

# Needs identification document checklist application

Date: January 26, 2022

Applicant reference: P2247 – Buffalo Plains Wind Farm Connection

<p><b>Identification</b></p> <p><b>Company name:</b> Alberta Electric System Operator</p> <p><b>Name, position and contact information of applicant contact:</b></p> <p>Michelle Jackson Regulatory Administrator 403-539-2850 Michelle.Jackson@aeso.ca</p>
<p><b>Project details</b></p> <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>Buffalo Plains Wind Farm Inc. (Buffalo Plains) has requested system access service to connect its proposed Buffalo Plains Wind Farm (Facility) to the transmission system in the Vulcan County area (AESO Planning Area 49, Stavely, which is part of the AESO South Planning Region). The Facility includes Buffalo Plains' proposed collector substation, to be designated Amber 611S. Buffalo Plains expects the Facility to be commercially operational by December 31, 2023.</p> <p>Buffalo Plains' request includes a new Rate STS, <i>Supply Transmission Service</i>, contract capacity of 466 MW and a new Rate DTS, <i>Demand Transmission Service</i>, contract capacity of 2 MW. Buffalo Plains' request indicated their intention to submit a proposal to construct and to temporarily operate some transmission facilities, as contemplated in Section 24.31 of the <i>Transmission Regulation</i> (TReg).</p> <p>The Proposed Transmission Development consists of two elements:</p> <ol style="list-style-type: none"> <li>1. The Proposed Buffalo Plains Development, which includes transmission facilities that, as contemplated by Section 24.31 of the TReg will be constructed by Buffalo Plains, and, thereafter, jointly operated by Buffalo Plains and AltaLink Management Ltd., in its capacity as general partner of AltaLink, L.P. (AltaLink), for a temporary specified period of time (as per section 24.31(7) of the TReg): <ul style="list-style-type: none"> <li>• Add one 240 kilovolt (kV) circuit, approximately 15 kilometers in length, with a minimum capacity of 518 MVA, to connect the Facility to the existing Milo 356S substation using a radial configuration; and</li> <li>• 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> </ul> </li> <li>2. The Proposed AltaLink Development: <ul style="list-style-type: none"> <li>• Modify the Milo 356S substation including adding one 240 kV circuit breaker; and</li> <li>• 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> </ul> </li> </ol>
<p><b>Applicable ratings/capability of any proposed major elements:</b></p> <p>The 240 kV transmission circuit shall have a minimum capacity of 518 MVA.</p>

**Proposed in-service date:** April 17, 2023

**Cost estimate for the preferred option for the project is attached.**

Yes  No

The cost estimate for the Proposed Buffalo Plains Development is not attached, at the request of Buffalo Plains.

**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 that 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. These thermal criteria violations are listed below.

- 138 kV transmission line 611L (Balzac 391S to Dry Creek 186S)
- 240 kV transmission line 924L (Milo 356s to Langdon 102s)
- 240 kV transmission line 1005L (Milo 356S to 1005AL Tap)
- 138 kV transmission line 765L (Chestermere 419S to Strathmore 151S)
- 138 kV transmission line 820L (Coaldale 254S to 820AL Tap)
- 240 kV transmission line 1080L (Enmax 65 to Enmax 25)
- 240 kV transmission line 1109L (Enmax 65 to Enmax 25)
- 240kV transmission line 927L (Milo 356s to Langdon 102s)

A planned remedial action scheme (RAS) for 820L, and real-time operational practices can be used, alone or in combination as appropriate, to mitigate the post-connection thermal criteria violations:

**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 three other transmission development alternatives, in consultation with Buffalo Plains and AltaLink:

1. **T-Tap connection to 240 kV Transmission Line 1005L** - This would require the addition of a 240 kV circuit, approximately 600 meters in length and crossing the 240 kV transmission line 1036L.
2. **In-and-Out Connection to the 240 kV transmission line 1005L** - This alternative would require adding a new substation including three 240 kV circuit breakers; and adding one 240 kV circuit, approximately 600 meters in length.
3. **T-Tap connection to 240 kV Transmission Line 1036L** - This would require the addition of a 240 kV circuit, approximately 600 meters in length.

The alternatives above were ruled out due to the limited capacity available on transmission lines 1036L and 1005L to accommodate the proposed Facility. Therefore, these alternatives were not selected for further study.

**Participant involvement requirements**

**Notification requirements have been met and there are no unresolved objections.**

Yes  No

**Environmental requirements**

**The AESO does not anticipate significant environmental effects as a result of the project.**

Yes  No

**Other considerations**

**If you answered no to any of the questions above, please explain:**

n/a

**The project raises issues not addressed by the preceding questions.**

Yes  No

**If yes, please explain:**

n/a