



Alberta Electric System Operator

Needs Identification Document Application
Southwest Alberta 240-kV Transmission
System Development
Pincher Creek – Lethbridge Area

May 17, 2005

ALBERTA ENERGY AND UTILITIES BOARD

Decision 2005-049: Alberta Electric System Operator
Needs Identification Document Application
Southwest Alberta 240-kV Transmission System Development
Pincher Creek – Lethbridge Area
Application No. 1340849

May 17, 2005

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ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

ALBERTA ELECTRIC SYSTEM OPERATOR NEEDS IDENTIFICATION DOCUMENT APPLICATION SOUTHWEST ALBERTA 240-KV TRANSMISSION SYSTEM DEVELOPMENT PINCHER CREEK – LETHBRIDGE AREA

**Decision 2005-049
Application No. 1340849**

1 INTRODUCTION

The Alberta Electric System Operator (AESO) filed Application No. 1340849 (the Application) with the Alberta Energy and Utilities Board (EUB/Board) on April 5, 2004, requesting approval of the Needs Identification Document (NID) for 240-kV transmission system development in southwest Alberta (the SW Transmission System). AESO staged its proposed development in two parts, Part A and Part B.

Part A would be developed according to one of two options:

- Option 1 would consist of a double-circuit, 240-kV, both-sides-strung transmission line from Pincher Creek substation 396S to Peigan substation 59S and a double-circuit, one-side-strung transmission line from Peigan substation 59S to North Lethbridge substation 370S.
- Option 2 would consist of a double-circuit, 240-kV, both-sides-strung transmission line from Pincher Creek substation 396S to proposed Mud Lake substation 116S and a double-circuit, one-side-strung transmission line from proposed Mud Lake substation 116S to North Lethbridge substation 370S.

Part B would consist of stringing the second 240-kV circuit from either Peigan substation 59S or proposed Mud Lake substation 116S to North Lethbridge substation 370S. It would proceed contingent upon the development of a 300-MW wind farm in the Waterton area (the Waterton Wind Farm).

The Board held a prehearing meeting in Lethbridge, Alberta, on May 18, 2004, and issued Decision 2004-044 on May 20, 2004. Subsequently, the Board considered the application at a public hearing held in Lethbridge from July 6 - 8, 2004 and on July 12, 2004 in Calgary. The participants at the hearing are shown in Appendix A.

2 PROCESS SUMMARY

On September 7, 2004, the Board issued Decision No. 2004-075, referring the Application back to the AESO to perform additional studies and provide additional information on its proposed transmission system improvements in southwest Alberta. On September 15, 2004, the Board issued Decision No. 2004-087 (addendum to Decision 2004-075), setting out the reasons for

Decision 2004-075. AESO filed its response to Decisions No. 2004-075 and 2004-087 on November 4, 2004. (See Section 3.1)

The Board issued a Notice of Amended Application on November 10, 2004 with a deadline for submissions of November 26, 2004. A number of submissions supporting AESO's application were received while Industrial Power Consumers Association of Alberta (IPCAA) reiterated its objections to the application.

On December 22, 2004, AESO filed an addendum to its November 4, 2004 response that included an assessment of the congestion that may occur on the SW Transmission System and an estimate of the generation constraint for each of the options considered in its November 4, 2004 response. The addendum was forwarded to interested parties with a request to provide comment on the addendum no later than January 7, 2005. IPCAA requested and received Board approval for additional time to provide its comments.

On January 13, 2005, the Board solicited interested parties' views on the following process options for the further consideration of the Application:

- **Process option 1:** The Board would make a decision based upon materials already filed in response to Decisions 2004-075 and 2004-087.
- **Process option 2:** The Board would convene a written proceeding consisting of information requests followed by written submissions.
- **Process option 3:** The Board would reopen the public hearing process.

On January 17, 2005, the Board issued an additional Information Request (e.g. BR-AESO-10/12) to AESO with respect to its December 22, 2004 addendum.

