

April 25, 2016

Lance Jefferies
Chief Electricity Distribution Officer
Hydro Ottawa Limited

Bing Young
Director, System Planning
Hydro One Networks Inc.

Dear Mr. Jefferies and Mr. Young,

Re: Initiating a Transmission Project for Supplying the Growing Electricity Demand in the South Nepean Area of Ottawa

The purpose of this letter is to:

- Recommend that an integrated solution, which comprises conservation and additional transmission and distribution (“wires”) facilities, be pursued at this time to meet the growing electricity demand in the South Nepean area of Ottawa ; and
- Request Hydro Ottawa and Hydro One to initiate work associated with the development of a new transmission station and connection line in the South Nepean area for an in-service date of 2021.

As you are aware, a regional planning Working Group for the Ottawa area, consisting of the Independent Electricity System Operator (IESO), Hydro One and Hydro Ottawa, has been active since 2011. In 2013, the planning process was restructured to conform to the timeline and requirements of the Ontario Energy Board (OEB) formalized Regional Planning Process. In April 2015 the IESO released an Integrated Regional Resource Plan (IRRP) for the Ottawa area, documenting a 20 year plan developed by the Working Group. That plan provided forecasts of electricity demand growth in the region, identified short, medium and long-term needs, presented possible solutions, and recommended near-term actions. In December 2015 Hydro One completed a Regional Infrastructure Plan (RIP) as a subsequent step of the regional planning process.

The IRRP identified two issues affecting the western portion of the City of Ottawa which required additional planning focus. First, the more immediate need to supply demand growth in the southwest corner of the City (referred to as the South Nepean area), and second, the longer-term need to reinforce the 115 kV supply capability in the broader West Ottawa area, which includes the supply to downtown Ottawa. These areas are shown in Figure 1 below.

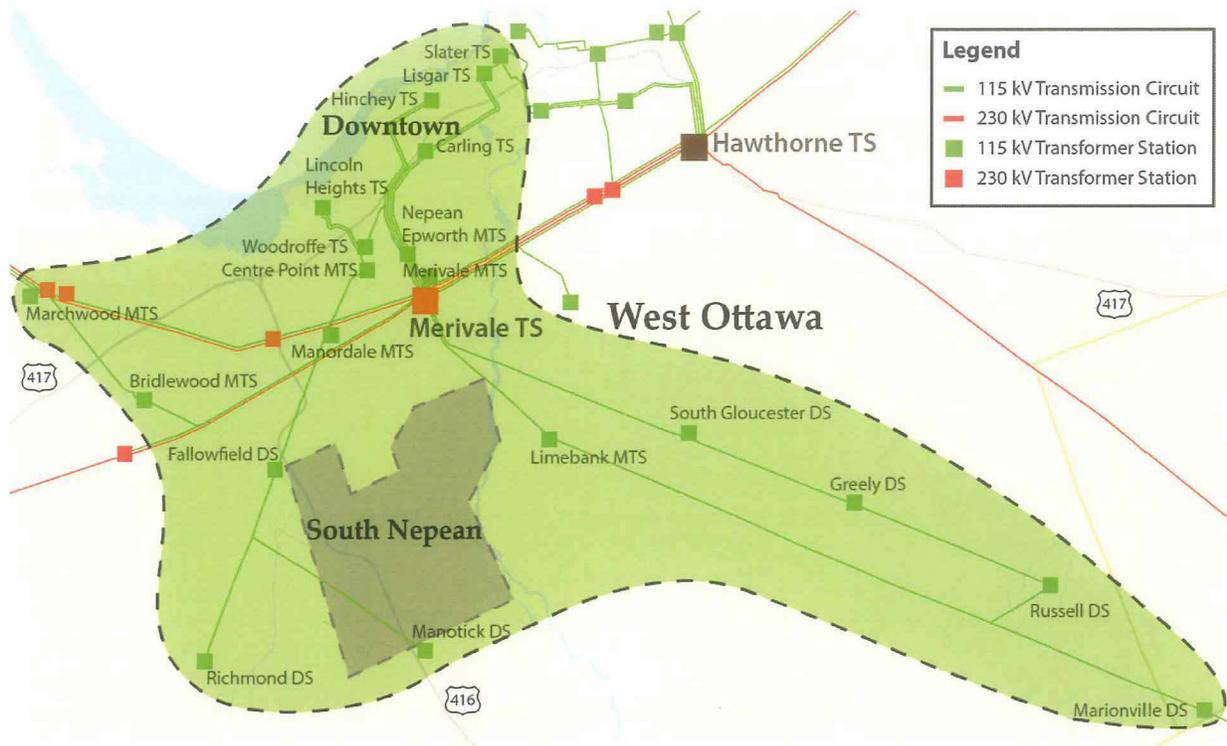


Figure 1. The South Nepean and West Ottawa areas.

