



Alberta Electric System Operator

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In the Matter of the Need for Fort Saskatchewan Path2Zero Expansion Connection

And in the matter of the *Electric Utilities Act*, S.A. 2003, c. E-5.1, the *Alberta Utilities Commission Act*, S.A. 2007, c. A-37.2, the *Hydro and Electric Energy Act*, R.S.A. 2000, c. H-16, the Regulations made thereunder, and *Alberta Utilities Commission Rule 007*

Application of the Alberta Electric System Operator for Approval of the
**Fort Saskatchewan Path2Zero Expansion Connection
Needs Identification Document**

Date: January 30, 2026

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PART A - APPLICATION

1 Introduction

1.1 Initial Checklist Application

On June 6, 2025 the Alberta Electric System Operator (AESO) submitted a Needs Identification Document Checklist Application for the Fort Saskatchewan Path2Zero Expansion Connection to the Alberta Utilities Commission (Commission).¹ On November 3, 2025 the Commission directed the AESO to file an Abbreviated Needs Identification Document for the Fort Saskatchewan Path2Zero Expansion Connection.² On November 10, 2025 the AESO confirmed it would file the Abbreviated Needs Identification Document on or before January 30, 2026.³

1.2 Application

Pursuant to Section 34(1)(c) of the *Electric Utilities Act* (Act), and in accordance with further provisions set out in legislation,⁴ the AESO applies to the Commission for approval of the *Fort Saskatchewan Path2Zero Expansion Connection Needs Identification Document* (Application). This application is submitted in accordance with AUC Rule 007, Section 7.1.2, *Abbreviated needs identification document application information requirements*.

1.3 Application Overview

The market participant, Dow Chemical Canada (market participant), requested system access service to connect its proposed Fort Saskatchewan Path2Zero Expansion (the Facility)⁵ to the transmission system in the Fort Saskatchewan area (AESO Planning Area 33, Fort Saskatchewan). The Facility includes a substation, to be designated the Main Site BLK 80 1199S substation.⁶ Dow Chemical expects the Facility to be commercially operational by April 1, 2028.

The market participant's request includes a new Rate DTS, *Demand Transmission Service*, contract capacity of 231 MW and a new Rate STS, *Supply Transmission Service*, contract capacity of 0 MW. The market participant's request can be met by adding two 240 kilovolt (kV) circuits to connect the Facility to the existing Lamoureux 71S substation in a radial configuration and modifying the Lamoureux 71S substation, including adding four 240 kV circuit breakers (the Proposed Transmission Development, as further described in Section 2.2).

The scheduled in-service date for the Proposed Transmission Development is September 1, 2027.

This Application describes the need to respond to the market participant's request for system access service, and the AESO's determination of the manner in which to respond to the request. Having followed the AESO

¹ Exhibit 39004-X0094

² Exhibit 39004-X0106, Ruling on Standing and Abeyance, paragraph 12.

³ Exhibit 39004-X0107

⁴ The *Alberta Utilities Commission Act*, S.A. 2007, c. A-37.2, the *Hydro and Electric Energy Act*, R.S.A. 2000, c. H-16, the Regulations made thereunder, and Alberta Utilities Commission Rule 007 (AUC Rule 007).

⁵ Dow Chemical has approval for an Industrial System Designation for the Facility. 29880-D01-2025, Dow Chemical Canada ULC., Dow Fort Saskatchewan Path2Zero Project and Industrial System Designation (September 24, 2025).

⁶ Substation Permit and Licence 29880-D02-2025, Appendix 1 to Decision 29880-D01-2025, Dow Chemical Canada ULC, Main Site BLK 80 1199S Substation (September 24, 2025).

Connection Process,⁷ the AESO has determined that the Proposed Transmission Development provides a reasonable opportunity for the market participant to exchange electric energy and ancillary services. The Proposed Transmission Development is consistent with the AESO's long-term plans for the Northeast Planning Region, which includes the Fort Saskatchewan area. The AESO submits this Application to the Commission for approval in accordance with the AESO's responsibility to respond to requests for system access service and having determined that transmission development is required and is in the public interest.^{8,9}

1.4 AESO Directions to the TFO

During the AESO Connection Process, the AESO issued various directions to the legal owner of the transmission facility (TFO), in this case AltaLink Management Ltd., in its capacity as general partner of AltaLink L.P., (AltaLink), including a direction to submit, for Commission approval under the *Hydro and Electric Energy Act* (HEEA), a Facility Proposal for the Proposed Transmission Development, as defined in Section 2.2.¹⁰

⁷ For information purposes, refer to note iv of Part C of this Application for more information on the AESO Connection Process.

