



October 29, 2010

Alberta Utilities Commission
Attention: Don Popowich
Director of Facilities
Fifth Avenue Place
4th Floor, 425 - 1 Street SW
Calgary, AB T2P 3L8

Dear Mr. Popowich:

Re: Application to the Alberta Utilities Commission (AUC) for approval of the Wild Rose 1 and Wild Rose 2 Wind Energy Connections Needs Identification Document

Please find enclosed the AESO application for approval of the Needs Identification Document for the proposed Wild Rose 1 and Wild Rose 2 Wind Energy Connections pursuant to section 34 of the *Electric Utilities Act*.

The AESO understands that AltaLink Management Ltd. will file the related facilities application shortly. The AESO requests that the Commission combine the NID and the facilities application and consider them together pursuant to section 15.4 of the *Hydro and Electric Energy Act*.

Please do not hesitate to contact either of the individuals below if you have questions or concerns regarding the foregoing:

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Manager, Regulatory Services
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Jill Grassi
NID Filings Coordinator
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403-539-2948

Yours truly,

A handwritten signature in black ink that reads 'David Michaud'. The signature is written in a cursive, flowing style.

David Michaud
Manager, Regulatory Services



Alberta Utilities Commission

In the Matter of the Need for the Wild Rose 1 and Wild Rose 2 Wind Energy Connections

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 Needs Identification Document for the Wild Rose 1 and Wild Rose 2 Wind Energy Connections

**Wild Rose 1 and Wild Rose 2 Wind Energy Connections
Needs Identification Document**

PART A - APPLICATION

1 Introduction

1.1 Application – Pursuant to section 34(1)(c) of the *Electric Utilities Act* (EUA) 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 (Commission) for approval of the Wild Rose 1 and Wild Rose 2 Wind Energy Connection Needs Identification Document (NID), as more specifically described herein.

1.2 Application Scope – Pursuant to section 11(2) of the *Transmission Regulation*, AR86/2007, the NID has been prepared as a single needs identification document in response to a request by NaturEner Energy Canada Inc. (the Customer) for connection of its 200 MW Wild Rose 1 (WR1) and 200 MW Wild Rose 2 (WR2) Wind Energy generating facilities (Facilities) to the Alberta Interconnected Electric System (AIES). The NID describes the need to respond to the Customer's request and demonstrates that the manner in which the connections are proposed to be developed provides a reasonable opportunity for the Customer to exchange electricity and is consistent with the AESO's long-term transmission forecasts and plans for the area.¹ The requested in-service dates for the new connections are March 31, 2013 for WR1 and July 1, 2013 for WR2.

1.3 AESO Directions – In the process of establishing need and preparing the NID, the AESO issued various directions to the incumbent transmission facility owner, AltaLink Management Ltd. (TFO), including, pursuant to subsection 35(1) of the EUA, a direction to prepare a transmission facility proposal (FA) to meet the identified need. As per section 39 of the EUA and section 14 of the *Transmission Regulation* (TReg), the AESO has relied on work conducted by the TFO to prepare this NID.

¹ This NID is directed solely to the question of the need for expansion or enhancement of the capability of the transmission system. Any reference to customers or other parties and/or the facilities they may, or may wish to, own and operate is not intended to associate this NID with any other application for regulatory or other approval that are the responsibility of such customer or other party.

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2 Need Overview and Proposed Development

2.1 Duty to Respond to Request for System Access Service – The AESO, pursuant to its responsibilities under section 29 of the EUA, must provide system access service on the transmission system in a manner that gives market participants a reasonable opportunity to exchange electricity. The market participant (the Customer) has requested connection of its Facilities to the AIES, thereby establishing the need for development. Through the AESO connection process, the Customer, the AESO and the TFO have collaborated in identifying the Proposed Development to meet the Customer needs.

2.2 Proposed Development – The Facilities will be located approximately 50 kilometres southeast of the City of Medicine Hat, Alberta and the Proposed Development is designed to be integrated with certain Southern Alberta Transmission Reinforcement² (SATR) facilities planned for the southeastern area of Alberta.