While this letter is mainly focused on addressing the South Nepean issue, the proposed solution will contribute to relieving the broader West Ottawa supply issue.

Electricity Demand Growth in the South Nepean Community

For electricity planning purposes, the South Nepean service area is shown on the map in Figure 2, below. It is bounded by Fallowfield Road to the north, the Rideau River to the east, Bankfield Road to the south and Moodie Drive to the west. Hydro Ottawa, the local distribution company which serves customers in this part of the City, is forecasting robust electricity demand growth for this area. This forecast is consistent with the City of Ottawa’s development plans for the area, including plans for the development of the Nepean Town Centre, the Strandherd Business Park, and residential developments that are associated with the Barrhaven South Community Design Plan, the Barrhaven South Urban expansion and Longfields Community Plan.

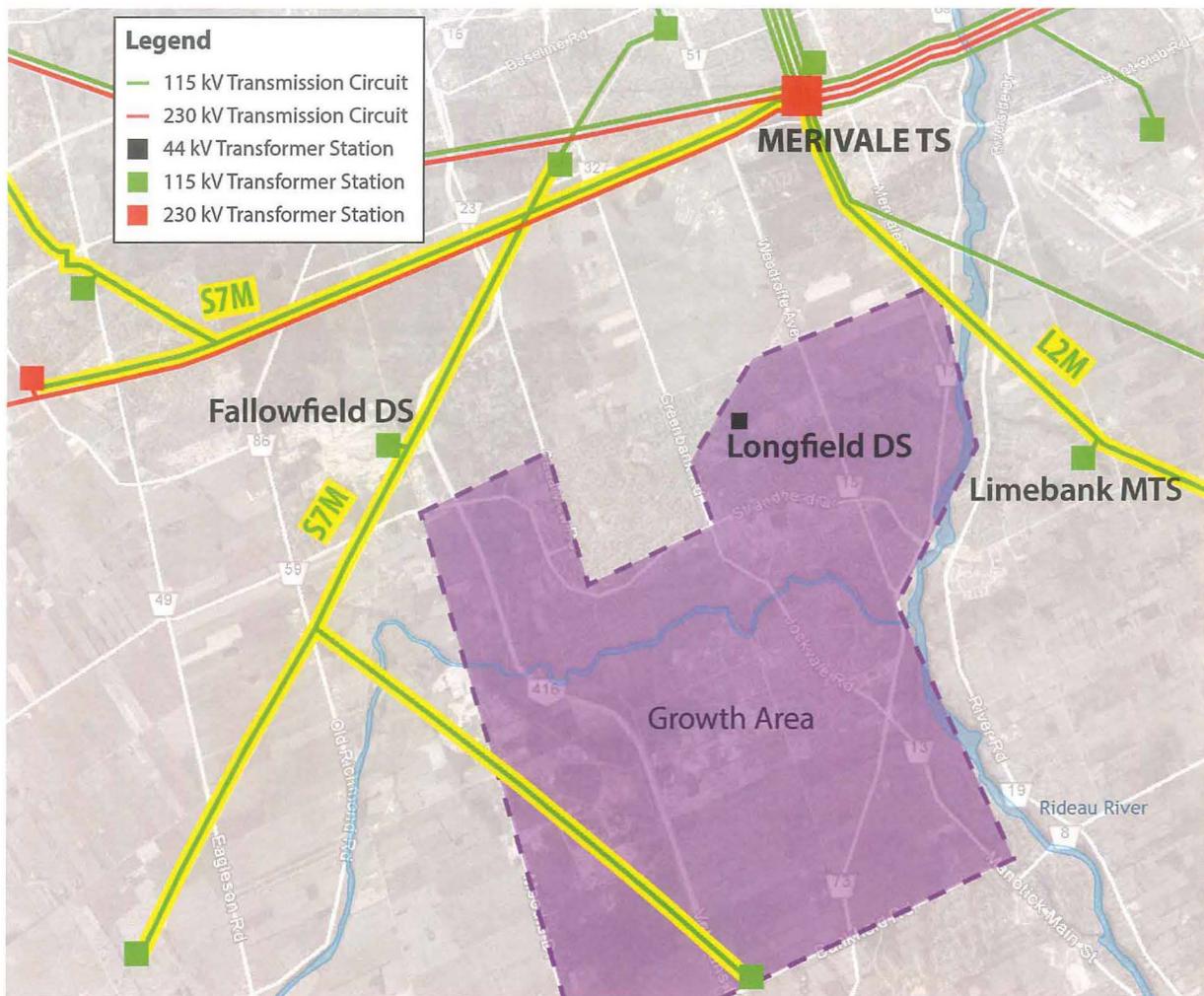


Figure 2. Electricity Supply to the South Nepean area.

