

Needs identification document checklist application

Date: June 21, 2021

Applicant reference: P2137 - Winnifred Wind Power Project Connection

<p>Identification</p> <p>Company name: Alberta Electric System Operator</p> <p>Name, position and contact information of applicant contact:</p> <p>Brenda Hill Regulatory Administrator 403-539-2850 Brenda.Hill@aeso.ca</p>
<p>Project details</p> <p>This application is for:</p> <p>Generation connection <input checked="" type="checkbox"/> Non-distribution facility owner load <input type="checkbox"/></p>
<p>Project written description, including the need, nature and extent of the project and the Alberta Electric System Operator's (AESO) preferred option:</p> <p>Enerfin Energy Company of Canada Inc. (Enerfin) has requested system access service to connect its proposed Winnifred Wind Power Project (the Facility) to the transmission system in the Whitla area (AESO Planning Area 4, Medicine Hat, which is part of the AESO South Planning Region). The Facility includes Enerfin's proposed Holsom 1054S collector substation. Enerfin expects the Facility to be commercially operational by May 24, 2023.</p> <p>Enerfin's request includes a new Rate STS, <i>Supply Transmission Service</i>, contract capacity of 90 MW and a new Rate DTS, <i>Demand Transmission Service</i>, contract capacity of 1 MW. Enerfin's 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 components:</p> <ol style="list-style-type: none"> 1. The Proposed Enerfin Development, which includes transmission facilities that, as contemplated by Section 24.31 of the TReg that will be constructed by Enerfin, and, thereafter, jointly operated by Enerfin and AltaLink Management Ltd. (AltaLink), in its capacity as general partner of AltaLink L.P., for a temporary period of time (as per section 24.31(7) of the TReg): <ul style="list-style-type: none"> • Add one 138 kilovolt (kV) circuit, approximately 25 kilometers in length, with a minimum capacity of 100 MVA, to connect the Facility to the existing Bullshead 523S substation using a radial configuration; and • 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. 2. The Proposed AltaLink Development: <ul style="list-style-type: none"> • Modify the Bullshead 523S substation, including adding one 138 kV circuit breaker; and • 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.
<p>Applicable ratings/capability of any proposed major elements:</p> <p>The 138 kV transmission circuit shall have a minimum capacity of 100 MVA.</p>

Proposed in-service date: February 15, 2023

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

Yes No

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 pre-connection assessment identified thermal criteria violations under certain Category B conditions. Under certain Category B conditions, the majority of the thermal criteria violations that were observed in the pre-connection assessment were either marginally exacerbated, marginally reduced, or significantly reduced in the post-connection assessment. These thermal criteria violations are listed below.

- 138 kV transmission line 879L (Bowmanton 244S - 879L Tap)
- 138 kV transmission line 610L (Fincastle Sub 336S – Taber 83S)
- 138 kV transmission line 668L (Empress 394S - Cypress 562S)
- 240 kV transmission line 1005L (Milo 356S - 1005L Tap)
- 138 kV transmission line 507L (Taber 83S - Hull 257S)
- 138 kV transmission line 763L (Vauxhall 158S - Hull 257S)
- 240 kV transmission line 1087L (Cassils 324S - Newell 2075S)

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

- existing RAS 149;
- a planned 879L RAS, to be implemented with the Rattlesnake Ridge Wind Power Project Connection, approved in AUC Decision 25018-D01-2020; 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 five other transmission development alternatives, in consultation with Enerfin and AltaLink:

- 1. T-Tap Connection to 138 kV Transmission Line 879L** – This alternative involves connecting the Facility to the existing 138 kV transmission line 879L using a T-tap configuration. This alternative would require the addition of a 138 kV circuit, approximately 10 kilometers in length.

This alternative was ruled-out because thermal criteria violations were observed on 879L when the approved Rattlesnake Ridge Wind Power Project connection (approved in AUC Decision 25018-D01-2020), was included in the studies. The Proposed Transmission Development is more economically efficient as it provides for an unconstrained option.
- 2. In-and-Out Connection to the 138 kV transmission line 879L** – This alternative involves connecting the Facility to the 138 kV transmission line 879L using an in-and-out configuration. This alternative would require the addition of a switching station, including three 138 kV circuit breakers and the addition of one 138 kV circuit, approximately 10 kilometers in length.

Similar to Alternative 1, this alternative was ruled-out because thermal criteria violations were observed on 879L when the approved Rattlesnake Ridge Wind Power Project connection, was included in the studies. The Proposed Transmission Development is more economically efficient as it provides for an unconstrained option.

The following three additional alternatives were ruled out due to increased transmission development, and hence overall increased cost, compared to the Proposed Transmission Development.

3. **Radial Connection to the Burdett 368S substation** – This alternative involves connecting the Facility to the existing Burdett 368S substation using a radial configuration. This alternative requires the addition of one 138 kV circuit, approximately 35 kilometers in length, and modification of the Burdett 368S substation, including adding one 240 kV circuit breaker.
4. **In-and-Out Connection to the 240 kV transmission line 964L** - This alternative involves connecting the Facility to the 240 kV transmission line 964L using an in-and-out configuration. This alternative would require the addition of a switching station, including three 240 kV circuit breakers and the addition of one 240 kV circuit, approximately 28 kilometers in length.
5. **Radial Connection to the Whitla 251S substation** - This alternative involves connecting the Facility to the existing Whitla 251S substation using a radial configuration. This alternative requires the addition of one 240 kV circuit, approximately 37 kilometers in length, and modification of the Whitla 251S substation, including adding one 240 kV circuit breaker.

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