The Proposed Development in respect of WR1 generally includes construction of the new Elkwater 264S³ switching substation; approximately 36 kilometres of single circuit 240kV line rated at approximately 492 (summer)/606 (winter) MVA, to be designated 978L, between the Customer-owned Wild Rose 1 547S collector substation and the Elkwater 264S substation; approximately 77 kilometres of single circuit 240kV line rated at approximately 638 (summer)/788 (winter) MVA, to be designated 1009L, between the Bowmanton 244S substation⁴ and the Cypress 562S substation; rebuild of approximately 2 kilometres of single circuit 138kV 668L line in the vicinity of Empress 394S substation; and related connection, switchgear, telecommunication and protection and control equipment. The Proposed Development also includes the necessary

² Approved by the Commission in *Decision 2009-126* and *Approval U2010-264*.

³ Proposed substation and 240kV line designations are preliminary and subject to change. The designations are provided for ease of reference.

⁴ Bowmanton 244S substation forms part of the Southern Alberta Transmission Reinforcement specifically, the Cassils to Bowmanton project (TFO Application No. 1606402, Proceeding ID No. 748).

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modifications to Cypress 562S and Bowmanton 244S substations to accommodate the interconnection including a 50 MVAR shunt reactor at Bowmanton 244S substation. The point of connection for WR1 will be at the connection of 978L to the 240kV bus in the Wild Rose 1 547S substation.

The Proposed Development in respect of WR2 generally includes construction of approximately 1 kilometre of single circuit 240kV line rated at approximately 492 (summer)/606 (winter) MVA, to be designated 1076L, between the Customer-owned Eagle Butte 274S collector substation and the Elkwater 264S substation and construction of a 240kV bus and related termination, telecommunication and protection and control equipment at the Elkwater 264S substation to accommodate the interconnection of Eagle Butte 274S to the AIES. The Proposed Development for WR2 also includes the interconnection of Elkwater 264S substation to the 240kV double circuit lines 964/983L that run to the Whitla 251S substation⁵. The point of connection for WR2 will be at the connection of 1076L to the 240kV bus in the Eagle Butte 274S substation.

Details and configuration of equipment required for the Proposed Development will be more specifically described in the TFO's FA and/or determined as further detailed engineering progresses and the Customer's operating requirements are finalized. Routing of the transmission lines does not form part of this NID and will also be addressed in the TFO's FA. The Customer facilities that may be subsequently interconnected with the AIES are the responsibility of the Customer and are not included in this NID.

2.3 Proposed Development Cost – The TFO has estimated the in-service cost of the Proposed Development generally described in paragraph 2.2 to be in the order of \$83 Million (+20/-10%) in respect of WR1 and \$11 Million (+20/-10%) in respect of WR2 for a total Proposed Development Cost in the order of \$94 Million (+20/-10%). The

⁵ The 240kV transmission lines 964/983L and the Whitla 251S substation form part of the Southern Alberta Transmission Reinforcement specifically, the Bowmanton to Whitla project (TFO Application No. 1606403 and AESO Application No. 1606564, Proceeding ID No. 748).

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estimated cost is comprised of both system and customer-related costs as further described in paragraph 2.4

The AESO and the TFO originally considered two possible interconnection arrangements each of which would integrate with SATR and connect the Facilities to the AIES via Elkwater 264S substation but with differing line configurations connecting WR1 and WR2.

Alternative 1 entailed:

- WR1 connected to Elkwater 264S with a 240 kV double circuit transmission line on to Bowmanton 244S.
- WR2 connected to a separate 240 kV switching substation with a double circuit 240kV transmission line connection via Elkwater 264S to Bowmanton 244S.

Alternative 2 entailed:

- Connecting both WR1 and WR2 to Elkwater 264S on single circuit 240 kV transmission lines.
- Connecting Elkwater 264S to Bowmanton 244S with a double circuit 240 kV transmission line.

Based on siting considerations, Alternative 2 was selected as the preferred option and forms the basis for the technical studies and cost estimates appended hereto.

