

Loop Flow Study Phase II

Scope of Work

Loop Flow Study Phase I

Follow-Up

- Midwest ISO and PJM have received written comments on the Phase I study report from ITC. The RTOs will confirm that IESO, NYISO, and TVA do not intend to submit written comments.
- Midwest ISO and PJM met with FERC staff on September 5, 2007, to provide them an overview of Phase I loop flow study report. The RTOs will contact FERC staff to determine if they would like any additional information beyond what was presented at the September 5, 2007, meeting.
- Midwest ISO and PJM will develop appropriate action items based on recommendations from the Loop Flow Study Phase I report. These action items will be tracked and progress will be reported to the JCM Stakeholders.

Loop Flow Study Phase II

Purpose

The purpose of the Loop Flow Study Phase II (Phase II Study) Joint and Common Market Initiative is to go to the next level of granularity on the Midwest ISO/PJM loop flow study. The Loop Flow Study Phase I focused on interfaces where Midwest ISO and/or PJM have experienced significant loop flows. In these cases, the interfaces represent interfaces between Balancing Areas and loop flow was defined as the difference between scheduled flow and actual flow. Under the Phase II Study, the RTOs will go beyond reviewing loop flows on interfaces between Balancing Areas. Midwest ISO and PJM will analyze flowgates internal to Midwest ISO and PJM markets as well as flowgates on the border between Midwest ISO and PJM and between the two RTOs and outside entities.

The Phase II Study will identify flowgates located within the two markets that have experienced congestion during the last two years. An analysis will be made that identifies the source of all net flows on the flowgate. The analysis will examine data for specific dates and times when these flowgates experienced high flows and will identify the contributors to these high flows. The contributors will be sorted into those coming from the flowgate owner(s) versus those coming from outside entities. Midwest ISO and PJM will, to the extent possible based on available data, take into account system conditions (outages, transfers, generator dispatch, and load levels) as it identifies loop flow contributors.



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The results will be used to provide insight on how to better manage loop flows when congestion occurs in the future on these flowgates as well as provide the ability to predict these loop flows in the future. Understanding the source of loop flows is the first step in the process to manage loop flows.

Loop Flow Study Phase II High-Level Activities

- Identify up to 20 flowgates in Midwest ISO and up to 20 flowgates in PJM that have experienced congestion during past two years (fall 2005 to fall 2007). In identifying the flowgates, the RTOs will consider both TLR events and market-to-market events to identify flowgates along with the number and duration of congestion hours.
- For the identified dates and times of congestion, Midwest ISO and PJM will obtain tag data, market flow data and generation-to-load impact data. This will require having access to IDC historical data and having the ability to process this data to see the flowgate impacts.
- Midwest ISO and PJM will process the tag data, market flows and generation-to-load impacts to identify individual contributors to loop flows. To the extent all contributors cannot be identified, the RTOs will identify an “Other” category as the source of loop flows. The goal will be to minimize the “Other” category.
- Midwest ISO and PJM will look for factors that may impact these individual contributions such as, are the contributors influenced by system topology and/or operating practices; and are there steps that can be taken by the contributors or other entities to mitigate these loop flows.
- Knowing the individual contributors to loop flows and the factors associated with these contributions should improve the RTOs ability to predict loop flows in the future. Midwest ISO and PJM will also want to identify any upcoming changes that may alter the loop flows that have been experienced in the past.

Issues to Be Resolved

- Is the IDC data for the last two years accessible or are there data confidentiality restrictions that must be addressed? Midwest ISO and PJM have already executed a number of data confidentiality agreements for the Phase I Study.
- Are there holes in the data? An example of this occurred in the Phase I Study. The calculation of Midwest ISO market flows were modified on December 20, 2006, when it was determined that market flows on the MECS-ONT interface overstated Midwest ISO’s actual contribution. Therefore, the market flows prior to December 20, 2006, were not a good source of data for the MECS-ONT interface.



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- Do we rely on the generation-to-load calculation from the IDC? Is this calculation archived? Since the IDC uses a static calculation, is there a better source for the generation-to-load data?
- What is the source for response factors that include the impact of outages and topology changes in the past?
- The tools that will be used to make the analysis will be another issue:
 - The tag data, market flow data and generation-to-load impact data for the last two years is a significant amount of data. A data warehouse will be required to manage the data. PJM set-up a tag data warehouse for Phase I Study that can be expanded for Phase II Study.
 - Unlike the Phase I Study, where the RTOs were able to sum the tags scheduled across an interface, for the Phase II Study the RTOs will need to compute the impact of tags on a flowgate using response factors. This is similar to an IDC type of calculation. Unfortunately, the IDC does not archive the impact calculations. Therefore, the Phase II Study will attempt to duplicate the IDC calculation but it will not have all of the topology information to fully duplicate the IDC results at the time of congestion.
 - Another Phase II Study issue is the flowgates to be selected for review. In the Phase I Study, the actual flow was the sum of the ties that form the interface. However, many of the Phase II Study flowgates are expected to be OTDF flowgates that involve outages. To obtain a flowgate value during a period of high congestion means having the flows on the monitored element and contingent element of an OTDF flowgate along with a response factor that represents the post contingent flow of the monitored element. While line flows are generally available from SCADA data archives, response factors are not. Midwest ISO and PJM will investigate whether a calculated post contingent line flow is available in the archive or if another mechanism is available to determine the post contingent line flow.
- How to identify the factors that may influence the loop flows? These factors could include topology, operating procedures or even activities of market participants/scheduling entities that impact loop flows. This will likely require multiple reviews of different factors.
- Once Midwest ISO and PJM identify the sources of loop flows, the next challenge will be to identify steps that can be taken to mitigate the loop flows. This could lead to changes in operating procedures, redispatch agreements, and improvements to the TLR process.



Loop Flow Study Phase II

Timeline

- Finalize scope – Complete by October 15, 2007
- Develop flowgate analysis approach – Complete by December 1, 2007
- Conduct analysis of transaction tags, market flows and generation-to-load impacts – Complete by February 1, 2008
- Quantify contributions – Complete by March 1, 2008
- Identify mitigating actions – Complete by April 1, 2008
- Finalize report – Complete by May 1, 2008
- Present findings to stakeholders – June 2008 JCM Stakeholder Meeting

Summary

Midwest ISO and PJM will perform the Phase II Study in coordination with other Reliability Coordinators and interested Transmission Owners whose facilities are impacted by loop flows. The study will identify flowgates that have experienced congestion due to loop flows, the sources of these loop flows and the steps that can be taken to mitigate these loop flows. This study is also expected to develop strategies which can assist in predicting loop flows based on historical observations, and system conditions.

Midwest ISO and PJM will provide periodic reports to stakeholders on study progress.

