Needs identification document checklist application

Date: October 1, 2025 Applicant reference: P2656 – Edmonton Carbon Capture Utilization and Storage Connection

Identification

Company name: Alberta Electric System Operator (AESO)

Name, position and contact information of applicant contact:

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Project details

This application is for:

Generation connection ☒ Non-distribution facility owner load ☐

Project written description, including the need, nature and extent of the project and the Alberta Electric System Operator's (AESO) preferred option:

Heidelberg Materials Canada Limited (Heidelberg) has applied to the AESO for transmission system access to connect its proposed Edmonton Carbon Capture Utilization and Storage Project (Facility) in the Edmonton planning area (Area 60) and region. The Facility includes a proposed cogeneration power plant and a substation, to be designated Kinokamau 1121S substation. Heidelberg has applied for an Industrial System Designation for the Facility (Application 30316-A001). Heidelberg expects the Facility to be commercially operational by June 30, 2029.

Heidelberg's request includes a new rate STS, *Supply Transmission Service*, contract capacity of 94 MW and a new DTS, *Demand Transmission Service*, contract capacity of 3 MW.

The Proposed Transmission Development consists of:

- Add one 138 kilovolt (kV) circuit, approximately 1.5 km in length, to connect the Facility to the existing 138 kV transmission line 711L in a T-tap configuration.
- Reterminate the existing 138 kV transmission line 747L from the existing tap with transmission line 711L to the North Calder 37S substation by adding approximately 0.25 km of 138 kV transmission line.
- Modify the North Calder 37S substation, including adding one 138 kV circuit breaker.
- Increase the capacity of the existing 138 kV transmission line 711L from 96 MVA to 100 MVA.
- 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.

Applicable ratings/capability of any proposed major elements:

The 138 kV transmission circuit and the existing 711L shall have a minimum capacity of 100 MVA.

Proposed in-service date: 3/31/2029

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

Yes ☒ No ☐ Cost estimates prepared by AltaLink Management Ltd. and EPCOR Distribution & Transmission Inc. are attached.

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):

The Proposed Transmission Development will not result in new or exacerbated Category B system impacts. The Proposed Transmission Development includes increasing the capacity of the existing 138 kV transmission line 711L which will address the Category A (N-0) overload identified on 711L. The remaining reliability criteria violations identified are pre-existing system issues that can be managed through the use of real time operational practices. Therefore, no remedial action schemes are required.

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:

1. **Radial 138 kV connection to the Inland Cement 113S substation** – This alternative involves connecting the Facility to the existing Inland Cement 113S substation. This alternative requires adding one 138 kV circuit, approximately 1.5 km in length, to connect the Facility to the existing Inland Cement 113S substation. This alternative includes modifying Inland Cement 113S substation, including adding one 138 kV circuit breaker.

   This alternative was ruled out based on lack of physical expansion space at the Inland Cement 113S substation to accommodate a 138 kV termination into the substation and future plans to decommission the Inland Cement 113S substation.

2. **T-tap connection to the 138 kV transmission line 711L** – This alternative involves connecting the Facility to the existing 138 kV transmission line 711L using a T-tap configuration. This alternative involves adding one 138 kV circuit, approximately 1.5 km in length, to connect the Facility to the existing transmission line. This alternative involves increasing the capacity of the existing 138 kV transmission line 711L.

   This alternative will create a 4-terminal configuration, resulting in reduced transmission reliability for the Facility. Therefore, this alternative was ruled out as the market participant has advised it would not meet its required level of reliability compared to the Proposed Transmission Development.

3. **Radial 138 kV connection to North Calder 37S substation** – This alternative involves connecting the Facility to the existing North Calder 37S substation. This alternative requires adding one 138 kV circuit, approximately 5 km in length, to connect the Facility to the existing North Calder 37S substation. This alternative includes modifying North Calder 37S 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.

4. **T-tap connection to the 138 kV transmission line 747L** – This alternative involves connecting the Facility to the existing 138 kV transmission line 747L using a T-tap configuration. This alternative involves adding one 138 kV circuit, approximately 4.5 km in length, to connect the Facility to the existing transmission line.

   This alternative was ruled out due to increased transmission development, and hence overall increased cost, compared to the

Proposed Transmission Development. In addition, this alternative will create a 4-terminal configuration, resulting in reduced transmission reliability for the Facility, compared to the Proposed Transmission Development.

5. **T-tap connection to the 240 kV transmission line 930L** – This alternative involves connecting the Facility to the existing 240 kV transmission line 930L using a T-tap configuration. This alternative involves adding one 240 kV circuit, approximately 2.5 km in length, to connect the Facility to the existing transmission line.

   This alternative was ruled out due to increased transmission development, and hence overall increased cost, compared to the Proposed Transmission Development.

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:

The project raises issues not addressed by the preceding questions.

Yes ☐ No ☒

If yes, please explain:

When complete, save a copy of this form as a PDF file and submit the file to the AUC through the eFiling System.