2.4 Customer Commitments – Consistent with the rated capacity of its Facilities, the Customer is prepared to sign a Supply for Transmission Service (STS) contract for the Proposed Development upon energization of the Proposed Development; contractual arrangements between the AESO and the Customer will be made prior to energization. As of this NID filing date, the AESO has assessed the Proposed Development to be comprised of a customer and a system component. The system component is associated with facilities that provide system benefits beyond serving the direct needs of the Customer. Of the total estimated cost, the customer portion is

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estimated at approximately \$89M and the system portion is estimated at approximately \$5M.

2.5 AESO Participant Involvement Program – The AESO directed the TFO to assist the AESO in conducting a Participant Involvement Program (PIP), in accordance with AUC Rule 007, NID13 and Appendix A. The TFO and the AESO used various methods to notify and, as necessary, consult stakeholders of the need for the Proposed Development. The PIP was conducted in May – October 2010 and the AESO is not aware of any outstanding concerns related to its assessment of the need for the Proposed Development.

2.6 Environmental and Socio-Economic Overview – As set out in the attached Appendix E, the AESO has been advised that the TFO's FA will contain information in respect of Commission Rule 007, Section 6.1 – NID12. The AESO understands that the TFO considered potential environmental effects of the Proposed Development and in identifying the preferred transmission line route. As potential environmental effects are related to siting, routing and on-going operations of the Proposed 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.

2.7 AESO Connection Assessment – The 400 MW generating Facilities, located approximately 50 kilometres southeast of the City of Medicine Hat, Alberta, align with the AESO's wind generation forecast included as part of the Hanna Region Transmission Development Needs Identification Document⁶ and the Southern Alberta Transmission Reinforcement Need Identification Document. Load forecasts used in the Engineering Study attached hereto as Appendix B (Study) were approximately 8% less

⁶ The AESO received Alberta Utilities Commission approval of the Hanna Region Transmission System Development Needs Identification Document in *Decision 2010-188 and Approval U2010-135*. The AESO filed with the Commission amendments to *Approval U2010-135* on August 31, 2010 (Application No. 1606434, Proceeding ID No. 768) and on September 1, 2010 (Application No. 1606526, Proceeding ID No. 748). These amendments do not affect the generation forecast included in the original HRTD NID filed with the Commission on August 14, 2009.

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for 2012 and 2% greater for 2013 than the AESO's most recently published load forecast⁷ for the area. The AESO has reviewed the differences in load forecasts and concluded that there is no material effect to the Study results; the AESO's review and acceptance of load forecasts used in the Study is attached in Appendix A.

The Study includes steady state, dynamic and short circuit analyses to evaluate the impact of the proposed Facilities interconnection on the transmission system for existing system, pre-SATR (2012) and post-SATR (2013) conditions. The Study shows that under normal and Category B and C contingency conditions, interconnection of the Facilities increases local, Calgary region and system wide overloading. Most of the local violations will be mitigated by SATR upgrades planned for 2013. Violations that are not addressed by SATR include those in the Calgary region and system wide concerns in the Red Deer/Nevis area and the Langdon to Janet 240kV path. Planned upgrades for the 911L line between Janet and Peigan will mitigate some of the violations and the AESO is currently finalizing its transmission development plans for the Foothills area which are expected to address the remaining overloads in the Calgary region. The AESO currently has another study underway that is expected to address, as part of the overall transmission system, overload conditions in the Red Deer/Nevis area. Until such time as the planned reinforcements are in place, the AESO will develop Remedial Action Schemes (RAS) to run back or remove the Facility generation from the system as system constraints require⁸.

2.8 Approval is in the Public Interest – Having regard to sections 29 and 34 of the EUA, information obtained from consultations, estimated costs, and the AESO's connection assessment, it is the conclusion of the AESO that the Proposed Development provides a reasonable opportunity for the Customer to exchange

⁷ Future Demand and Energy Outlook (2009 – 2029) can be located at http://www.aeso.ca/downloads/AESO_Future_Demand_and_Energy_Outlook.pdf

⁸ Details of any interim operational measures that may be necessary are not available at this time. While the AESO develops appropriate Rules (including RAS) and practices to address transmission constraints that may materialize from time to time, the creation and management of these Rules pertain to operational matters that are beyond the scope of this NID.