On January 21, 2005, the Board received responses to its process option request from a number of supporting parties confirming a preference for process option 1. IPCCCA requested an opportunity to review AESO's response to the Board's January 17, 2005 IR before it committed to a specific process option.

On January 28, 2005 AESO filed its response to the Board's January 17, 2005 IR. On February 2, 2005 IPCAA requested the opportunity to pose additional questions arising from AESO's response to BR-AESO-12. AESO filed its responses to IPCCCA's questions on February 11, 2005.

On February 16, 2005, IPCCCA submitted that the Board should refer the NID back to AESO for additional work and requested the Board to direct AESO to consult with IPCCCA on the additional work. Subsequently, AESO advised the Board that it was receptive to the consultative process proposed by IPCCCA and requested an extension to accommodate the process and to file its final submission.

On March 28, 2005, AESO submitted that the consultative process had been beneficial. It stated that, given the outcome of these meetings, it was not necessary to respond in detail to IPCCCA's submissions of November 26, 2004 and February 16, 2005.

On March 29, 2005, IPCAA withdrew its objection to the Application in light of the new information provided by AESO. IPCAA emphasized that its withdrawal was made based on the specific understanding that if there is any material change to the generation underpinning the project, such changes would be addressed when they arose.

3 SUMMARY OF NEW EVIDENCE

3.1 AESO's Responses to Decision No. 2004-087

AESO performed a congestion analysis forecast on the existing SW Transmission System for 2006 analyzing six scenarios based on the amount of power transfer between Alberta and British Columbia (B.C.). In so doing, it identified two congested transmission paths:

- 1) the Natal-Pincher Creek-Peigan-Lethbridge Path, and
- 2) the Magrath-Tempest Path.

AESO also developed four new transmission upgrade alternatives for comparison to its proposed development.

In its December 22, 2004 addendum, AESO conducted a congestion analysis for each of the four alternatives. The analyses were performed under the same six scenarios referenced above.

AESO submitted that, based on its analysis, its original recommendation continued to be its preferred solution to meet the needs of market participants while alleviating the transmission constraints identified in the Application in the SW Transmission System.

3.2 AESO's Responses to Board's IRs and IPCAA's Questions

In its IRs, the Board requested AESO to update the "Existing and Proposed Generation in southwest Alberta" table in the Application and to elaborate on the impacts on the system of wind power generation additions, deletions, and/or change of in-service schedules of any projects included in such update. With regard to AESO's responses to the Board's IR, IPCAA requested AESO provide status and details of the new wind farms, including Waterton, presented by AESO in its updated generation forecast. IPCAA also asked AESO about the level of congestion under N-0 and N-1 conditions for AESO's Part A and B developments based on the updated generation.

In its submission, AESO stated that since its original application was filed, three new wind farms (Castle Rock Ridge, "Confidential 1", and "Confidential 2") had signed Stage 2 System Access Service (SAS) Agreements. In addition, AESO noted that GW Power increased its Soderglen wind farm Stage 2 SAS Agreement from 11 to 71 MW. Furthermore, AESO stated that Windbreaker Energy Corporation confirmed its intention to file a Stage 1 SAS Agreement for 99 MW. AESO estimated that the total existing and proposed generation in southwest Alberta had thus increased by 312 MW, from 826 to 1138 MW.

AESO also submitted that, it had not studied the impacts of the recently proposed projects in detail. Instead, AESO provided a high level assessment¹ of the expected impacts of the increased generation development on the preferred option and some selected options for Part A (excluding Waterton Wind Farm) and Part B (including Waterton Wind Farm) of the development.

3.3 AESO-IPCAA Consultative Process

AESO submitted that IPCAA expressed several technical concerns regarding AESO's proposed southwest Alberta development. The main concerns were: the actual wind resource potential in Alberta compared to AESO's generation forecast, the ability of the system to absorb large amounts of wind generation based on such a forecast and the wind generation potential in the area, future operation of 138-kV B.C. interties in light of the additional generation, and consideration of other alternatives to AESO's proposed development.

