

November 2, 2010



Mr. Paul Cook
Senior Network Management Engineer
Transmission & Connection Planning
Hydro One Networks
483 Bay Street, 15th Floor
Toronto, Ontario
M5G 2P5

Dear Mr. Cook:

***Transfer Load to Horner TS
Notification of Conditional Approval of Connection Proposal
CAA ID Number: 2010-EX499***

Thank you for the information regarding the proposed transfer of load to Horner TS.

We have concluded that the proposed changes will not result in a material adverse impact on the reliability of the integrated power system.

The IESO is therefore pleased to grant **conditional approval** for the modification detailed in the attached assessment report. Any material changes to your proposal may require re-assessment by the IESO in accordance with Market Manual 2.10, and may nullify your conditional approval.

Final approval to connect the facility to the IESO-controlled grid will be granted upon successful completion of the IESO Market Entry process including, without limitation, satisfactory completion of the requirements set out in the System Impact Assessment report. During this process you will be expected to demonstrate that you have fulfilled the requirements and that the facility you have installed is materially unchanged from the proposal assessed by the IESO. Please refer to the '**External Guidelines for Connection to the IESO**' attachment in your approval email for key steps in the Market Entry process. In order to initiate this process, please contact Market Entry at market.entry@ieso.ca as soon as possible prior to your energization date.

For further information, please contact the undersigned.

Yours truly,

Barbara Constantinescu
Manager – Market Facilitation
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cc: IESO Records

All information submitted in this process will be used by the IESO solely in support of its obligations under the *Electricity Act, 1998*, the *Ontario Energy Board Act, 1998*, the *Market Rules* and associated policies, standards and procedures and in accordance with its licence. All information submitted will be assigned the appropriate confidentiality level upon receipt.

**Final Report - Expedited System Impact Assessment
Hydro One Networks****1.0 GENERAL DESCRIPTION & PROPOSED MODIFICATIONS**

Two new 27.6 kV feeder breaker positions will be installed at Horner TS to relieve loading at Manby West TS.

Manby West TS is a 230/27.6 kV DESN connected to Richview TS by the 230 kV circuits R2K and R15K and connected to Cooksville TS by the 230 kV circuit K21C. Horner TS is a 230/27.6 kV DESN connected between the 230 kV circuits R2K and R15K closer to Richview TS.

A total of 14.88 MVA will be transferred from Manby West TS to Horner TS, 4.32 MVA (90 A) from Manby M4 to Horner M12 and 10.56 MVA (220 A) from Manby M12 to Horner M11.

The proposed in-service date is January 31, 2011.

2.0 REQUIREMENTS

The proponent must notify the IESO as soon as it becomes aware of any changes to the assumptions made in the connection assessment. The IESO will determine whether these changes require a re-assessment.

The Market Rules require that Hydro One have the capability to maintain a power factor (pF) within the range of 0.9 lagging and 0.9 leading as measured at the defined metering point at Manby West TS and Horner TS. This power factor range translates into a load angle range between - 0.45 and + 0.45 radians. All points above 0.45 radians indicate a lagging power factor below 0.9. All points below -0.45 radians indicate a leading power factor below 0.9, which is not a concern to the IESO.

The IESO requires that Hydro One monitors the power factor at this station for occurrences below 0.9 and implements correction measures as soon as practical, either in cooperation with the loads, or by installing power factor correction devices at this station.

Hydro One is required to ensure that the UFLS targets specified in Section 10.4.6 of Chapter 5 of the Market Rules and Section 4.5 of Market Manual 7.4 are met after the load is transferred. Hydro One is required to submit during the IESO Market Entry process a revised schedule of feeder selections and their related load amounts for each shedding stage that will ultimately satisfy the UFLS targets. If Hydro One is part of the UFLS Program Implementation Plan, they are required to take into account the transfer of load when implementing the plan.

3.0 ASSESSMENT & CONCLUSIONS**3.1 Load Peaks and Projections at Manby West T3, T4, T13 & T14**

Revenue meter information from December 16, 2009 through September 16, 2010 was used to evaluate the load on T3, T4, T13 & T14 at Manby West TS. Figure 1 shows the loading at the LV side of T3, T4, T13 & T14.