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electricity and that connection to the grid as proposed is consistent with other system plans for the southeastern Alberta area. In consideration of these factors, the AESO believes that approval of the Wild Rose 1 and Wild Rose 2 NID is in the public interest.

3 Request to Combine the NID and FA for Consideration in a Single Process

3.1 The AESO understands that the TFO's FA noted in paragraph 1.3 above will be filed shortly. As contemplated by section 15.4 of the *Hydro and Electric Energy Act* and section 6 of Commission Rule 007, the AESO requests and expects the TFO will also request that the Wild Rose 1 and Wild Rose 2 Wind Energy Connection NID be combined with the FA for consideration by the Commission in a single process. An evident advantage of doing so will be to enable the Commission to consider factors and information in the FA that are relevant to the issue of need.

3.2 While it is believed that the information contained in the NID and the FA will be materially consistent, the AESO respectfully requests that in its consideration of both, the Commission give consideration to the fact that the two documents have been prepared separately and for different purposes. The purpose of the Wild Rose 1 and Wild Rose 2 Wind Energy Connection NID is to obtain approval for the identified need and provide a preliminary description of the preferred manner for meeting that need. In contrast, the FA will contain more detailed engineering and designs for the proposed development and seek approval for the construction and operation of specific facilities.

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4 Relief Requested

4.1 Having regard to the factors set out in section 38 of the TReg, and in particular, subsection 38(e), the AESO submits that its assessment of the need to meet the Customer's request is technically complete, and that the manner proposed to meet the identified need is consistent with AESO long-term forecasts and transmission system plans. As such, the AESO believes that approval of the NID is in the public interest.

4.2 As such, and for the reasons set out, the AESO requests that the Commission approve the proposed Wild Rose 1 and Wild Rose 2 Wind Energy Connection NID to meet the needs of the Customer's request.

All of which is respectfully submitted this 29th day of October 2010.

Alberta Electric System Operator



Doyle Sullivan, P. Eng.
Director, Regulatory Services

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PART B – NID BACKGROUND AND SUPPORTING INFORMATION

1. AESO Planning Duties and Responsibilities – The AESO’s responsibilities with respect to the safe, reliable, and economic operation of the Alberta Interconnected Electric System (AIES) and for the promotion of a fair, efficient and openly competitive market for electricity in Alberta are set out in the EUA and the TReg. As directed by section 33 of the EUA, the AESO must forecast transmission needs for 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. Part 2 of the TReg further defines the AESO’s transmission planning duties and responsibilities. Part 3 of the TReg directs the AESO to comply with, adopt, develop, and maintain the transmission system reliability standards, agreements, criteria and directives necessary to the execution of its duties.

2. Preparation and Submission of NID – As noted in section 2.1 of Part A, the AESO must provide system access service on the transmission system in a manner that gives market participants (including customers) a reasonable opportunity to exchange electricity. Where, as in this case, the Customer is requesting system access for its Facilities, and in responding to the Customer’s request the AESO has identified system expansions or enhancements, the AESO must prepare and submit for Commission approval, a NID that describes the need to respond to the Customer’s request and the assessments conducted by the AESO regarding the manner proposed to address that need.

3. Direction to the TFO to Prepare a FA – Pursuant to subsection 35(1) of the EUA, the AESO directs the TFO in whose service territory the need is located to prepare a FA to meet the need identified. The FA is also submitted to the Commission for approval. As noted in paragraph 1.3 of Part A, such a direction has been given to the TFO in this case. As further noted in Section 3 of this application, the AESO has requested that the NID and FA be combined for consideration in single process; the

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AESO recognizing that to combine needs applications and facility applications where possible provides a simpler, more efficient process for participation by interested parties.

The remainder of this NID provides information in support of this filing.

4. AESO Assessment and Acceptance of Engineering Study – Appendix A contains the AESO’s Assessment and Acceptance of the Engineering Study including the system topology and generation dispatch assumptions and the impact of changes in the area load forecast.