⁸ For information purposes, some of the legislative provisions relating to the AESO's planning duties and duty to provide system access service are referenced in notes i and ii of Part C of this Application.

⁹ Note v of Part C of this Application describes the Application scope in more detail.

¹⁰ The directions are described in more detail in the following sections of this Application and in Part C, note vi.

2 Need Overview and Proposed Transmission Development

2.1 Duty to Provide Transmission System Access Service

The AESO, pursuant to its responsibilities under Section 29 of the Act, must provide system access service on the transmission system in a manner that gives all market participants a reasonable opportunity to exchange electric energy and ancillary services.

The AESO, in consultation with the market participant and TFO, has determined that the Proposed Transmission Development is the preferred option to provide the market participant with a reasonable opportunity to exchange electric energy and ancillary services. In accordance with Section 34 of the Act, the AESO has determined that the Proposed Transmission Development will result in an expansion or enhancement of the capability of the transmission system thereby establishing the need for this Application. The market participant has made the appropriate applications to the AESO to obtain transmission system access service.

Through the AESO Connection Process, the AESO, in consultation with the market participant and the TFO, has determined the Proposed Transmission Development and has assessed the impacts that the Proposed Transmission Development and the associated load would have on the Alberta interconnected electric system.

2.2 Proposed Transmission Development

The Proposed Transmission Development, as shown in Figure 2-1, involves the following elements:

1. Add two 240 kV single circuits, approximately 3.5 km in length, each with a minimum capacity of 480 MVA, to connect the Facility to the existing Lamoureux 71S substation in a radial configuration;¹¹
2. Modify the Lamoureux 71S substation, including adding four 240 kV circuit breakers; and
3. 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.¹²

¹¹ The 240 kV circuit will connect the market participant's approved Main Site BLK 80 1199S substation, which is part of the Facility. Through the detailed routing and siting activities the TFO has estimated that the 240 kV circuit will have a length of approximately 3.3 kilometres. This is subject to change as routing and/or siting is finalized by the TFO.

¹² Details and configuration of equipment required for the Proposed Transmission Development are more specifically described in the AESO's Functional Specification included in the TFO's Facility Proposal. Also, further details will be determined as detailed engineering progresses and the market participant's operating requirements are finalized. Routing and/or siting of transmission facilities do not form part of this Application and are addressed in the TFO's Facility Proposal. Line numbering and substation names provided here are for ease of reference and are subject to change as engineering and design progresses. The market participant's facilities that may subsequently be connected to the Proposed Transmission Development are the responsibility of the market participant and are not included in the Application.

Transmission Development will be classified as participant-related. In accordance with the ISO tariff, the AESO has determined that the market participant is eligible for approximately \$4.2 million of local investment.

2.4 Transmission Development Alternatives

In addition to the Proposed Transmission Development (Alternative 2), the AESO, in consultation with the market participant and the TFO, examined six other transmission development alternatives to respond to the market participant's request for system access service. To assist with alternative selection, the AESO relied upon environmental and land use information provided by the TFO (see Appendix D Environment and Land Use Assessment).

Alternative 1 – In-and-out connection to 240 kV transmission lines 997L and 942L – Alternative 1 involves connecting the Facility to the existing 240 kV transmission lines 997L and 942L using an in-and-out configuration. Alternative 1 requires adding a substation, including six 240 kV circuit breakers, connected to the existing 240 kV transmission lines 997L and 942L. Alternative 1 also requires adding two 240 kV circuit, approximately 2 km in length, to connect the Facility to the 240 kV switching substation.

Alternative 1 was ruled out due to increased transmission development, hence overall increased costs compared to the Proposed Transmission Development. Further, the TFO's desktop Environmental and Land Use (ELU) assessment has identified similar environmental impacts to the Proposed Transmission Development, but increased land disturbance, additional right-of-way requirements and more line crossings compared to the Proposed Transmission Development.

Alternative 3a – In-and-out connection to 240 kV transmission line 997L (two circuits) – Alternative 3a involves connecting the Facility to the existing 240 kV transmission line 997L using an in-and-out configuration. Alternative 3a requires adding a substation, including three 240 kV circuit breakers, connected to the existing 240 kV transmission line 997L. Alternative 3a also requires adding two 240 kV circuits, each approximately 2 km in length, to connect the Facility to the 240 kV switching substation.