The maximum load on Manby West T3, T4, T13 & T14 was 194.1 MVA on July 5, 2010 at 1230.

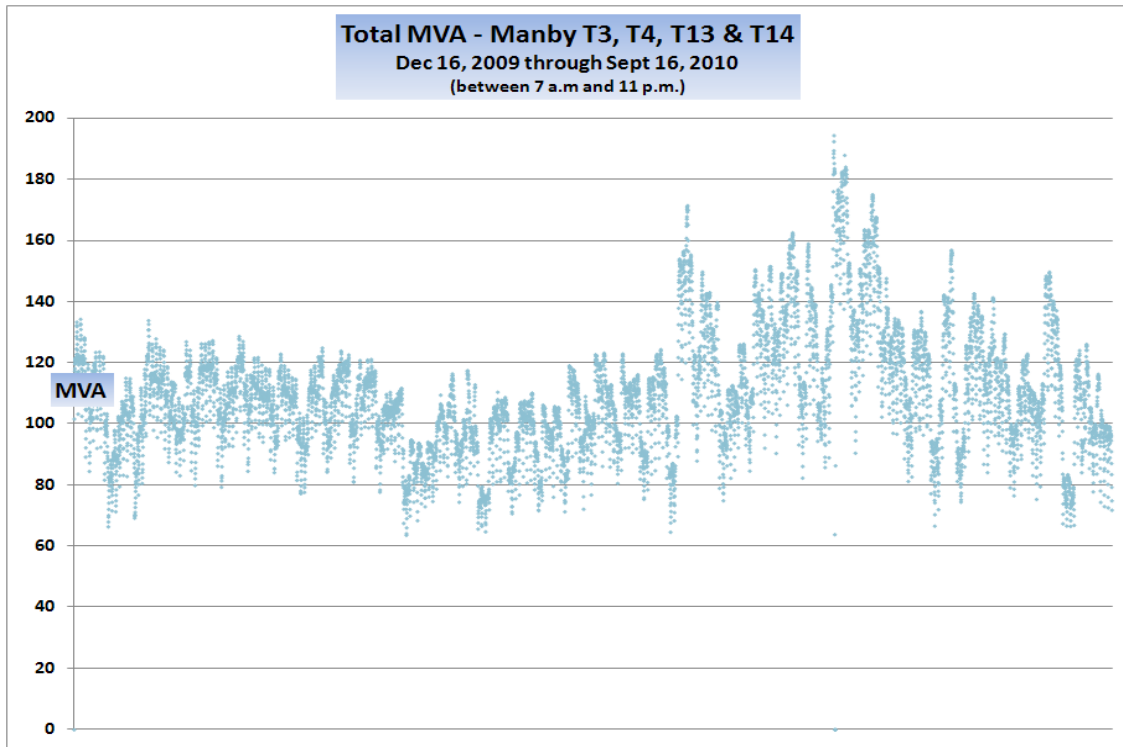


Figure 1 – T3, T4, T13 & T14 Load at Manby West TS

3.2 Load Peaks and Projections at Manby West T3 and T4

The maximum load on Manby West T3 & T4 was 90.4 MVA on July 5, 2010 at 1230.

The table below shows the existing 10-DAY summer capabilities for Manby West T3 and T4.

10-DAY Summer Ratings for Transformers T3 & T4 @ Manby West TS	
Transformer	10-DAY Thermal Rating (MVA) (summer 35°C)
T3	O/S (63.5)
T4	63.1
10-DAY Summer Capability (with highest rated transformer out of service)	63.1

The load on Manby West T3 and T4 is projected to increase by 1% annually as shown in the table below minus the 4.32 MVA that will be moved from feeder M4 (T3 and T4) to Horner.

Manby West T3 and T4 Projected Peak Load Growth (assuming a 1% annual load growth)	
Year	Projected Peak Load
2010	90.4 MVA (actual)
2011	91.3 – 4.32 = 87.0 MVA
2012	87.9 MVA
2013	88.7 MVA
2020	95.1 MVA

After the load is transferred to Horner TS, assuming unchanged 10-DAY LTRs, there will be a deficit of 23.9 MVA on T3 and T4 when compared to the 2011 projected peak loads. With projected loads as shown in the table below, T3 and T4 at Manby West TS could exceed their 10-day LTRs in 2011.

