Parallel Flow Visualization/Mitigation SAR

Joint Stakeholder Meeting
November 14, 2008

pjm

MidwestISO
Energizing the Heartland

Parallel Flow Visualization/Mitigation Proposal

- The IDC would indicate the source of all flows on a flowgate and the priority of these flows (tag impacts, gen-to-load impacts and market flow impacts).
- Reliability Coordinators (RCs) would report their gen-to-load impacts to the IDC on a real-time basis or make arrangements to have someone report on their behalf.
- An RC experiencing congestion would have visualization of the magnitude and source of all flows affecting their flowgate using information from the IDC.
- An RC experiencing congestion would request an amount of flow reduction that would be processed by the IDC. A relief obligation would be issued to all parties contributing to the loading.

Major Issue Being Addressed by SAR

- Use of static data in NNL calculation produces questionable results, delays in calling TLR 5 and allows no after-the-fact reviews
  - NNL calculation in the IDC relies heavily on operating information submitted to the SDX to model system conditions. There is no NERC requirement that operating data be submitted to the SDX.
  - Default assumptions are used where operating information is missing (i.e. generator outages, load and net scheduled interchange).
  - There must be a total of 20 MW or more generation at a bus in order to have NNL impacts determined.

Major Issue Being Addressed by SAR

- Use of static data in NNL calculation produces questionable results, delays in calling TLR 5 and allows no after-the-fact reviews – (continued)
  - Because NNL calculation is made on an on-demand basis, RCs must adjust the static data to improve the NNL relief obligation. This can delay calling TLR 5 anywhere from 30 to 45 minutes.
  - Because NNL calculation is made on an on-demand basis, there is no real-time view of gen-to-load parallel flows (except during TLR 5). There is no historical archive of impacts that could be reviewed on an after-the-fact basis.

Major Issue Being Addressed by SAR

- RCs in Eastern Interconnection (EI) Lack Visualization as to the Source and Magnitude of Parallel Flows When They Experience Congestion
  - Transaction impacts in forward and reverse directions for current hour and next hour are available in IDC.
  - Likewise, Midwest ISO, PJM and SPP gen-to-load impacts (market flows) in forward and reverse directions for current hour and next hour are available in the IDC.
  - An RC should know its own gen-to-load impacts. However, there is no real-time info in the IDC on parallel flows caused by gen-to-load impacts from outside the RC area.

Major Issue Being Addressed by SAR

- RCs in EI Lack Visualization as to the Source and Magnitude of Parallel Flows When They Experience Congestion – continued
  - Because NNL calculation is made on-demand and uses static operating information, it is not a suitable source for real-time impact of parallel flows.
  - Would like an archive of tag impacts, gen-to-load impacts and market flow impacts that could be used to make after-the-fact reviews.

Major Issue Being Addressed by SAR

- Instances when parallel flows in the EI caused reliability concerns:
  - June 12, 2007- A combination of transmission and generation contingencies plus high Lake Erie circulation contributed to IESO initiating voltage reduction procedure.
  - August 19, 2007- PJM initiated TLR 5b on its interface with Duke to manage congestion caused by North to South bias (mild temps in NE vs. hot temps in Southeast).
  - August 20, 2007- PJM initiated TLR 5a on its interface with CPL to manage congestion caused by a North to South bias (mild temps in Northeast vs. hot temps in Southeast).

Major Issue Being Addressed by SAR

- Instances when parallel flows in the EI caused reliability concerns – (continued):
  - December 3-6, 2007- PJM initiated TLR 3a/3b on its interface with CPL to manage congestion caused by a South to North bias (mild temps in Southeast vs. cold temps in Northeast).
  - January-Aug, 2008- IESO call TLR on Lake Erie flowgates 115 times. This is usually an indication that there are high circulation flows around Lake Erie.
  - January 2006-July 2008- Of the 217 TLR 5 reports during these 31 months, about half of the events occurred during periods of high regional transfers.

Major Issue Being Addressed by SAR

- Generators using non-firm transmission service to serve load inside the Balancing Authority Area (BAA):
  - Designated Resources are considered firm use of the transmission system. Non-designated resources are considered non-firm use of the transmission system.
  - The IDC is unable to assign relief obligations to non-firm gen-to-load impacts during TLR. If a non-designated resource is below the 20 MW threshold, transmission usage is treated firmer than firm.
  - Tagging these non-firm uses not effective since the IDC lacks the granularity to determine tag impacts of intra-BAA transactions.

Major Issue Being Addressed by SAR

- Generators using non-firm transmission service to serve load inside the BAA – (continued):
  - Instances where non-firm transmission service is used to serve load within the BAA:
    - Non-designated resources that are being used to serve load inside the BAA have the highest priority of non-firm service (Priority 6-NN).
    - Renewable resources that have elected to use non-firm transmission service to deliver to load inside the BAA.
    - Qualifying facilities that are delivering to load within the BAA.

Summary of Future Path for Parallel Flow Visualization SAR

- Provides RCs with visualization of the magnitude and source of all flows they experience. These flows are used in the assignment of relief obligations.
- The IDC would be expanded to accept gen-to-load impacts reported by RCs or a service provider reporting on behalf of an RC.
- The IDC would be used to assign relief obligations based on tag impacts, market flow impacts and gen-to-load impacts.
- Non-firm gen-to-load impacts would get a relief obligation along with non-firm market flows and non-firm tag cuts during TLR 3.
- An IDC archive would store tag impacts, market flow impacts and gen-to-load impacts on a flowgate basis for after-the-fact analysis.

Seek Industry Support for Parallel Flow Visualization SAR

- SAR submitted to NERC on Aug. 22 by Midwest ISO, PJM and SPP.
- NERC SC assigned draft SAR to TLR SDT at their Sept 22 meeting.
- TLR SDT met Sept. 29-30 and developed a plan for finalizing SAR and posting for public comment in December.
- Midwest ISO, PJM and SPP will develop a business case on need for the SAR before posting.
- Following 30-day comment period, NAESB will develop a methodology to assign curtailment priority of gen-to-load impacts and market flow impacts.
- Target is to have standard changes in-place by end of 2009 with implementation prior to Summer 2010.
- Midwest ISO, PJM and SPP are seeking stakeholder support for SAR once it is posted for public comment.

Future Path for Parallel Flow Visualization SAR

- Questions?