

ASSESSMENT OF LOW POWER FACTOR AT BRUCE HEAVY WATER B TS

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Disclaimer

This Local Planning Report was prepared for the purpose of developing wires options and recommending a preferred solution(s) to address the local needs identified in the [Needs Assessment \(NA\) report](#) for the Greater Bruce/Huron Region that do not require further coordinated regional planning. The preferred solution(s) that have been identified through this Local Planning Report may be reevaluated based on the findings of further analysis. The load forecast and results reported in this Local Planning Report are based on the information and assumptions provided by study team participants.

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Background

As part of the Ontario Energy Board's (OEB) Regional Planning process, a Needs Assessment was performed for the Greater Bruce / Huron Region. There were four (4) needs identified in the 2016 Needs Assessment for this Region, one of them being the poor power factor at Bruce Heavy Water B (Bruce HWB) TS.

This assessment addresses the low power factor issues at the Bruce HWB TS identified in the Needs Assessment report.

Introduction

Bruce HWB TS is a 230/13.8kV transformer station supplying one transmission-connected customer, Bruce Power's loads. The station is supplied via 230kV circuits B20P and B24P and has an approximate loading of 10MW. There is no distributed generation (DG) connected at Bruce HWB TS.

As per IESO Market Rules, customers are required to maintain a power factor of 0.9 or better at the point of connection. From the data gathered for the Needs Assessment phase it was observed, from January 2014 to December 2015, that the power factor fell below the 0.9 requirement 80% of the time.

Findings

Upon further assessment, Hydro One reached out to Bruce Power (the Customer) to determine if the Customer had similar issues or concerns with the power factor at the point of connection. The Customer's metering data showed an average power factor of 0.91 from August 2014 to November 2016, varying from as low as 0.724 on occasion, up to a very healthy 0.975.

The Customer's metered data differed significantly from the IESO's telemetered data that was used for the Needs Assessment. To verify the discrepancy, historical data was requested from Hydro One's settlements department. Upon analyzing the Hydro One settlements data, Hydro One found that the power factor performance at Bruce HWB was very good, with a similar average and range to the power factor calculated from the Customer's data. From January 2015 to August 2016 the power factor was above 0.9 for almost 60% of the time, and above 0.85 more than 95% of the time. Graphs representing the power factor data and the power factor performance are shown in Figures 1 and 2, respectively, in Appendix A.

Even with the occasional dip to the mid-0.7 range, the Customer indicated that it believes that power factor at the point of connection is good, and that it is satisfied with the power quality that is being supplied to its loads. The station load at Bruce HWB TS is well below the station's capacity, and there are no concerns about equipment overloading or being damaged. It was also confirmed that both the 230kV and the 13.8kV bus voltage stayed within criteria during periods of low power factor.

Conclusion

The power factor at Bruce HWB TS is generally above 0.85. Since there are no voltage issues at Bruce HWB TS and there is no lack of reactive power support in the local area, Hydro One Transmission, IESO and Bruce Power propose that no action is required at this time and the occasional low power factor observed at Bruce HWB TS is not a need that requires mitigation. Hydro One will continue to monitor the situation and act accordingly if the low power factor becomes an issue in the future.