3.3 Load Peaks and Projections at Manby West T13 and T14

The maximum load on Manby West T13 and T14 was 105.6 MVA on May 27, 2010 at 1300.

The table below shows the existing 10-DAY summer capabilities for Manby West T13 and T14.

10-DAY Summer Ratings for Transformers T13 & T14 @ Manby West TS	
Transformer	10-DAY Thermal Rating (MVA) (summer 35°C)
T13	O/S (111.6)
T14	111.6
10-DAY Summer Capability (with highest rated transformer out of service)	111.6

The load on Manby West T13 and T14 is projected to increase by 1% annually as shown in the table below minus the 10.56 MVA that will be moved from feeder M12 (T13 and T14) to Horner.

Manby West T13 and T14 Projected Peak Load Growth (assuming a 1% annual load growth)	
Year	Projected Peak Load
2010	105.6 MVA (actual)
2011	106.7 – 10.56 = 96.1 MVA
2012	97.1 MVA
2013	98.0 MVA
2020	105.1 MVA

After the load is transferred to Horner TS, assuming unchanged 10-DAY LTRs, there will be a surplus of 15.5 MVA on T13 and T14 when compared to the 2011 projected peak loads. With projected loads as shown in the table below, T13 and T14 at Manby West TS are not expected to exceed their 10-DAY LTR in the near future.

3.4 Load Peaks and Projections at Horner T3 and T4

Revenue meter information from December 16, 2009 through September 16, 2010 was used to evaluate the load on T3 and T4 at Horner TS. Figure 2 shows the loading at the LV side of T3 and T4.

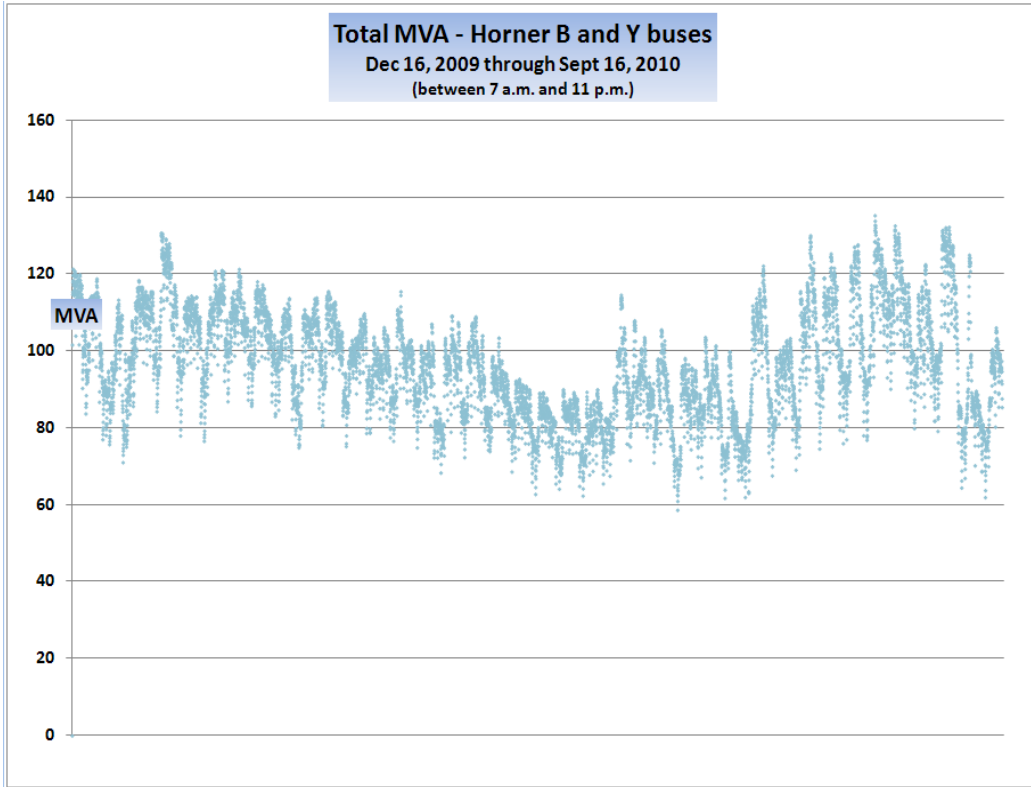


Figure 2 – T3 and T4 Load at Horner TS

The peak load of 135.1 MVA occurred on August 10, 2010 at 1330.