Alternative 3a was ruled out due to increased transmission development, increased land disturbance, additional right-of-way requirements compared, more line crossings and hence overall increased costs compared to the Proposed Transmission Development. In addition, connecting solely to 997L could cause unbalanced power flows, leading to non-optimal utilization of the existing transmission system.

Alternative 3b – In-and-out connection to 240 kV transmission line 997L (one circuit) – Alternative 3b involves connecting the Facility to the existing 240 kV transmission line 997L using an in-and-out configuration. Alternative 3b requires adding a substation, including three 240 kV circuit breakers, connected to the existing 240 kV transmission line 997L. Alternative 3b also requires adding one 240 kV circuit, approximately 2 km in length, to connect the Facility to the 240 kV switching substation.

Alternative 3b was ruled out as the single circuit connection does not meet the market participant's requested level of reliability (see Appendix E). Alternative 3b also involves increased transmission development, increased land disturbance, additional right-of-way requirements, more line crossings and hence overall increased costs, compared to the Proposed Transmission Development. Additionally, connecting solely to 997L may cause unbalanced power flows, resulting in non-optimal utilization of the existing transmission system.

Alternative 4a – In-and-out connection to 240 kV transmission line 942L (two circuits) – Alternative 4a involves connecting the Facility to the existing 240 kV transmission line 942L using an in-and-out configuration. Alternative 4a requires adding a substation, including three 240 kV circuit breakers, connected to the existing 240 kV transmission line 942L. Alternative 4a also requires adding two 240 kV circuits, each approximately 2 km in length, to connect the Facility to the 240 kV switching substation.

Alternative 4a was ruled out due to increased transmission development, increased land disturbance, additional right-of-way requirements, more line crossings and hence overall increased costs compared to the Proposed

Transmission Development. Additionally, connecting solely to 942L may cause unbalanced power flows, resulting in non-optimal utilization of the transmission system.

Alternative 4b – In-and-out connection to 240 kV transmission line 942L (one circuit) – Alternative 4b involves connecting the Facility to the existing 240 kV transmission line 942L using an in-and-out configuration. Alternative 4b requires adding a substation, including three 240 kV circuit breakers, connected to the existing 240 kV transmission line 942L. Alternative 4b also requires adding one 240 kV circuit, approximately 2 km in length, to connect the Facility to the 240 kV switching substation.

Alternative 4b was ruled out as the single circuit connection does not meet the market participant's requested level of reliability (see Appendix E). Alternative 4b also involves increased transmission development, increased land disturbance, additional right-of-way requirements, more line crossings and hence overall increased costs, compared to the Proposed Transmission Development. Additionally, connecting solely to 942L may cause unbalanced power flows, resulting in non optimal utilization of the system.

Alternative 5 – Radial 240 kV connection to Ursus 430S substation – Alternative 5 involves connecting the Facility to the existing Ursus 430S substation using a radial configuration. Alternative 5 also requires adding two 240 kV circuits, approximately 7 km in length, and modifying the Ursus 430S substation, including adding four 240 kV circuit breakers.

Alternative 5 was ruled out due to increased development, resulting from a longer and more complex route through the Dow industrial complex, and hence overall increased cost, compared to the Proposed Transmission Development. While Alternative 5 would result in fewer impacts to environmental features, residences, and non-industrial land, and would avoid crossing the North Saskatchewan River, the ELU assessment indicates it would likely require expansion of Ursus 430S, adversely affecting land use in the area.

2.5 Connection Assessment

Power flow, voltage stability, transient stability, short-circuit and motor starting studies were conducted to assess the impact of the Proposed Transmission Development and the associated load 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. Transient stability, motor starting and voltage stability studies were performed following the connection of the Proposed Transmission Development.

No system performance issues were identified under the Category A condition. Thermal criteria violations were observed under Category B conditions. Most of the thermal criteria violations observed in the pre-connection assessment under Category B conditions were marginally reduced in the post-connection assessment and an additional thermal criteria violation was observed on the 240 kV transmission line 908L (Eilerslie 98S 89S – Petrolia). Following the connection of the Proposed Transmission Development, the thermal criteria violation on the 72 kV transmission line 72RG1 (Rossdale – Garneau) is marginally exacerbated under Category B conditions.

Real-time operational practices can continue to be used to mitigate the observed post-connection thermal criteria violations.

2.6 Transmission Dependencies

The Proposed Transmission Development does not require the completion of any other AESO plans to expand or enhance the capability of the transmission system prior to connection.

