

**MISO Investigation Report on the NERC TLR Level 5 Event**  
**Manitoba Hydro**  
**Flowgate 6002: MHEX\_S Interface**  
**April 16, 2010**

Report submitted to NERC on: May 25, 2010

This report is submitted in accordance with the NERC Transmission Loading Relief (TLR) Investigation Procedure for the TLR events that occurred on Flowgate 6002 on April 16, 2010. This event resulted in curtailment of Firm transactions.

**1. Description of purpose/cause of hold/curtailment:**

The definition of flowgate 6002 is listed below.

Monitored Facilities: Dorsey-Roseau 500kV line  
Glenboro-Rugby 230kV line  
Richer-Roseau 230kV line  
Letellier-Drayton 230kV line

**2. Facility/Flow gate limitations and flow at the time the TLR was initiated:**

Midwest ISO, along with Manitoba Hydro has developed a standing operating guide to provide guidance for operators to manage real time flow on the MHEX\_S Interface.

On April 16, 2010, a TLR 5 was required to reduce the real-time south flows across flowgate 6002 due to the forced outage of the Forbes 300MVar Cap Bank. Scheduling limit was lowered to 985MW. This is one element of the MHEX\_S Interface into the USA.

At 13:20 EST, MHEB informed MISO that they needed TLR the MHEX\_S flowgate 6002 to reduce the real-time schedules on FG 6002 due to the Forbes Cap Bank forced outage.

At 13:22 EST, MISO issued a TLR-5B for across 13:35 EST on the MHEX\_S flowgate 6002 to reduce the real-time flows below the scheduling limit.

At 13:48 EST, MISO re-issued the TLR-5B as a TLR-5A for across 14:00 EST on flowgate 6002

At 15:23 EST, MISO issued a TLR-0 for across 15:30 EST on flowgate 6002 thus ending the TLR

As the NERC IDC showed insufficient non-firm schedule curtailments to relieve flows to the necessary levels, TLR-5 was issued for 3 continuous issuances over the duration of this event.

**3. TLR Level 5 issuance information, timing (EST), firm tag information obtained for flow gate #6002 April 16, 2010:**

<b>TLR LEVEL</b>	<b>TIME (EST)</b>	<b>Firm Transaction / Curtailment Information</b>	<b>NNL Reduction Requirement</b>
5B	13:35	13 tags of (7-F & 7-FN) = 550 MW schedules curtailed to provide 550 MW relief	None
5A	14:00	11 tags of (7-F & 7-FN) = 449 MW schedules curtailed to provide 449 MW relief	None
5A	15:00	11 tags of (7-F & 7-FN) = 468 MW schedules curtailed to provide 468 MW relief	None
0	15:30	Terminated TLR	None

**NNL Mitigation:**

- There were no NNL obligations for this TLR 5.

**4. Transmission and generation outage or changes from prediction that may have contributed:**

**Significant Forced Transmission Outages:**

Prairie-Winger 230kV  
 Forbes Capacitor Bank  
 Eau Claire TR10 345/161kV

**Significant Generator Outages:**

Coal Creek 2	550
JP Madgett	412
Council Bluffs 4	800
King 1	611
Prairie Island 2	563
Sherburne County 2	769
Antelope Valley 2	480
	====
	4185

**System Condition Summary:**

The Forbes Capacitor Bank was forced out of service which lowers the scheduling limit south.

**5. Procedures implemented prior to hold/curtailment:**

None – this issue is covered by the Standing op-guide and was a forced outage.

**6. Compare Complete Transaction Curtailment List with the Whole Transaction List as generated by the IDC, before and after curtailments:**

Firm transactions impacting the flow gate by 5% or greater were partially curtailed and reloaded.

**7. Known Transactions not in the IDC and actions taken:**

There were no known transactions not in the IDC at the time this TLR was in effect that were impacting this flow gate.

**8. RCIS or other system messages:**

Information was provided to NERC Reliability Coordinators via the NERC IDC. The IDC automatically sends TLR Level information to the RCIS. Curtailment information was communicated to the MISO control areas via the MISO MCN and ICCS messaging systems.