The table below shows the existing 10-DAY summer capabilities for Horner T3 and T4.

10-DAY Summer Ratings for Transformers T3 & T4 @ Horner TS	
Transformer	10-DAY Thermal Rating (MVA) (summer 35°C)
T13	192.3
T14	O/S (193.1)
10-DAY Summer Capability (with highest rated transformer out of service)	192.3

The load on Horner T3 and T4 is projected to increase by 1% annually as shown in the table below plus the 14.88 MVA that will be moved to Horner.

Horner T3 and T4 Projected Peak Load Growth (assuming a 1% annual load growth)	
Year	Projected Peak Load
2010	135.1 MVA (actual)
2011	136.5 + 14.88 = 151.3 MVA
2012	152.8 MVA
2013	154.4 MVA
2020	165.5 MVA

After the load is transferred to Horner TS, assuming unchanged 10-DAY LTRs, there will be a surplus of 41.0 MVA on T3 and T4 when compared to the 2011 projected peak loads. With projected loads as shown in the table below, T3 and T4 at Horner TS are not expected to exceed their 10-DAY LTR in the near future.

3.5 Load Angle at Manby West TS

Revenue meter data from December 16, 2009 through September 16, 2010 was used to evaluate the load angle on T3, T4, T13 & T14 at Manby West TS. Figure 3 illustrates the load angle on the LV side of T3, T4, T13 & T14 during the daily on-peak hours, which are defined as 7 a.m. until 11 p.m.

Manby West TS (T3, T4, T13 & T14) is equipped with low voltage shunt capacitors, SC2, SC13 and SC14 providing reactive compensation totaling 68.4 MX at 28.8 kV.