2.7 AESO Participant Involvement Program

The AESO directed the TFO to assist the AESO in conducting the AESO's participant involvement program (PIP).

Between October 2024 and June 2025 the TFO and the AESO used various methods to notify stakeholders about the need for development and the AESO's preferred option to respond to the system access service request. The AESO has responded to questions and concerns raised by one industry stakeholder. No other questions or concerns have been raised by other stakeholders.

Apart from the inquiry described above, no concerns or objections were raised regarding the need for the Proposed Transmission Development or the AESO's preferred option to respond to the system access service request.¹⁴

2.8 Environmental and Land Use Effects

The TFO has advised that the Proposed Transmission Development is not expected to result in significant environmental effects. Desktop environmental and land use information provided by the TFO for all transmission development options is provided in Appendix D.

2.9 Approval is in the Public Interest

Having regard to the following:

- the transmission planning duties of the AESO as described in Sections 29, 33 and 34 of the Act;
- the market participant request for system access service and the AESO's assessment thereof;
- the AESO's connection assessment;
- the cost estimate for the Proposed Transmission Development;
- the TFO's assessment of environmental and land use effects;
- confirmation from the TFO that no significant environmental effects are expected;
- information obtained from AESO PIP activities; and
- the AESO's long-term transmission system plans;

it is the conclusion of the AESO that the Proposed Transmission Development provides a reasonable opportunity for the market participant to exchange electric energy and ancillary services. In consideration of these factors, the AESO submits that approval of this Application is in the public interest.

¹⁴ Further information regarding the AESO's PIP for this Application is included in Appendix C.

3 Request to Combine this Application with the Facility Proposal for Consideration in a Single Process

3.1 Facility Proposal

Pursuant to Subsection 35(1) of the Act, the AESO has directed the TFO to prepare a Facility Proposal corresponding with this Application, which has already been filed with the Commission.¹⁵

3.2 Purpose

While this Application and the Facility Proposal are materially consistent, the AESO respectfully requests that in its consideration of each, the Commission be mindful of the fact that the documents have been prepared separately and for different purposes. The purpose of this Application is to obtain approval of the need to respond to the market participant's request for system access service and provide a preliminary description of the manner proposed to meet that need, having regard for the AESO's determination that the Proposed Transmission Development is required to provide the market participant with a reasonable opportunity to exchange electric energy and ancillary services. In contrast, the Facility Proposal contains more detailed engineering and designs for the Proposed Transmission Development and seeks approval for the construction and operation of specific facilities.

¹⁵ The TFO has filed a Facility Proposal relating to this Application titled *P2614 Dow Fort Saskatchewan Load* (AUC Proceeding 30094).

4 Relief Requested

4.1 Approval is in the Public Interest

The AESO submits that its assessment of the need to meet the market participant's request for system access service is technically complete and that approval is in the public interest.

4.2 Request

For the reasons set out herein, and pursuant to Section 34 of the Act, the AESO requests that the Commission approve this Application, including issuing an approval of the need to respond to the market participant's request for system access service, and to connect the Facility to the transmission system, by means of the following transmission development:

- A. Add two 240 kV single circuits to connect the Facility to the existing Lamoureux 71S substation in a radial configuration;
- B. Modify the Lamoureux 71S substation, including adding four 240 kV circuit breakers; and
- C. 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.

All of which is respectfully submitted this 30th day of January, 2026.

Alberta Electric System Operator

"Electronically Submitted by"

Pravin Koshti
Director, Customer Access and Project Engineering

PART B – APPLICATION APPENDICES

The following appended documents support the Application (Part A).

APPENDIX A Connection Assessment – Appendix A contains the *AESO Engineering Connection Assessment – P2614 Fort Saskatchewan Path2Zero Expansion Connection* that assesses the transmission system performance prior to and following the connection of the Proposed Transmission Development. As part of the AESO Connection Process, the AESO defined the study scope, and provided the system models and study assumptions to the market participant who engaged a consultant to conduct the connection assessment studies. The AESO reviewed the results of the connection assessment studies prepared by the consultant and found the results acceptable for the purposes of assessing the impacts of the Proposed Transmission Development on the transmission system.

APPENDIX B Capital Cost Estimate – Appendix B contains a detailed cost estimate corresponding to the Proposed Transmission Development. Appendix B includes an estimate prepared by the TFO, to an accuracy level of +20%/-10% which exceeds the accuracy required by AUC Rule 007, Section 7.1.2, NID 11.