The electricity demand in the South Nepean area peaked at 59 MW in the summer of 2015. Much of that demand was supplied from the provincial grid through the Merivale “hub” station in west Ottawa and delivered to the South Nepean area by two 115 kV transmission lines (S7M and L2M), and three step-down stations (Longfield DS, Limebank MTS and Fallowfield DS). These facilities are shown in Figure 2. In addition to the grid supply, there is some distributed generation connected to the three step-down stations, totaling about 7 MW, contributing to the area’s supply.

The 115 kV network in the South Nepean area was originally developed to supply a relatively small number of customers in a rural area. Regional development has since given rise to significant demand growth on this legacy system as the area is being transformed into denser residential communities and commercial areas. With the forecasted growth, Hydro Ottawa anticipates the peak demand in the area to reach 88 MW by 2020 and 134 MW by 2032, an increase of about 78 MW, more than doubling today’s level. This growth will place increased stress on the existing transmission and distribution infrastructure – the 115 kV line, step-down stations and distribution feeders. Over time these system elements will exceed their respective capacities.

Adequacy of Existing Supply to South Nepean

The Province's conservation initiatives are helping to manage future demand growth across the City of Ottawa. The forecast used for this planning study assumes that roughly 25% of growth in the South Nepean area will be met by increased efficiency, time of use savings, and conservation programs. Peak demand impacts associated with the aggressive conservation targets established in the 2013 LTEP were assumed before identifying the residual planning forecast, which is shown in Figure 3, below.

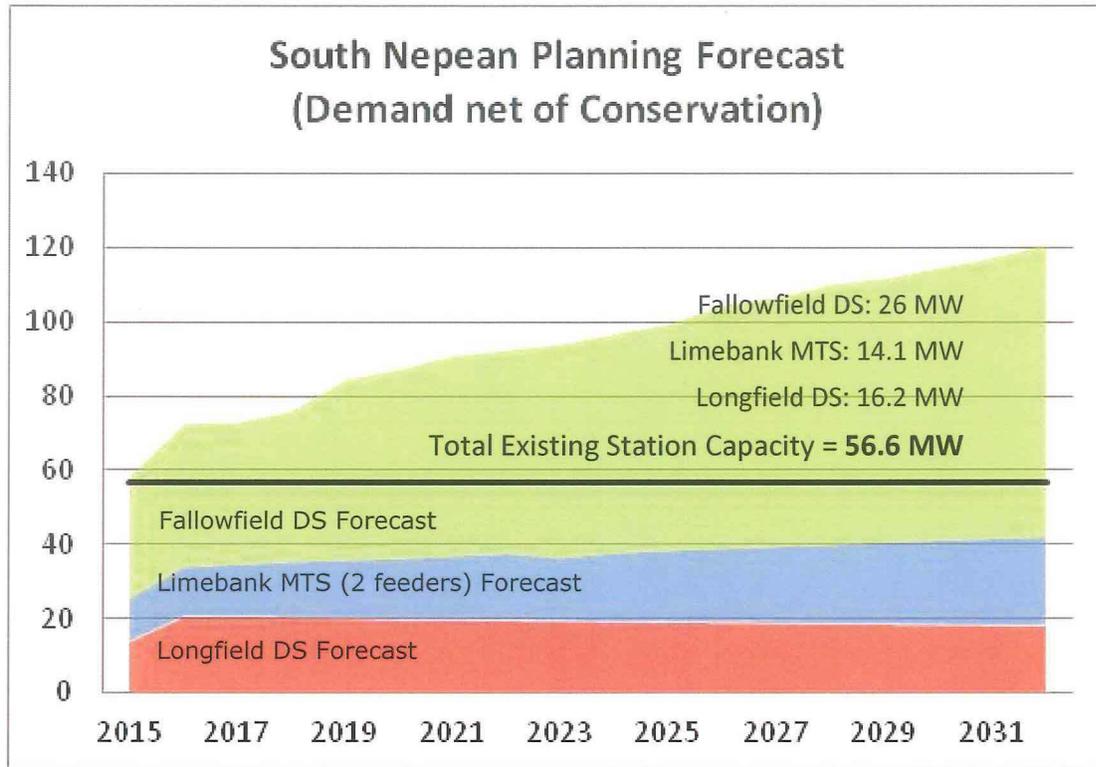


Figure 3. South Nepean Planning Forecast.

