Alberta Utilities Commission

In the Matter of the Need for the Peace Butte Wind Energy 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 *Transmission Regulation*, AR 86/2007 and Alberta Utilities Commission Rule 007, all as amended

Application of the Alberta Electric System Operator for approval of the Peace Butte Wind Energy Connection Needs Identification Document

PART A - APPLICATION

1 Introduction

1.1 Application – Pursuant to Section 34(1)(c) of the *Electric Utilities Act* (Act) and in accordance with the further legislative provisions set out in the recitals, the Alberta Electric System Operator (AESO) applies to the Alberta Utilities Commission (the "Commission") for approval of the *Peace Butte Wind Energy Connection Needs Identification Document* (Application).

1.2 Application Overview – This Application describes the need for transmission development arising from a Pteragen Canada Inc. (the "market participant") request for transmission system access service for its proposed 120 MW aggregated wind generating facility, the Peace Butte Wind Power Project (Facility), located in the Medicine Hat area. Connection of the Facility to the transmission system requires development of a new 138kV transmission line between the market participant's proposed Tothill 219S collector substation and the existing 600L transmission line. The market participant's requested in-service date for the new connection is July 2013.

Having followed the AESO Connection Process,[1] the AESO has determined that the proposed transmission development provides a reasonable opportunity for the market participant to exchange electricity and is consistent with the AESO's long-term transmission forecasts and plans for the area. This Application, being consistent with the AESO's responsibility to plan the transmission system, is submitted for Commission approval.[2]

This Application is directed solely to the question of the need for expansion or enhancement of the capability of the transmission system as more fully described in the

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

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

Act and the *Transmission Regulation*, and as it relates to the above referenced connection. This Application does not seek approval of those aspects of transmission development that are managed and executed separately from the needs 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 such other processes or information, the inclusion of such information is for context and reference only.

1.3 AESO Directions to the TFO – During the AESO Connection Process, the AESO issued various directions to AltaLink Management Ltd. (AltaLink) as the legal owner of transmission facilities (TFO), including direction to assist the AESO in preparing its needs identification document.[3]

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 market participant has requested connection of its Facility to the transmission system, thereby establishing the need for transmission development. Through the AESO Connection Process, the AESO, the TFO and the market participant have collaborated to determine the characteristics of the proposed transmission development and the AESO has assessed the impacts of connecting the Facility to the transmission

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

system and issued directions to the TFO to prepare a transmission facility proposal[4] to meet the market participant's need.

2.2 Proposed Transmission Development – The proposed transmission development includes a new single circuit 138 kV transmission line, with an approximate 121/146 MVA summer/winter capacity, connecting the Tothill 219S substation to the existing 138 kV 600L line via a T-tap, and associated switching, connections, protections, controls and telecommunications.[5]

2.3 Transmission Development Alternatives – In addition to the proposed development described in Section 2.2, the AESO, TFO and market participant considered connecting the Facility to the existing Bullshead 523S substation via a new 138 kV transmission line and circuit breaker to terminate the line at Bullshead 523S. Each of the proposed and optional connections would meet the need for transmission system access; the proposed transmission development was selected as the least cost option and forms the basis for the cost estimates and the Connection Assessment described herein.

2.4 AESO Regional Forecast – The wind generation assumptions used in the connection assessment described in paragraph 2.5 assumed existing and planned wind generation projects within the study area that have advanced through the second stage of the AESO Connection Process and have an expected in-service date earlier than that of the proposed Facility.

[4] Also referred to as facility application, or FA, under Commission Rule 007.

[5] Details and configuration of equipment required for the proposed transmission development, including substation single-line diagrams, are more specifically described in the AESO's Functional Specification included in the TFO's transmission facility proposal. Also, further details will be determined as detailed engineering progresses and market participant 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. Market participant 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.

The load forecast used to assess the proposed connection aligns with the AESO's corporate load forecast, *Future Demand and Energy Outlook (2009-2029)*.[6] The AESO's corporate load forecasts are used by the AESO to assess adequacy of the regional transmission system and to identify future transmission system expansion and enhancement plans.