APPENDIX C AESO PIP – Appendix C contains a summary of the PIP activities conducted, in accordance with requirements of NID12 and Appendix A2 of AUC Rule 007, regarding the need to respond to the market participant's request for system access service. Copies of the relevant materials distributed during the PIP are attached for reference.

APPENDIX D Environment and Land Use Assessment- Appendix D contains a report prepared by the TFO summarizing its high-level desktop environment and land use analysis of the seven transmission development alternatives considered by the AESO.

APPENDIX E Market Participant Reliability Request – Appendix E contains a letter from the market participant identifying its requirement for two circuits to connect the Facility to the AIES.

PART C – REFERENCES

- i. **AESO Planning Duties and Responsibilities** – Certain aspects of the AESO's duties and responsibilities with respect to planning the transmission system are described in the Act. For example, Section 17, Subsections (g), (h), (i), and (j), describe the general planning duties of the AESO.¹⁶ Section 33 of the Act states that the AESO "must forecast the needs of Alberta and develop plans for the transmission system to provide efficient, reliable, and non-discriminatory system access service and the timely implementation of required transmission system expansions and enhancements." Where, as in this case, the market participant (refer to note ii below) is requesting system access service, and the AESO has determined that the request requires or may require the expansion or enhancement of the capability of the transmission system, the AESO must prepare and submit for Commission approval, as per Section 34(1)(c), a needs identification document that describes the need to respond to requests for system access service, including the assessments undertaken by the AESO regarding the manner proposed to address that need. Other aspects of the AESO's transmission planning duties and responsibilities are set out in Sections 8, 10, 11, and 15 of the *Transmission Regulation*.
- ii. **Duty to Provide Transmission System Access** – Section 29 of the Act states that the AESO "must provide system access service on the transmission system in a manner that (a) subject to clause (b), gives all electricity market participants [Dow Chemical Canada ULC] wishing to exchange electric energy and ancillary services a reasonable opportunity to do so..."
- iii. **AESO Transmission Planning Criteria** – In accordance with the Act, the AESO is required to plan a transmission system that satisfies applicable reliability standards. Transmission Planning (TPL) standards are included in the Alberta Reliability Standards, and are generally described on the AESO website.

In addition, the AESO's *Transmission Planning Criteria – Basis and Assumptions* is included in Appendix A.
- iv. **AESO Connection Process** – For information purposes, the AESO Connection Process, which changes from time to time, is generally described on the AESO website.
- v. **Application for Approval of the Need to Respond to a Request for System Access Service** – This Application is directed solely to the question of the need to respond to a request for system access service, as more fully described in the Act and the *Transmission Regulation* and the AESO's determination of the manner in which to respond to the request. This Application does not seek approval of those aspects of transmission development that are managed and executed separately from the needs identification document approval process. Other aspects of the AESO's responsibilities regarding transmission development are managed under the appropriate processes, including the ISO rules, Alberta reliability standards and the ISO tariff, which are also subject to specific regulatory approvals. While the Application or its supporting appendices may refer to other processes or information from time to time, the inclusion of this information is for context and reference only.

Any reference within the Application to market participants or other parties and/or the facilities they may own and operate or may wish to own and operate, does not constitute an application for approval

¹⁶ The legislation and regulations refer to the Independent System Operator or ISO. "AESO" and "Alberta Electric System Operator" are the registered trade names of the Independent System Operator.

of such facilities. The responsibility for seeking such regulatory or other approval remains the responsibility of the market participants or other parties.

- vi. **Directions to the TFO** – Pursuant to Subsection 35(1) of the Act, the AESO has directed the TFO, in its capacity as a legal owner of transmission facilities, in whose service territories the need is located, to prepare a Facility Proposal to meet the need identified. The Facility Proposal is also submitted to the Commission for approval. The AESO has also directed the TFO, pursuant to Section 39 of the Act and Section 14 of the *Transmission Regulation*, to assist in the preparation of the AESO's Application. The TFO has also been directed by the AESO under Section 39 of the Act to prepare a service proposal to address the need for the Proposed Transmission Development.
- vii. **Capital Cost Estimate** – The provision of capital cost estimates in the Application is for the purposes of relative comparison and context only. The requirements applicable to cost estimates that are used for transmission system planning purposes are set out in Section 25 of the *Transmission Regulation*, AUC Rule 007, and Section 504.5 of the ISO rules, *Service Proposals and Cost Estimating*.