AESO and IPCAA discussed the updated generation forecast and its impact on the transmission system once this generation was firm up. Through these meetings, IPCAA concluded that with the potential new generation, its proposals for the Southwest Alberta development were not materially better than what was proposed by the AESO. IPCAA was satisfied that AESO had committed to providing it with an indication of the progress of the generation development in southwest Alberta.

In its proposal to address IPCAA's outstanding technical concerns, AESO conducted a performance analysis of the system with the recently proposed development in place for the 2006 summer period under three possible Alberta-B.C. interchange conditions and with the inclusion of the updated generation forecast. AESO identified five major constraints and presented additional proposed transmission developments to address the constraints.

4 NEEDS ASSESSMENT

4.1 Need for Expansion or Enhancement of the Capability of the SW Transmission System

In Decision 2004-087, the Board found that an expansion or enhancement of the SW Transmission System was necessary to address system constraints and improve efficiency. However, the Board found that it did not have a sufficient understanding of the conditions or constraints affecting the existing transmission system to allow it to make a determination regarding the appropriate means to alleviate the constraint identified.

The Board finds that AESO's responses to Decisions 2004-075 and 2004-087 and subsequent information requests provides sufficient evidence regarding the impact of the constraint and congestion experienced by the existing system. The Board further finds that AESO has also provided sufficient evidence regarding the further constraints and congestion the current system is likely to experience under the updated generation forecast.

Having considered all of the evidence before it, the Board finds that the expansion of the capability of the SW Transmission System is required to alleviate constraints in the existing

¹ The analyses were performed on a single system operating scenario; namely, a 2006 summer minimum load scenario with maximum generation and zero Alberta – B.C. interchange.

system due to the interconnection of a large amount of new wind generation, to provide sufficient capacity for future new generation developments in the area, and to maintain the reliability and operability of the SW Transmission System. In making its determination, the Board finds that:

- Increased system capacity in the area is required to ensure the continued development of a fair, open, and competitive marketplace.
- Eliminating transmission constraints will foster a robust system that provides for safe and reliable operation.
- Reducing the use of, or reliance upon, remedial action schemes (RAS) will provide more efficient and reliable operation.

4.2 Is AESO's Proposal to expand or Enhance the SW Transmission System Reasonable and in the Public Interest?

After a review of the new evidence presented by AESO, the Board finds that the upgrades proposed in the NID to alleviate the constraint in the SW Transmission System and to improve system efficiency will result in an economic and efficient transmission system. The Board also believes that the proposed upgrades will result in a transmission system that is safe, reliable, robust, provides for non-discriminatory system access, and will facilitate an openly competitive market.

Regarding AESO's application for Part A development of the SW Transmission System, the Board considers that both Options 1 and 2 will effectively address the identified need. The Board notes, in that regard, that the only significant difference between the two options is routing, a topic that the EUB must address in detail in any subsequent transmission facility owner (TFO) application pursuant to the *Hydro and Electric Energy Act* (HEEA). The Board understands that the determination of which option will be driven by detailed routing considerations and finds that the approval of both options, with the understanding that ultimately only one will be used, is a practical and efficient solution to this concern. The Board expects that AESO will provide prompt notification of which option will be used when that determination is made.

The AESO also sought approval for Part B contingent upon the development of the Waterton Wind Farm. The Board agrees that the development of the proposed Waterton Wind Farm would establish the need for the Part B system development described in the NID. The Board also agrees that the proposed Part B facilities represent an acceptable means to address the identified need, if, or when, that need arises. The Board considers that the need for the Part B development will be realized upon the fulfilment of the following two conditions:

- (a) The EUB issues approvals pursuant to the HEEA with respect to the Waterton facilities of approximately 300 MW in generating capacity; and
- (b) The proponent of the Waterton Wind Farm commits to an SAS Agreement with AESO for approximately 300 MW.

