

Conceptual System Plan

Cluster 1 - Northwest Region

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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 Northwest 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 Fox Creek Path Reinforcement

Cause:

- High generation in the Valleyview area pushing flow into the 144 kV/138 kV system of Fox Creek.

Mitigation:

- Upgrade Fox Creek 741S substation to 240kV and include 240/144 kV facilities.
- Add a 240 kV transmission line between Little Smoky 813S and Fox Creek 741S substations.
- Add a 240 kV transmission line between Fox Creek 741S and Bickerdike 39S substations.
- Open 7L199 between Fox Creek 347S substation to new generation project T-tap.

2.2 Transfer-out Path (East) Development

Cause:

- Heavy flows on the 240 kV path transfer out into the 144 kV system, overloading 7L55 and 7L230.

Mitigation:

- Add a 240 kV transmission line between Louise Creek 809S and North Barrhead 69S substations.

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

2.3 Transfer-out Path (South) Development

Cause:

- Heavy flow from the generation in the NW region transfer out into the 138 kV system, overloading 799L, which is currently derated.

Mitigation:

- Restore the line rating of 799L.
- Add another 138 kV circuit between Sagitawah 77S and Entwistle 235S substations.

2.4 7L06 Overload Mitigation

Cause:

- New generation project to be connected to 7L06 takes up most of the line capacity, additional flow from other cluster projects in Valleyview area causes the line to overflow between the project tap point to Westpeace 793S substation.

Mitigation:

- Increase the capability of 7L06 (Westpeace 793S substation – new generation project T-tap point).

3. System Plan SLD

See attached page.

This diagram contains a simplified version of the system configuration. Technical detail has been simplified for illustration purposes. It does not indicate geographical locations of facilities.

- Legend:
- Cluster Projects
 - Projects Meeting Inclusion Criteria
 - Future Developments
 - Gas Generator
 - Other Generator
 - Future 240 kV Substation
 - 69 or 72 kV Substation
 - 138 or 144 kV Substation
 - 240 kV Substation
 - 500 kV Substation
 - Future 138 kV Line
 - Future 240 kV Line
 - Normally Closed
 - 69/72 kV
 - 69/72 kV D
 - 138/144 kV
 - 138/144 kV D
 - 240 kV
 - 240 kV D
 - 500 kV
 - ASFO Plan