APPENDIX A

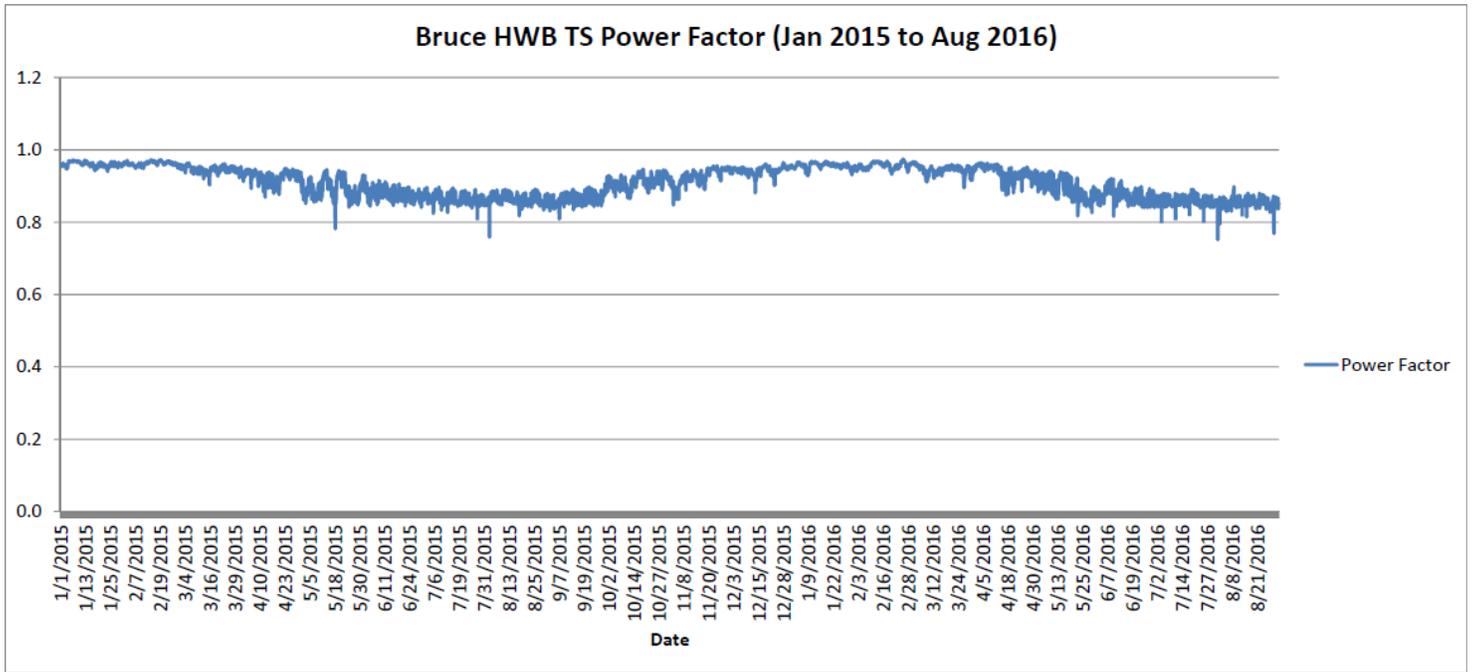


Figure 1: Graph showing the power factor at Bruce HWB TS between January 2015 and August 2016.

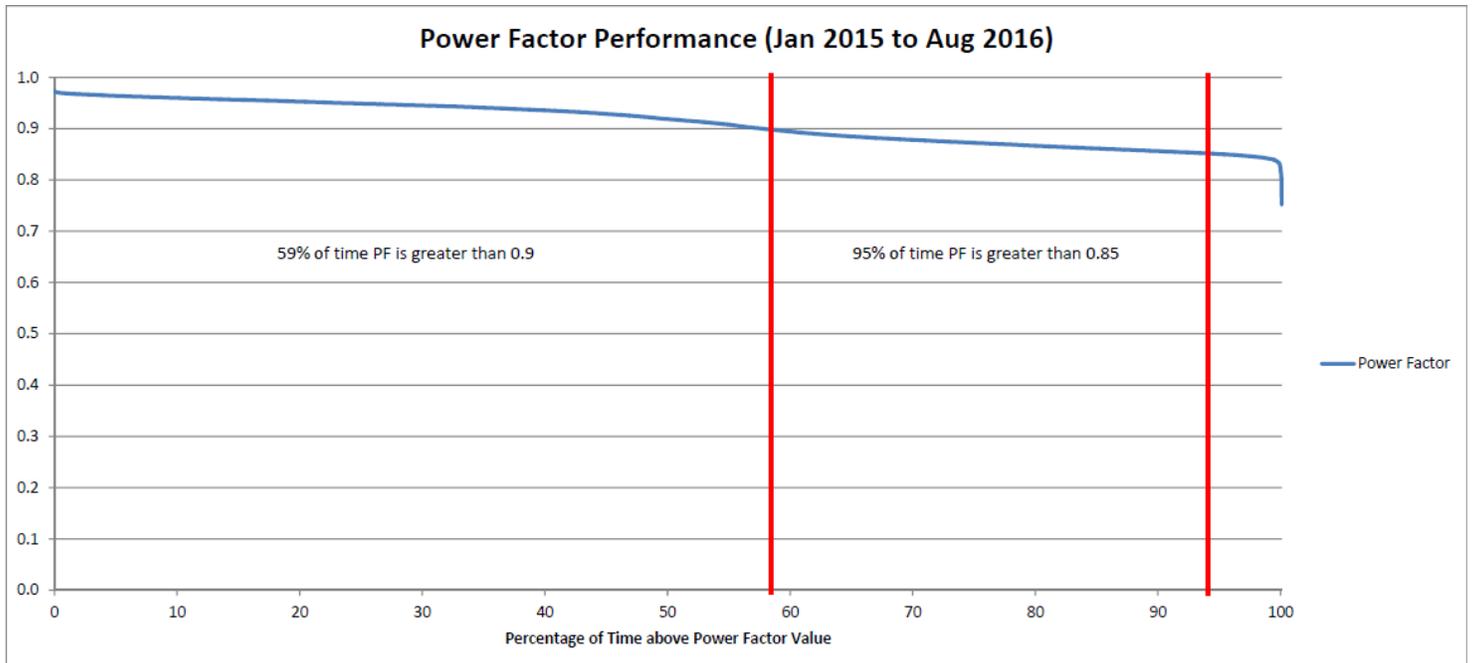


Figure 2: Graph showing power factor performance at Bruce HWB TS between January 2015 and August 2016.