2.5 Connection Assessment – Power flow, transient stability and short circuit analyses were performed to assess transmission system performance prior to and following connection of the proposed Facility. The power flow analysis indicates that connection of the Facility will result in overloads under the studied normal and contingency conditions. A sensitivity analysis confirmed that these overloads will be resolved by specific Southern Alberta Transmission Reinforcement (SATR) developments planned to be in service in 2014. Until such time as the specific SATR developments are in place, the AESO will analyze and implement operating procedures, including remedial action schemes, to run back or remove the Facility generation from the system as system conditions require.[7]

Based on the transient stability and short circuit analyses, connection of the Facility did not affect the response of the system under transient conditions and did not materially change the current fault levels in the system.

2.6 Proposed Transmission Development Cost – The TFO estimated the in-service cost of the proposed transmission development to be in the order of $4 million (+20%/-10%) generally comprised of the costs of the proposed transmission development described in Section 2.2. In accordance with the ISO Tariff, the AESO has determined that there are no system related costs in respect of the proposed transmission development.

[6] Section 4.5, Table 4.5-1 of the AESO *Future Demand and Energy Outlook (2009-2029)* contains the South region which includes the proposed development area.

[7] The AESO develops appropriate ISO Rules (including remedial action schemes) and practices to address transmission constraints that may materialize from time to time. The creation and management of such ISO rules pertain to operational matters that are beyond the scope of this NID.

2.7 Participant Involvement Program – The AESO directed the TFO to assist the AESO in conducting a participant involvement program (PIP), in accordance with Commission Rule 007, NID13 and Appendix A. The TFO and the AESO utilized various methods to notify stakeholders of the need for transmission development in the vicinity of the proposed transmission development. The AESO knows of no concerns related to the need for the proposed transmission development.

2.8 Environmental and Socio-Economic Overview – As potential environmental effects are related to siting, routing, and on-going operations of the proposed transmission development, the AESO has not undertaken a separate environmental and socio-economic assessment of the sort contemplated in Commission Rule 007, section 6.1 – NID12. The AESO has been advised that the TFO's facility proposal will contain information in respect of Commission Rule 007, section 6.1 – NID12.[8]

2.9 Approval is in the Public Interest – Having regard to the AESO's duties and responsibilities to plan the transmission system, it is the conclusion of the AESO that the proposed transmission development provides a reasonable opportunity for the market participant to exchange electricity and that connection to the transmission system as proposed is consistent with other system plans in the southern Alberta area. Further, the AESO confirms that the load forecasts used in the AESO's assessment of the proposed transmission development are consistent with the AESO's *Future Demand and Energy Outlook (2009-2029)* used for transmission system planning. In consideration of these factors, the AESO submits that approval of the Application is in the public interest.

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

3.1 Pursuant to subsection 35(1) of the Act, the AESO has directed the TFO to prepare a transmission facility proposal to meet the need identified. The AESO

[8] As per Appendix D of this Application, the AESO has been advised that AltaLink's facility proposal will contain information in respect of Commission Rule 007, Section 6.1 – NID12.

understands that the TFO's facility proposal will be filed shortly.[9] The AESO requests, and expects the TFO will also request, that this Application be combined with the facility proposal for consideration by the Commission in a single process. Such a request is consistent with the principles contemplated by section 15.4 of the *Hydro and Electric Energy Act* and section 6 of Commission Rule 007. An evident advantage of doing so will be to enable the Commission to consider factors and information in the facility proposal that are relevant to the issue of need.

3.2 While it is believed that this Application and the facility proposal will be materially consistent, the AESO respectfully requests that in its consideration of both, 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 for the identified transmission system need and provide a preliminary description of the manner proposed to meet that need. In contrast, the facility proposal will contain more detailed engineering and designs for the proposed transmission development and seek approval for the construction and operation of specific facilities.

4 Relief Requested

4.1 Having regard to the factors set out in section 38 of the *Transmission Regulation*, and in particular, subsections 38(d) and (e), the AESO submits that its assessment of the need to meet the market participant's request for transmission system access service is technically complete and that approval of the need for the proposed transmission development, as described in section 2.2, is in the public interest.