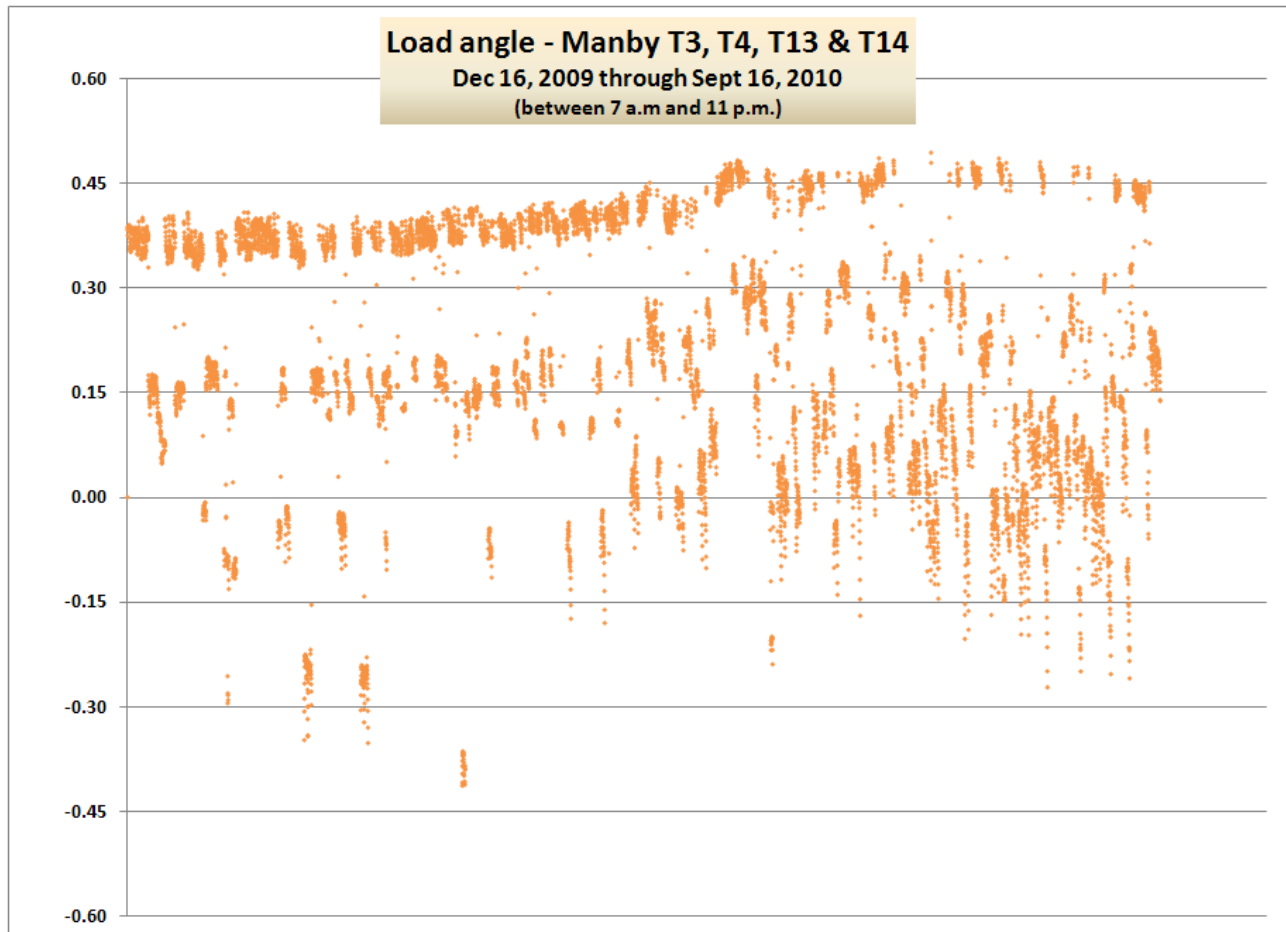


Figure 3 - Load angle at Manby West TS

For the period of December 16, 2009 through September 16, 2010, highest load angle of 0.493 at Manby West TS occurred on July 18, 2010 at 0700. Neither of SC2, SC13 or SC14 were in service at that time and as a result were not providing any reactive compensation.

The lowest observed power factor on the low voltage side and the corresponding power factor as calculated on the high voltage side are shown in the table below.

Date	Time	P Total (MW)	Q Total (MX)	LV Power Factor (observed)	HV Power Factor (calculated)
July 18, 2010	730	93.97	48.73	0.881	0.848

To maintain the power factor in the range of 0.9 lagging to 0.9 leading at the defined meter point, 12 MX of reactive compensation would be required at Manby West TS. Since SC2, SC13 and SC14 are capable of providing the required reactive compensation, no additional shunt capacitors are required.

3.6 Load Angle at Horner TS

Revenue meter data from December 16, 2009 through September 16, 2010 was used to evaluate the load angle on T3 and T4 at Horner TS. Figure 4 illustrates the load angle on the LV side of T3 and T4 during the daily on-peak hours, which are defined as 7 a.m. until 11 p.m.

Horner TS (T3 and T4) is equipped with low voltage shunt capacitors, SC3 and SC4 providing reactive compensation totaling 46.8 MX at 28.8 kV.