The Board notes that AESO stated in its March 28, 2005 submission that it would return to the Board should material changes arise. The Board understands this to mean material changes to the

forecast generation and not just material changes to the applied for facilities. The Board also expects AESO to re-apply if additional facilities, or facilities other than those described in the application are necessary to address the identified need.

In order to provide additional transparency and, in light of the new evidence presented by AESO with respect to the updated generation forecast, the Board concurs with AESO that it should provide periodic updates on the progress of generation development in southwest Alberta to all interested parties, including the Board. The Board agrees with AESO that such updates should be coincident with

- The TFO's application for project approval pursuant to the HEEA, and
- Prior to the commencement of construction activities.

5 DECISION

For the reasons detailed above, the Board finds that AESO has established the need for enhancement and expansion of the SW Transmission System to alleviate constraint and improve system efficiency.

The Board finds that the both Option 1 and Option 2 would appropriately address the need identified. The Board also considers that AESO's Part B development will appropriately address the need for enhancement and expansion resulting from the development of the proposed Waterton Wind Farm.

The Board therefore approves the AESO's NID pursuant to Section 34 of the *Electric Utilities Act* (EUA) subject to the following condition:

The AESO shall not assign the Part B development to a TFO until

- The EUB issues approvals pursuant to the HEEA with respect to the Waterton facilities of approximately 300 MW in generating capacity; and
- The proponent of the Waterton Wind Farm commits to an SAS Agreement with AESO for approximately 300 MW.

Dated in Calgary, Alberta on May 17, 2005.

ALBERTA ENERGY AND UTILITIES BOARD

(original signed by)

J. R. Nichol, P.Eng.
Presiding Board Member

(original signed by)

J. D. Dilay, P.Eng.
Board Member

(original signed by)

Gordon J. Miller
Board Member

APPENDIX A – HEARING PARTICIPANTS

Name of Organization (Abbreviation) Counsel or Representative (APPLICANTS)	Witnesses
Alberta Electric System Operator (AESO) J. Smellie	N. Millar, P.Eng. N. Brausen, P.Eng. J. Billinton, P.Eng.
AltaLink Management Ltd. (AltaLink) Z. Lazic	T. Rutkunas, P.Eng. D. Walters C. Barton
TransAlta Utilities Corporation (TransAlta) T. Dalgleish, Q.C.	K. VanKoughnett, P.Eng. F. Gallagher J. Leskiw
Industrial Power Consumers Association of Alberta (IPCAA) D. Davies	D. Macnamara R. Gallant M. Drazen (of Drazen Consulting Group) R. Mikkelsen (of Drazen Consulting Group) P. Kos, P.Eng. (of Power System Solutions Inc.)
Piikani First Nation and Piikani Utilities Corporation/ATCO Electric Ltd. (Piikani/ATCO Group) R. Jeerakathil N. Sanderson	
City of Lethbridge (the City) J. Sparkes	
Pembina Institute for Appropriate Development (PIAD) J. Row	
ATCO Power Ltd. (ATCO Power) R. Lowe	
Municipal District of Pincher Creek (the MD) D. Hammond	D. Hammond
Town of Pincher Creek (the Town) A. Bonertz	A. Bonertz
New Generation Processors (NGP) B. Mowat	B. Mowat
Canadian Hydro Developers (Canadian Hydro) J. Keating, CA	

Name of Organization (Abbreviation) Counsel or Representative (APPLICANTS)	Witnesses
Alberta Energy and Utilities Board Board Staff J. P. Mousseau (Board Counsel) T. Chan, P.Eng. K. G. Gladwyn R. Guzman J. Wang	

APPENDIX B – PARTICIPANTS TO THE WRITTEN PROCESS

Alberta Electric System Operator (AESO)

Industrial Power Consumers Association of Alberta (IPCAA)

AltaLink Management Ltd. (AltaLink)

TransAlta Utilities Corporation (TransAlta)

Piikani First Nation and Piikani Utilities Corporation

Municipal District of Pincher Creek (the MD)

Canadian Hydro Developers (Canadian Hydro)