

# Needs identification document checklist application

**Date:** April 25, 2025

**Applicant reference:** P2676 – Kaybob South 3 Cogeneration Project Connection

<b>Identification</b>
<p><b>Company name:</b> Alberta Electric System Operator</p> <p><b>Name, position and contact information of applicant contact:</b></p> <p>Brenda Hill Regulatory Administrator 403-539-2850 Brenda.Hill@aeso.ca</p>
<b>Project details</b>
<p><b>This application is for:</b></p> <p>Generation connection <input checked="" type="checkbox"/> Non-distribution facility owner load <input type="checkbox"/></p>
<p><b>Project written description, including the need, nature and extent of the project and the Alberta Electric System Operator's (AESO) preferred option:</b></p> <p>Pembina Gas Infrastructure (PGI) has requested system access service to connect its approved Kaybob #3 South Gas Plant (the Facility) to the transmission system in the Fox Creek area (AESO Planning Area 24, Fox Creek, which is part of the AESO Northwest Planning Region). The Facility includes PGI's approved Kaybob South 1117S substation (Substation Permit and Licence 29262-D03-2024). This Facility also has an approved Industrial System Designation (Industrial System Designation Order 29262-D02-2024). PGI expects the Facility to be commercially operational by February 1, 2026.</p> <p>PGI's request includes a new Rate STS, <i>Supply Transmission Service</i>, contract capacity of 25 MW.</p> <p>The Proposed Transmission Development consists of:</p> <ol style="list-style-type: none"> <li>1. Add one 138 kilovolt (kV) circuit, approximately 0.6 km in length, to connect the Facility to the existing 138 kV transmission line 864L between the Benbow 397s substation and transmission line 864AL in a T-tap configuration; and</li> <li>2. Modify, alter, add or remove equipment, including switchgear, and any operational, protection, control and telecommunication devices required to undertake the work as planned and ensure proper integration with the transmission system.</li> </ol>
<p><b>Applicable ratings/capability of any proposed major elements:</b></p> <p>The 138 kV transmission circuit shall have a minimum capacity of 28 MVA.</p>
<p><b>Proposed in-service date:</b> November 25, 2025</p>
<p><b>Cost estimate for the preferred option for the project is attached.</b></p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>The costs for ATCO Electric Ltd.'s scope are not available at this time but are expected to be minimal due to limited scope.</p>

## Technical considerations

Single line diagram(s) of the proposed development and study area is attached.

Yes ☒ No ☐

The AESO has conducted appropriate studies and considers that the project will not result in adverse impacts to the Alberta Interconnected Electric System.

Yes ☒ No ☐

**List any new or exacerbated Category B system impacts that occur as a result of the project and provide a description of how they will be addressed (e.g. description of remedial action schemes that will be used):**

Power flow, transient stability and short-circuit studies were conducted to assess the impact of the Proposed Transmission Development and the associated generation would have on the transmission system. Power flow and short-circuit studies were conducted prior to and following the connection of the Proposed Transmission Development and transient stability studies were performed following the connection of the Proposed Transmission Development.

The post-connection assessment identified thermal criteria violations under certain Category B conditions. The thermal criteria violations exacerbated by the connection of the project are listed below:

- 138 kV transmission line 202L (Edson 58S Bus 20 – Cynthia 178S Bus 39)
- 138 kV transmission line 720L (Fox Creek 347S Bus 12 – Benbow 397S Bus 412)
- 138 kV transmission line 740L (Edson 58S Bus 20 – Bickerdike 39S Bus 88)
- 138 kV transmission line 744L (T.m.p.l.niton 228S Bus 395 – Pinedale 207S Bus 397)
- 138 kV transmission line 890L (Edson 58S Bus 20 – Pinedale 207S Bus 397)
- 138 kV transmission line 199L (Whitcourt 268S Bus 9 – 199AL Bus 973)
- 144 kV transmission line 7L199 (Fox Creek 347S Bus 12 – Fox Creek 741S Bus 1175)
- 144 kV transmission line 7L90 (Bus 1131 – Fox Creek 741S Bus 1175)

The following mitigation measures can be used, alone or in combination as appropriate, to mitigate the post-connection system thermal criteria violations:

- existing remedial action scheme (RAS) 185, 186, 188, 189, and 190;
- modification of planned RAS 218; and
- real-time operational practices.

**Briefly describe any alternatives to the AESO's preferred option that the AESO considered and why they were ruled out:**

In addition to the Proposed Transmission Development, the AESO examined two other transmission development alternatives:

1. **Radial 138 kV connection to Kaybob 346S substation** – This alternative would require adding one 138 kV circuit, approximately 50 metres in length, and modifying the Kaybob 346S substation, including adding one 138 kV circuit breaker.
  - The transmission facility owner has advised that it intends to decommission the Kaybob 346S substation as it is nearing end of life. As a result this alternative was not selected for further study.
2. **Radial 138 kV connection to Benbow 397S substation** – This alternative would require adding one 138 kV circuit, approximately 1 km in length, and modifying the Benbow 397S substation, including adding one 138 kV circuit breaker.
  - This alternative was ruled out due to increased transmission development, and hence overall increased cost, compared to the Proposed Transmission Development.

<b>Participant involvement requirements</b>
<b>Notification requirements have been met and there are no unresolved objections.</b>  Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Environmental requirements</b>
<b>The AESO does not anticipate significant environmental effects as a result of the project.</b>  Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Other considerations</b>
<b>If you answered no to any of the questions above, please explain:</b>  n/a
<b>The project raises issues not addressed by the preceding questions.</b>  Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>If yes, please explain:</b>  n/a