

Solutions to Loop Flow: NYISO Response to FERC Order

Presentation to Stakeholder Advisory Committee
October 28, 2009



- Loop Flow Issue
- FERC's July 16, 2009 Order to NYISO
- Response Development Activities
- Proposed Physical Solutions to Loop Flow
- Proposed Market Solutions to Loop Flow
- Comments for Design Team
- Questions

- Occurs where **Actual Flow \neq Scheduled Flow**
- Also known as off-contract path flow or parallel flow
- Significant loop flow of concern is Lake Erie Circulation
- Can cause congestion and associated costs in market area(s) outside of the contract path.
e.g. Ontario to Michigan transaction can financially impact NYISO market

- Found no evidence of market manipulation by market participants scheduling external transactions around Lake Erie
- Determined that there were no tariff violations by the NYISO or by market participants
- Ordered the NYISO to “expeditiously develop long-term comprehensive solutions to the loop flow problem with its neighboring Regional Transmission Organizations (RTOs), including addressing interface pricing and congestion management.”

NYISO must submit a report to FERC detailing its proposed solution, including necessary Tariff revisions, by mid-January

- NYISO identified concept solutions
- NYISO discussed concept solutions and plans for fleshing them out with stakeholders
- NYISO established a Broader Regional Markets Design Team involving PJM, MISO and IESO
- Team has been meeting on a weekly basis to further develop concepts
- Joint Stakeholder Technical Conference being held in Albany on October 29th

- Estimate expected hourly (uncontrolled) loop flows (*note: loop flows associated with Ontario market based inter-jurisdictional schedules are effectively “controllable”*)
- Coordinate with adjacent RTO in respect to critical flowgates outside Ontario to remove inter-jurisdictional transactions which are expected to be curtailed by Transmission Loading Relief (TLR) action.
- Call TLRs actions (to curtail external transactions) as necessary to address expected or actual congestion across internal flowgates

- Control flow through the use of phase shifting transformers, also known as phase angle regulators or PARs
- Once the Michigan–Ontario PARs are in-service, Ontario will have the ability to control the flows across each of its interconnection interfaces to some extent, and the (unscheduled) circulation flow across the top of Lake Erie in particular

Considered by IESO as the best first solution to loop flows around Lake Erie

- Initial installation completed in 1999
- Ongoing operation delayed due to equipment failures & difficulties in getting operating agreements in place.
- Failed equipment replaced and additional further protection upgrades scheduled to be in place by the end of Q1 2010.

- All physical controls will play a complementary role in any comprehensive loop flow solution
- Developing a broad protocol for coordinating the operation of all devices can be of benefit

- Concept
 - Parties scheduling transactions with any of the ISO/RTOs surrounding Lake Erie, would be billed for the real-time congestion costs incurred by the “off-contract” ISO’s to support the loop flow created by the transaction
 - Pre-elect to pay or be curtailed
- Provides for the recovery of congestion management costs incurred in managing loop flow impacts.
- Provides an alternative to market and operational interruptions caused by TLR actions.

- Concept
 - Allow for the dispatch of generator assets within a neighboring control area to address transmission constraints within own control area when more cost effective than operation of in-area generation.
 - Pre-determination of collective transmission constraints to jointly solve and real-time coordination of constraint solution costs.
 - Provides financial settlement to neighboring area for off-cost operation.
- Achieves a (more) efficient dispatch on a broader regional basis, e.g. PJM-MISO Market-to-Market Coordination

- Concept
 - Allow Market Participants to provide flexible energy, reserve and regulation transaction bids, where the real-time dispatch tools will evaluate these flexible transactions on an intra-hour basis and schedule on an intra-hour basis.
- Provides improved consistency of transaction schedules with real-time market price
- Expand pool of flexible assets to balance intermittent power resources output.

Illustrative Implementation Timeline (For Discussion Purposes Only)

- Market Flow Visualization
 - Software Ready / Parallel Operations 2010
- Buy-Through of Congestion
 - Design Development 2010
 - Implementation 2011
- Congestion Management
 - PJM-NYISO Implementation 2011
 - Extend to Additional Regions 2012-13
- Interregional Transaction Coordination
 - Energy Scheduling with NY/HQ 2010
 - Extend to Additional Regions 2011-13

*Prospective timeline pending design development and approval from Market Participants, neighboring Control Areas and the Commission.

- IESO is supportive of a more efficient dispatch of resources across the Eastern Interconnect
- The development and implementation of a more comprehensive solution should follow an approach wherein the cost/benefit is considered and the physical solution is in place (*Ontarians have paid for their share of the PARs equipment costs. This represents Ontario's prevailing financial contribution to solving the loop flow issue*)
- Any design changes will need to be prioritized with other work IESO has underway or planned

- Comments/Advice for Broader Regional Markets Design Team?
- Questions?