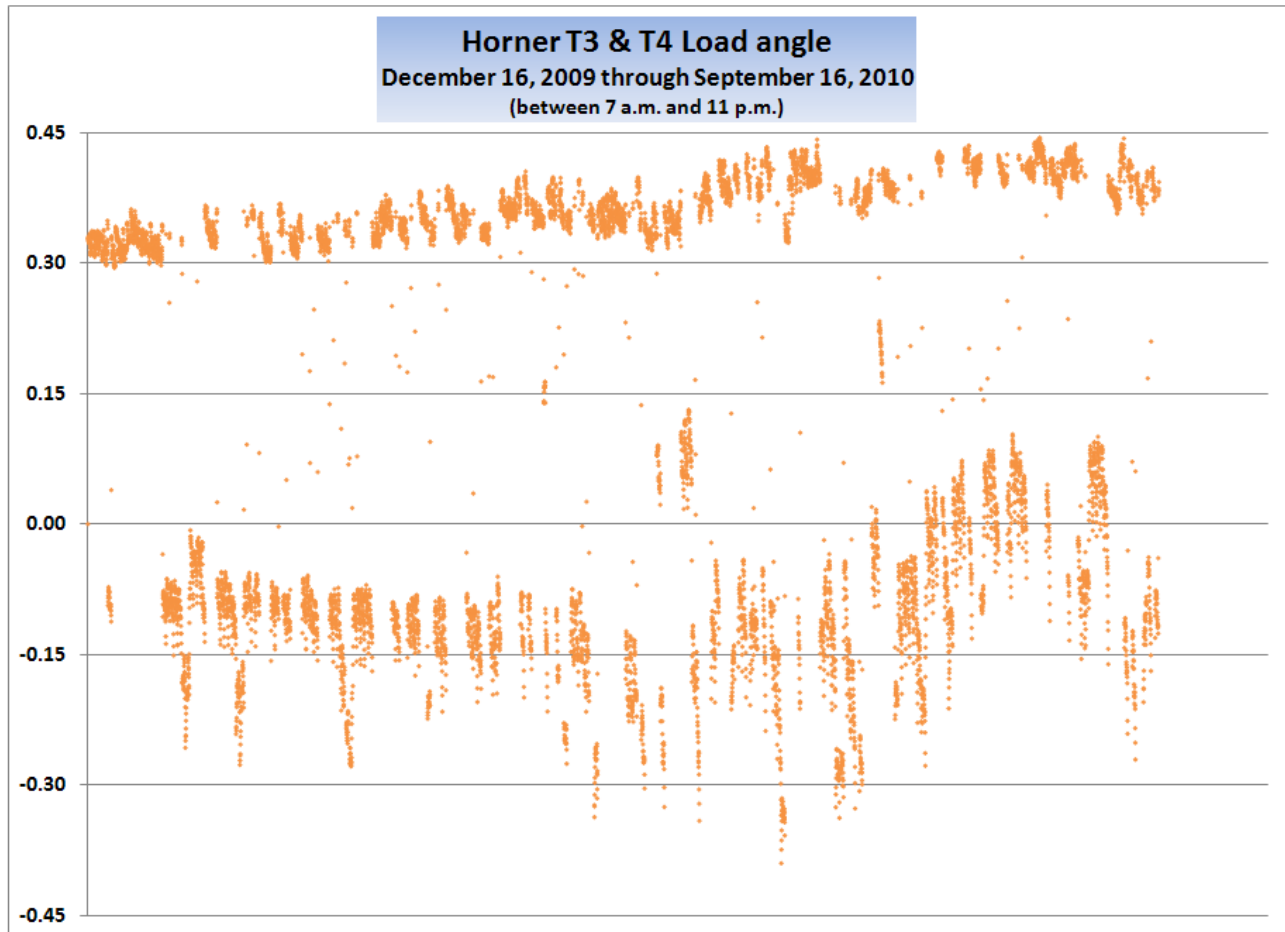


Figure 4 - Load angle at Horner TS

Between December 16, 2009 and September 16, 2010, the load angle at Horner TS of was within the IESO required limits.

3.7 Line Ratings

The R2K and R15K line sections between Richview TS and Manby West TS have minimum summer continuous ratings of 1350 A (537.8 MVA) at 230 kV (35°C, 4 km/h wind speed). The line sections connect between Richview and Manby West for each of R2K and R15K before connecting to Horner TS. Since these sections carry the full load before and after the load transfer, they are not affected by the load transfer.

The R2K and R15K line sections between Manby West TS and Horner TS have minimum summer continuous ratings of 1080 A (430.2 MVA) at 230 kV (35°C, 4 km/h wind speed). These sections will see the increase at Horner TS of an additional 310 A but this is not a concern as the section ratings are significantly higher than the projected load.

3.8 Conclusions

This expedited System Impact Assessment concludes that the transfer of 14.88 MVA from Manby West TS to Horner TS is not expected to have a material adverse impact on the IESO-controlled grid.