**9. State estimator snapshots and security analysis including contingency analysis or stability analysis along with any other recorded data indicating the need for TLR:**

None – this issue is covered by the Standing op-guide

**10. ATC Limitations before, during, and after the event:**

None – this issue is covered by the Standing op-guide

**11. Description of actions taken to avoid future hold/curtailments:**

None – this issue is covered by the Standing op-guide and was a forced outage.

**12. Re-dispatch actions taken:**

None – this issue is covered by the Standing op-guide

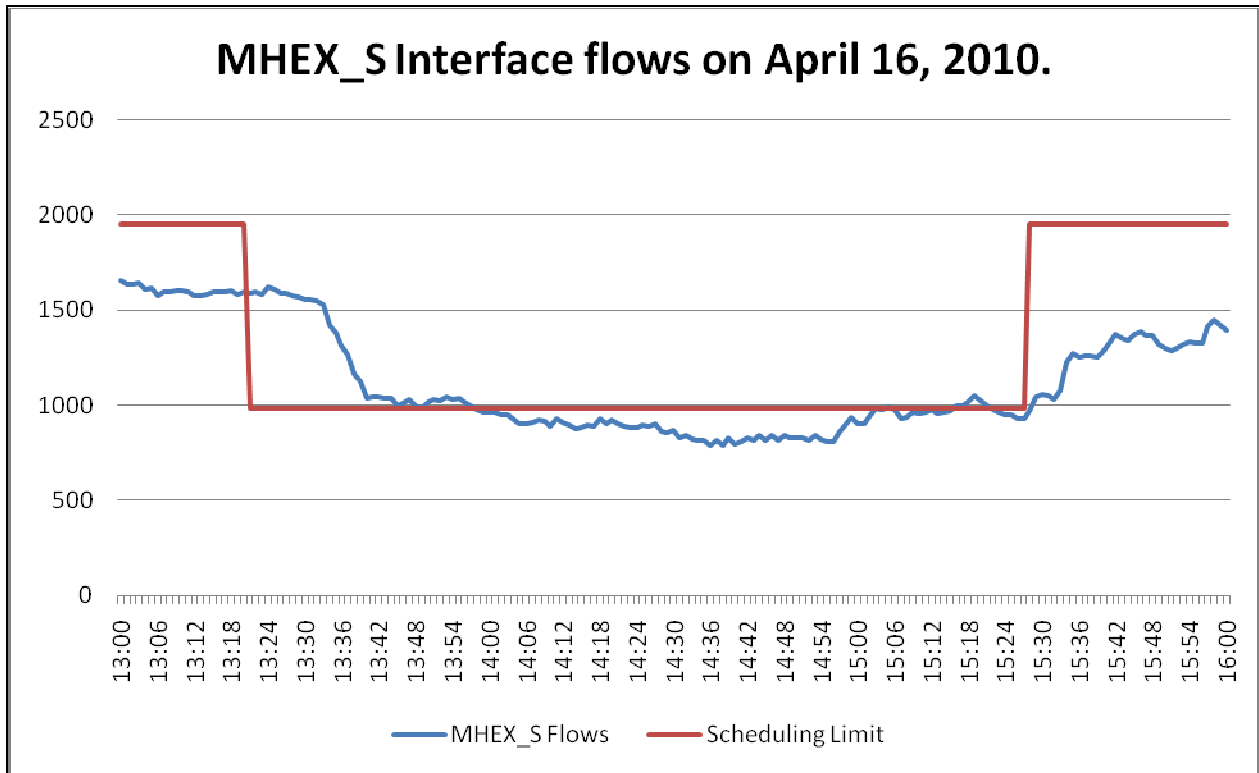
**13. If Firm transaction curtailments took place, description of Transactional Contribution Factor calculation and results as well as how necessary relief was obtained through network service and native load contributions:**

Firm schedules were curtailed as detailed in section 3 above.

**14. Other options considered before/during to avoid hold/curtailment:**

None – this issue is covered by the Standing op-guide

15. The following chart identifies the flowgate loading for the TLR level 5 event:



### 16. Lessons Learned

The MHEB and MISO Operators reacted appropriately to the forced outage that impacted the MHEX\_S Interface.

MHEB and MISO will continue to work closely to ensure the Interface limits are respected.