4. Engineering Study Report – Appendix B contains the Engineering Study Report including the impact of the proposed generation connection on the existing system. The report describes the study scope, related projects and future transmission development assumptions.

5. AESO Participant Involvement Program – Appendix C contains a summary of the Participant Involvement Program (PIP) activities conducted regarding the need for the Wild Rose 1 and Wild Rose 2 Wind Energy Connection; a summary of PIP results is also included. Copies of the relevant materials distributed during the PIP are attached for reference.

6. TFO Cost Estimates – Appendix D contains the detailed cost estimate for the Proposed Development that has been prepared by the TFO according to the AESO’s direction. The estimate is prepared to an approximate accuracy level of (+20%/-10%), which exceeds the accuracy requirement of AUC Rule 007, NID10.

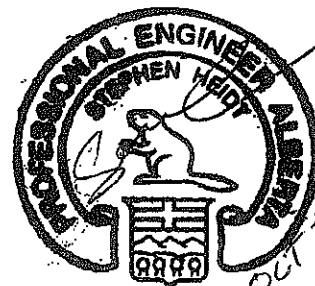
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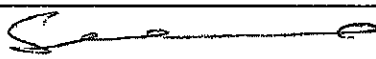
Appendices

- Appendix A – Wild Rose 1 and Wild Rose 2 Interconnections – AESO Assessment and Acceptance of Engineering Study
- Appendix B – Engineering Study NaturEner Canada Wild Rose 1 & 2 Wind Project
- Appendix C – Participant Involvement Program (PIP) Summary and Materials
- Appendix D – TFO Capital Cost Estimates
- Appendix E – TFO Confirmation of AUC Rule 007 NID 12

**APPENDIX A WILD ROSE 1 AND WILD ROSE 2
INTERCONNECTIONS - AESO ASSESSMENT AND ACCEPTANCE OF
ENGINEERING STUDY**

**APPENDIX A WILD ROSE 1 AND WILD ROSE 2
INTERCONNECTIONS - AESO ASSESSMENT AND ACCEPTANCE OF
ENGINEERING STUDY**



Role	Name	Signature	Date
Approved	Steve Heidt, P.Eng.		OCT 29/10



Wild Rose 1 and Wild Rose 2 Interconnections – AESO Assessment and Acceptance of Engineering Study

1.0 Overview

Under the AESO's new connection process implemented in early 2010, the customer has the alternative of engaging the Transmission Facility Owner (TFO) or engaging a consultant to conduct an engineering study to assess the technical adequacy of the proposed connection. This approach was discussed with NaturEner in October 2009. NaturEner Wild Rose 1 Energy Inc. and NaturEner Wild Rose 2 Energy Inc. (collectively, NaturEner) elected to engage Electranix (Consultant) to perform the Engineering Study to meet the AESO's requirements in respect of the Wild Rose 1 and Wild Rose 2 wind generating facilities connection.

This document, as Appendix A of the AESO Needs Identification Document for the Wild Rose 1 and Wild Rose 2 Wind Energy Connections (NID), provides:

1. The AESO's assessment of the Engineering Study results, and
2. The basis for the AESO's acceptance of the Engineering Study.

1.1 Project Development Summary

The Wild Rose 1 and Wild Rose 2 wind projects have been under development with the AESO and the TFO, AltaLink Management Ltd. (AltaLink) since 2005. In December 2007, the AESO filed an Abbreviated Needs Identification Document, Application No. 1550228 (ANID) for a connection concept that included both Wild Rose 1 and Wild Rose 2 connected by a dedicated 240 kV transmission line between the wind farm area and the Cypress 562S substation. NaturEner was to design, construct, and commission the connection facilities and then transfer such facilities to AltaLink to own, maintain and operate. Given potential changes to the project, the AESO withdrew the ANID application in December 2008.

