limit Type	DAM Schedule MWh	RTC Schedule MWh	DAM minus RTC Schedule MWh
1/11/2016 0:00	-$842.53	Exports to ISO-NE	MinGen	-1400	-113	1287
1/11/2016 0:15	-$846.51	Exports to ISO-NE	MinGen	-1400	-135	1265
1/11/2016 0:30	-$847.87	Exports to ISO-NE	MinGen	-1400	-196	1204
1/11/2016 0:45	-$297.82	Exports to ISO-NE	MinGen	-1400	-248	1152
1/11/2016 6:00	-$849.69	Exports to ISO-NE	MinGen	-1400	-35	1365
1/31/2016 23:45	-$158.20	Exports to ISO-NE	MinGen	-910	-145	765
3/13/2016 8:45	-$126.51	Exports to ISO-NE	MinGen	-226	0	226
3/13/2016 9:00	-$139.11	Exports to ISO-NE	MinGen	-178	0	178
3/13/2016 9:15	-$133.82	Exports to ISO-NE	MinGen	-178	0	178
3/13/2016 9:30	-$129.91	Exports to ISO-NE	MinGen	-178	0	178
3/13/2016 9:45	-$128.19	Exports to ISO-NE	MinGen	-178	0	178
3/13/2016 10:00	-$117.78	Exports to ISO-NE	MinGen	-126	0	126
3/13/2016 10:15	-$119.80	Exports to ISO-NE	MinGen	-126	0	126
5/25/2016 5:00	-$99.97	Exports to ISO-NE	MinGen	-878	-9	869
8/11/2016 13:45	$210.22	Imports from ISO-NE	10/30 Minute Reserves	-813	-568	245
8/11/2016 15:15	$477.81	Imports from ISO-NE	10/30 Minute Reserves	-1019	-1386	-367
8/11/2016 15:30	$354.54	Imports from ISO-NE	10/30 Minute Reserves	-1019	-1390	-371
8/11/2016 15:45	$360.55	Imports from ISO-NE	10/30 Minute Reserves	-1019	-1390	-371
8/11/2016 16:00	$95.01	Imports from ISO-NE	10/30 Minute Reserves	-1008	-1240	-232
8/11/2016 17:00	$121.48	Imports from ISO-NE	10/30 Minute Reserves	-1059	-1080	-21
3/13/2017 6:45	$24.37	Imports from ISO-NE	10/30 Minute Reserves	-340	-20	320
4/30/2017 20:15	$560.94	Imports from ISO-NE	10/30 Minute Reserves	-730	-1185	-455

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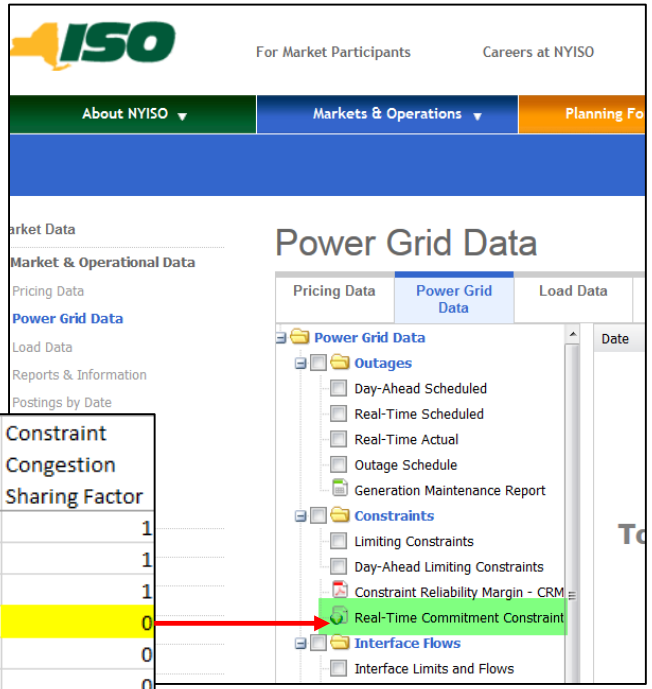
Where to find congestion sharing information on NYISO's OASIS

- **Constraint Congestion Sharing Factor rules only apply to External Constraints at the NY-NE AC Interface.**
  - "1" = 100% of the congestion is assigned to NYISO's LBMPs
  - "0.5" = 50% of the congestion is assigned to NYISO's LBMPs
  - "0" = 0% of the congestion is assigned to NYISO's LBMPs



RTC End Time Stamp	RTC Timestep	Facility Name	Contingency	RTC Constraint Cost	Constraint Congestion Sharing Factor
8/11/2016 15:15	1	DUNWODIE 345 SHORE_RD 345 1	NEPTUNE HVDC TIE LINE	34.6	1
8/11/2016 15:15	1	E179THST 138 HELLGATE 138 1	BASE CASE	-0.02	1
8/11/2016 15:15	1	GOETHALS 345 GOWANUS 345 1	BASE CASE	0.03	1
8/11/2016 15:15	1	SCH - NE - NY	BASE CASE	477.81	0
8/11/2016 15:30	2	SCH - NE - NY	BASE CASE	408.35	0
8/11/2016 15:45	3	SCH - NE - NY	BASE CASE	399.9	0
8/11/2016 16:00	4	SCH - HQ_IMPORT_EXPORT	BASE CASE	725.93	1
8/11/2016 16:00	4	SCH - NE - NY	BASE CASE	-295.72	0.5

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Questions?

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- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system

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