Figure 3 also shows that each of the three stations supplying South Nepean is reaching, or has already exceeded its planning capacity. Total supply capacity for South Nepean based on Hydro Ottawa's planning criteria is approximately 57 MW. This capacity is based on a combination of the ratings for the three stations, as well as the thermal ratings of individual feeders. The capability to transfer load at the distribution feeder level post contingency permits Hydro Ottawa to maintain reliable supply beyond the planning threshold, however this is not a permanent solution. Therefore, there is an imminent need to supply new connections in this growing corner of the City.

In addition to the station and feeder capacities being exceeded, the 115 kV single circuit transmission line, S7M, which provides the primary supply to this area and its surroundings, is also approaching its limit. The forecast demand on this circuit will reach its capacity of 108 MW in 2026. Therefore, solutions to relieving the station and feeder capacity constraints will also need to consider the line loading.

Solution Options Considered

Additional conservation, local generation, and transmission and distribution expansion were considered as means of increasing supply capacity in South Nepean. Given the near-term timing of the need for additional supply, in order for a solution to be feasible it must provide firm capacity in about five years, and be able to meet the total capacity need of over 60 MW by the end of the forecast period.

In order to rely entirely on conservation initiatives to provide additional capacity, more than four times the currently targeted level would need to be achieved. In terms of local generation, the magnitude of generation which would need to be connected to the distribution system in order to offset the need for additional station capacity is significantly higher than the historical uptake in the area. In addition, a distribution station like Fallowfield DS is not capable of absorbing a large amount of generation due to equipment rating limitations such as short circuit and thermal limits. New transmission connected generation in the area would not address the station limitation.

Based on the timeline and magnitude of the need for additional supply capacity in South Nepean, it is clear that it will not be feasible to address the need through additional conservation and local generation. Therefore, a new supply station and connection line are recommended for the South Nepean area.

Integrating Regional Transmission Considerations

As shown in Figure 1, South Nepean overlaps with the West Ottawa area, which is the 115 kV system supplied mainly by the Merivale hub station. A longer-term need to reinforce the 115 kV supply capability in West Ottawa was identified during the Ottawa area IRRP and in the RIP. The Merivale hub station has the capability of supplying roughly 645 MW and the 2015 peak demand in West Ottawa was 586 MW. The forecasted demand growth across West Ottawa, including the growth in South Nepean, will begin to exceed the Merivale hub capability as early as 2019. As a result of the overlap, if the new station in South Nepean is connected to the 230 kV system via a new 230 kV connection line into the area, it will take some pressure off the Merivale hub by moving demand growth off the West Ottawa 115kV system. The RIP report also reviewed potential wires solutions and indicated a preference for a 230 kV supply option if a wires solution were selected.

Community Engagement

In June of 2015 the IESO initiated the community engagement process by forming a Local Advisory Committee (“LAC”) for the Greater Ottawa region consisting of eight volunteers from the community. Three meetings have been held thus far to discuss the issues which have been identified in the South Nepean and West Ottawa areas, and comments and advice have been received from the committee. Committee members generally agreed that there is a need to secure additional supply for the South Nepean area. While some LAC members support the recommended transmission solution, others feel that conservation and generation alternatives should be considered further. After consideration of the LAC’s advice, transmission system expansion is nonetheless recommended, based on the magnitude and timing of the need for additional supply capacity, as well as the characteristics of the legacy system in

the area. However, a broader range of solutions may be feasible to address other planning issues where there is a longer timeline and broader scope.

Summary of Recommended Integrated Plan

The IESO, on behalf of the Working Group, recommends that an integrated solution, which comprises conservation and additional transmission and distribution (“wires”) facilities be pursued at this time to meet the growing electricity demand in the South Nepean area. This recommendation also contributes to a longer-term plan to address the broader needs across the West Ottawa area.

Hydro Ottawa and Hydro One are requested to initiate work associated with the development of a new transmission station and connection line in the South Nepean area for an in-service date of 2021.

The Working Group looks forward to engaging with local communities, LAC members, and the broader public while continuing to develop a long-term integrated plan for the Greater Ottawa region.

Kind regards,

A handwritten signature in black ink, appearing to read 'Michael Lyle', with a stylized flourish at the end.

Michael Lyle
Vice President, Planning, Law and Aboriginal Relations
Independent Electricity System Operator

c.c.

Terry Young, IESO
Mike Penstone, Hydro One
Ottawa Regional Planning Working Group members