

Conceptual System Plan

Cluster 1 - Southeast Region

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Table of Contents

1. Introduction	1
2. Conceptual Transmission Development Plan	1
2.1 CBW Path Reinforcement	1
2.2 138 kV transmission lines in Lethbridge – Vauxhall and 72kV transmission lines in Glenwood Area Upgrade	1
2.3 Sheerness Area Development	2
2.4 7L760/760L Overload Mitigation	2
3. System Plan SLD	2

1. Introduction

The objective of providing this conceptual system plan is to assist market participants to better understand the scope of potential transmission system developments required to integrate Cluster 1 projects in the Southeast region. The scope of transmission developments identified is in compliance with the existing *Transmission Regulation*, which requires the AESO to plan a system sufficiently robust such that 100% of anticipated in-merit electric energy can occur when all transmission facilities are in service (Category A or N-0 condition), and assumes that all cluster projects in this region proceed. Development options such as new transmission lines, increasing the capability of existing transmission lines, and network topology optimization were considered in the development of this conceptual system plan.

Typically, a major transmission system project can take at least 8-10 years to complete. The timing must consider significant work required in developing a detailed plan, initiating a project, engaging stakeholders, selecting the preferred alternative, seeking all necessary regulatory approvals, and the construction and commissioning of the transmission facilities.

Please note that the conceptual system plan identified here is different from the AESO's Long-term Transmission Plan and is based on different integration assumptions. The AESO's planning process still needs to be conducted to determine the timing and configuration of the system transmission projects being developed to meet planning standards and transmission regulation and policy. The pace and location of new load, storage, and generation developments play an important role in the AESO's planning process. The timing and configuration of the proposed system transmission projects as an outcome of the AESO's planning process, will be influenced by the timing and volume of connection projects meeting the AESO's project inclusion criteria¹.

2. Conceptual Transmission Development Plan

2.1 CBW Path Reinforcement

Cause:

- Integration of high renewable generation into 240 kV system causing potential overload of existing 240 kV double circuit along Cassils - Bowmanton - Whitla (CBW) path.

Mitigation:

- Add two 240 kV transmission lines between Whitla 251S and Newell 2075S substations².

2.2 138 kV transmission lines in Lethbridge – Vauxhall and 72kV transmission lines in Glenwood Area Upgrade

Cause:

- Integration of high renewable generation in these areas causing overload of 138 kV transmission lines (172L, 507L, 763L, 795L) and 72 kV transmission lines (225L, 162L, 185L).

¹ The definition of project inclusion criteria is available in the Connection Project List Guide on the AESO website.

² This development is also included in Central Region conceptual system plan.

Mitigation:

- Upgrade the existing 138 kV substations in the Vauxhall area to 240 kV, and connect these substations to the proposed 240 kV circuits between Whitla 251S and Newell 2075S.

2.3 Sheerness Area Development**Cause:**

- Generation at Bullpound 803S, Badlands 981S and Wintering Hills SCR4 stresses 138 kV transmission line 7L171.
- High generation transfer-out from Anderson 801S towards Tinchebray 972S overloads 240 kV transmission line 9L59.

Mitigation:

- Add a 138 kV transmission line between Wintering Hills 804S and Coyote Lake 963S substations.
- Add another 240 kV transmission line between Anderson 801S and Tinchebray 972S substations.

2.4 7L760/760L Overload Mitigation**Cause:**

- New generation project to be connected to 7L760/760L takes up most of the main line capacity. Also, additional flow from other cluster projects in Valleyview area causes overload between the project tap point to Oyen 767S substation.

Mitigation:

- Increase the capability of existing line 7L760/760L (Oyen 767S substation – new generation project T-tap point).

3. System Plan SLD

See attached page.