

MISO Investigation Report on the NERC TLR Level 5 Event
Manitoba Hydro
Flowgate 6002: MHEX_S Interface
April 5, 2010

Report submitted to NERC on: April 15, 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 5, 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 5, 2010, a TLR 5 was required to reduce the real-time south flows across the MHEX_S Interface into the USA.

At 03:45 EST, XCEL informed MISO that they needed TLR the MHEX_S flowgate 6002 due to a reduced real-time limit in order to remove the Roseau Capacitor #2 from service. The limit required to reach in order to complete switching was 300MW on the Dorsey-Roseau 500kV line.

At 03:54 EST, MISO issued a TLR-5A for across 04:00 EST on the MHEX_S flowgate 6002 to get the flows down on the 500kV line so switching could take place.

At 04:11 EST, MISO re-issued the TLR-5A to a TLR-5B for across 04:30 EST. Flows were still above the limit to remove the Roseau Cap from service.

At 04:34 EST, MISO re-issued the TLR-5B for across 04:45 EST on FG 6002. Flows were still above the limit to remove the Roseau Cap from service.

At 05:13 EST, MISO issued a TLR-0 for across 05:30 EST on FG 6002 thus ending the TLR. Roseau Cap was removed from service which ended the reduced limitation on the line.

As the NERC IDC showed insufficient non-firm schedule curtailments to relieve flows to the necessary levels, TLR-5 was issued for 4 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 5, 2010:

TLR LEVEL	TIME (EST)	Firm Transaction / Curtailment Information	NNL Reduction Requirement
5A	04:00	12 tags of (7-F & 7-FN) = 689 MW schedules curtailed to provide 689 MW relief	None
5B	04:30	12 tags of (7-F & 7-FN) = 605 MW schedules curtailed to provide 605 MW relief	None
5B	04:45	12 tags of (7-F & 7-FN) = 208 MW schedules curtailed to provide 208 MW relief	None
5A	05:00	12 tags of (7-F & 7-FN) = 416 MW schedules curtailed to provide 416 MW relief	None
0	05:30	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

Significant Generator Outages:

Coal Creek 2	550
King 1	611
Sherburne County 2	769
	====
	1930

System Condition Summary:

Heavy North-South flows across the interface were making it difficult to remove the Roseau Cap #2 from service.

5. Procedures implemented prior to hold/curtailment:

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

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

12. Re-dispatch actions taken:

There were no manual generation re-dispatch actions taken during this event.

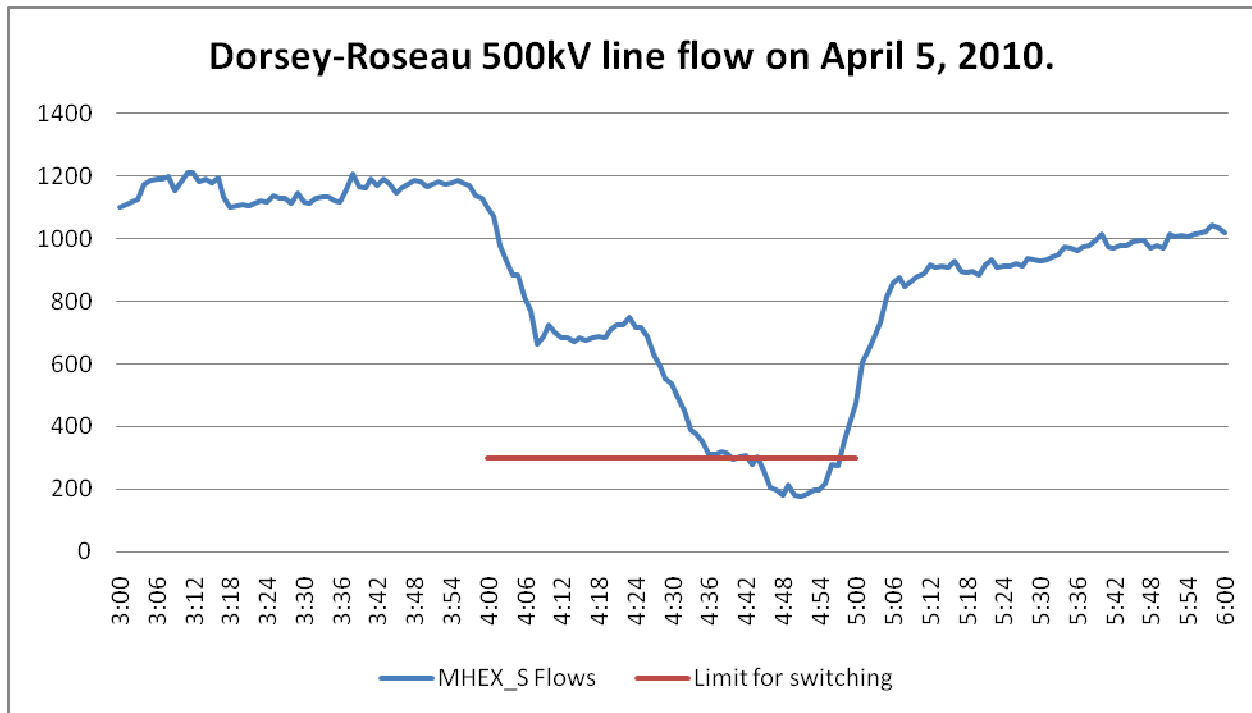
13. If Firm transaction curtailments took place, description of Transactional Contribution Factor calculation and results as well as how necessary relief was obtained through network service and native load contributions:

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:



Note: Red line indicates level flows needed to reach for switching, once completed the flows began to increase again.

16. Lessons Learned

The MHEB, XCEL and MISO Operators reacted appropriately in order to reduce flows for switching out the Roseau Cap #2.

This limitation was due to an XCEL outage, it should have been issued with XCEL as the company instead of MHEB, and curtailments would remain identical.