4.2 For the reasons set out above, the AESO requests that the Commission approve this Application, and issue an approval indicating that the AESO has processed the requests for transmission system access according to the AESO Connection Process and determined that the proposed transmission system development, consisting of the following elements, is needed to address the market participant's request:

[9] The AESO understands that AltaLink intends to file a facility proposal relating to this Application to be titled *Peace Butte Wind Power Facility Interconnection*.

A. Add a 138 kV single circuit transmission line to connect the proposed market participant Tothill 219S substation to the existing 138 kV 600L transmission line via a T-tap connection. Add necessary switching and connection facilities, protections, controls, and telecommunications to ensure proper integration with the transmission system; and

B. Modify, alter, add or remove equipment and any operational, protections, control and telecommunication devices required at existing facilities in the area to undertake the work described above, and to ensure proper integration with the transmission system.

All of which is respectfully submitted this 19th day of June 2012.

Alberta Electric System Operator

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PART B – APPLICATION APPENDICES

The following appended documents support the Application (Part A). They are provided for reference purposes only. The documents, and the work they represent, are not intended to be taken as the complete body of work conducted by the AESO, in the execution of its duties to plan the transmission system, or in the preparation of this application.

APPENDIX A **Connection Assessment** – Appendix A contains the *Connection Engineering Study Report, Peace Butte Wind Connection*, which contains an assessment of transmission system performance prior to and following the connection of the proposed transmission development. Appendix A describes the study scope and methodology, assumptions, reliability criteria and detailed results.

APPENDIX B **AESO PIP –** Appendix B contains a summary of the PIP activities conducted regarding the need for the proposed transmission development. Copies of the relevant materials distributed during the PIP are attached for reference.

APPENDIX C **TFO Capital Cost Estimate –** Appendix C contains detailed cost estimates corresponding to the proposed transmission development. These estimates have been prepared by the TFO at the direction of the AESO. The estimates are prepared to an approximate accuracy level of +20%/-10% which exceeds the accuracy requirement of Commission Rule 007, NID10.

APPENDIX D **TFO confirmation that Commission Rule 007 NID 12 aspects are being addressed in Facility Proposal** – Appendix D contains a letter provided by the TFO confirming that the seven major aspects of Commission Rule 007, NID 12 are addressed throughout the TFO's facility proposal.

PART C – REFERENCES

i. **AESO Planning Duties and Responsibilities –** Certain aspects of AESO 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.[10] 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 is requesting system access service, 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, and 11, of the *Transmission Regulation*.

ii. **Duty to Provide Transmission System Access** – Section 29 of the Act describes that the AESO "must provide system access service on the transmission system in a manner that gives all market participants wishing to exchange electric energy and ancillary services a reasonable opportunity to do so".

iii. **AESO Planning Criteria** – The AESO is required to plan a transmission system that satisfies applicable reliability standards. The AESO Planning Criteria is described at: http://www.aeso.ca/rulesprocedures/8677.html.[11]

iv. **AESO Connection Process** – For information, the AESO transmission system Connection Process, which changes from time to time, is generally described at: http://www.aeso.ca/8602.html.[12]

v. **Application for Approval of the Need for Expansion or Enhancement of the Capability of the Transmission System –** This Application is directed solely to the question of the need for expansion or enhancement of the capability of the transmission system. Any reference within the Application to existing market participants or other parties and/or the facilities they may own and

[10] 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.

[11] This link is provided for ease of reference and does not form part of this Application.

[12] This link is provided for ease of reference and does not form part of this Application.

operate or may wish to, own and operate is not intended to constitute an application for approval of such facilities, and the responsibility for seeking such regulatory or other approval remains the responsibility of such market participant or other party.

vi. **Directions to the TFO** – Pursuant to subsection 35(1) of the Act, the AESO has directed the TFO, in whose service territory 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 TFO has also been directed by the AESO under section 39 of the Act to prepare a proposal to provide services to address the need for the proposed transmission development. 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.

vii. **Capital Cost Estimates** –The provision of capital costs estimates in the Application is for the purposes of relative comparison and context only. The AESO's responsibilities in respect of project cost reporting are described in the *Transmission Regulation*, including section 25, and AESO Rule 9.1.