

APPENDIX B AESO LOAD AND GENERATION FORECAST

Load and Generation Forecast

Addition of Voltage Support at Rycroft 730S Substation

1 Introduction

1.1 Load and generation forecasts are an essential input to the AESO's transmission planning process. This document describes the forecast used in the AESO Planning Studies completed for the *Addition of Voltage Support at Rycroft 730S Substation Need Identification Document Application*.

1.2 The Planning Studies are focused on the local 144 kV and 72 kV network, which is connected to two source substations, Clairmont Lake 811S through transmission line 7L68, and West Peace River A793S through transmission line 7L75. The Study Area consists of the Rycroft 730S, Eureka River 861S, Ksituan River 754S, Boucher Creek 829S, Hines Creek 724S, Friedenstal 800S, and the new Mowat 2033S substations, and the 144 kV transmission lines connected to these substations, collectively referred to as the "Study Area". Therefore, the information and data presented in this document focuses on the load growth forecasts in the Study Area, and related generation forecasts over the 20-year planning horizon.

1.3 Load and generation data for the study cases were prepared using the *AESO 2017 Long-term Outlook*.¹ However, the Study Area was revised to reflect the latest information available to the AESO. Details and clarifications around the use of the forecast, for the purpose of assessing transmission system adequacy and planning for respective transmission system reinforcement in the Study Area, are provided in this document.

¹ The AESO updates its corporate load and generation forecast annually. The AESO's latest corporate load forecast and associated forecast scenarios released July 2017, are found in the 2017 Long-term Outlook, also referred to as the 2017 LTO. This forecast is available online on the AESO forecasting page found at: <https://www.aeso.ca/download/listedfiles/AESO-2017-Long-term-Outlook.pdf>

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2 Historical Load

2.1 Load in the Study Area consists mainly of industrial load from unconventional oil and gas facilities. Table 2-1 summarizes historical summer and winter peak load levels for the Study Area.

Table 2-1: Historical Summer and Winter Peak Loads in the Study Area (MW)

| Year | Summer Peaks | Winter Peaks |
|------|--------------|--------------|
| 2011 | 56 | 63 |
| 2012 | 61 | 65 |
| 2013 | 56 | 66 |
| 2014 | 58 | 66 |
| 2015 | 58 | 66 |
| 2016 | 58 | 68 |

Load growth in the Study Area has been relatively small over the last 6 years. Year over year changes in the overall Study Area peak load were caused primarily by fluctuations in the coincident timing of individual substation peak loads.

3 Load Forecast

3.1 While developing the load forecast for the Study Area the AESO considered historical load and reviewed the latest load forecast information including recently revised ATCO substation-level forecasts. Load in the Study Area was updated to reflect the most up to date information.

3.2 The AESO's near-term load forecast for the Study Area is dominated by loads associated with connection projects that are related to unconventional oil and gas developments. There is also a distribution-level load transfer into the Study Area that is expected to increase demand.

3.3 ATCO Electric (Distribution) submitted two System Access Service Requests (SASRs) in the Study Area, requesting capacity increases at the

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existing Eureka River 861S and Ksituan River 754S substations to serve distribution load increases. Together, these two projects have a combined increase under Rate DTS of the ISO tariff, *Demand Transmission Service*, increase of about 15 MW.

3.4 The distribution-level load transfer into the Study Area is a result of a SASR submitted by ATCO Electric (Distribution) at the Mowat 2033S substation. This substation recently energized in 2017 to accommodate a proposed load transfer from Saddle Hills 865S, Ksituan River 754S, and Rycroft 730S substations. The Mowat project is also planned to connect to new load from unconventional oil and gas developments within the Study Area. Load growth from 2017 to 2021 is assumed to come from the Eureka River, Ksituan River, and Mowat projects as these projects ramp up.

3.5 Due to the previously-mentioned connection projects, load is expected to increase significantly in the near term. Beyond these projects, the AESO forecasts minimal load growth (9 MW of winter peak load growth from 2021 to 2036) due to conservative assumptions regarding future development in the area. Table 3-1 summarizes the forecast summer peak and winter peak loads for the Study Area.

**Table 3-1: Forecast
Summer and Winter Peak Loads in the Study Area (MW)**

| Year | Summer Peak | Winter Peak |
|------|-------------|-------------|
| 2017 | 68 | 78 |
| 2021 | 77 | 87 |
| 2026 | 78 | 89 |
| 2036 | 84 | 96 |

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4 Existing Generation

4.1 There are no existing generation units connected to the distribution or transmission system within the Study Area.

5 Generation Forecast

5.1 There are currently no active generation SASRs that have been received by the AESO for system access service within the Study Area.

5.2 The AESO recognizes that the vicinity around the Study Area has hydroelectric resources suitable for development. As such, the AESO has determined that a sensitivity study is prudent to determine potential impacts on the preferred alternative if a 350 MW hydro facility were to develop in the area. This sensitivity is considered in the 2036 study cases.