The AESO, AltaLink and NaturEner continued with development studies until Q4 2009 when the AESO decided, with the agreement of the other parties, to integrate the Wild Rose 1 and Wild Rose 2 connections with some of the early stage transmission facilities planned as part of the Southern Alberta Transmission Reinforcement (SATR)¹. This approach would reduce the overall area footprint of transmission lines in close proximity and create a more efficient system overall in southeast Alberta. Technical Studies

¹ Approved by the Commission in *Decision 2009-126* and *Approval U2010-264*.



contemplating integration with SATR were initiated in December 2009 and have now been completed to form part of this NID application as the Engineering Study.

The in service date for the Wild Rose 1 connection facilities is March 31, 2013. The In service date for the Wild Rose 2 connection facilities is July 1, 2013.

1.2 Modeling Assumptions

Section 2.0 of the Engineering Study provides the criteria and assumptions used in the study models. A variety of base models were provided by the AESO to the Consultant in November and December 2009. These base models provided area loads for the in service years of 2012 and 2013. The consultant was instructed to provide existing system, Pre SATR, and Post SATR analysis. Southeast Alberta is a summer peaking area. Summer peak and summer light load modeling assumptions as provided by the AESO to the Consultant are contained in Section 2.2 (Table 2—3) of the Engineering Study.

The scoping and model preparation for the Wild Rose projects was begun in November, 2009. Models were created with the area load assumptions being used by the AESO Planning Group for their studies at the time. These models were provided to the Consultant as the basis of the development of specific cases to be used in the analysis. The area load assumptions used in the models prepared for the analysis have been compared to the most recently published AESO FC2009 forecast, published in February of 2010. Certain differences have been identified. Table 1.2-1 provides a comparison of the differences in MW values between the area load assumptions and the FC2009 forecast.

Table 1.2-1 Comparison of Base Case Area Load Assumptions to FC2009 Forecast

	AESO FC2009 Forecast for 2012 Summer Peak (MW) (February 2010)	Engg Study Base Case 2012 Summer Peak (MW) (November 2009)	MW Base Case Above (below) FC2009	AESO FC2009 Forecast for 2013 Summer Peak (MW) (February 2010)	Engg Study Base Case 2013 Summer Peak (MW) (November 2009)	MW Base Case Above (below) FC2009
Study Area Total	1156	1066	(90)	1200	1226	26
Total % Difference			-8%			2%



As shown in Table 1.2-1, the total percentage difference between the area forecasts between the FC2009 and the assumptions used in the model for 2012 is approximately negative 8% whereas the total difference for 2013 is approximately 2%.

A check on the impact of the differences in 2012 was made using one of the cases developed for the Engineering Study. The area loads in the model were adjusted to match the FC2009 forecast values and the steady state load flow rerun with the same approach as used in the Engineering Study for case S4C2GGA. This case represents full output of the Wild Rose 1 and Wild Rose 2 projects with the system topology used in the 2012 model. A comparison of the analysis is shown in Table 1.2-2.

Table 1.2-2-Comparison of Violations in Engineering Study versus FC2009 Sensitivity (Case S4C2GGA)

Figure	Overloaded element	% Overload Eng. Study	% Overload FC2009 Loads	Effect on Eng Study Results
S4GGA_N0	None	-	-	
S4GGA_E1	West Brook 7 to Bassano Tap 138kV	103%	98%	None
S4GGA_E5	Chappice Lake 7 to Medicine Hat 7 138kV	117%	121%	None
S4GGA_E5	Chappice Lake 7 to Glenridge 138kV	125%	129%	None
S4GGA_E5	Cypress 1 to Glenridge 138kV	126%	130%	None
S4GGA_E7	Ellerslie to Argyll 240kV	102%	102%	None
S4GGA_E14	Empress A7 to Cypress 1 138kV	123%	123%	None

As would be expected, due to the increased load growth projected in the Vauxhall and Lethbridge areas in the FC2009 forecast over the area load assumptions used in the Engineering Study, the flows over the line from Cypress to Medicine Hat would be increased. However, even with the increases on this circuit, there would be no difference to the overall impact to the necessary remedial action scheme (RAS) requirements and other conclusions arrived at by the AESO based on the results of the Engineering Study.

As a more broad comparison, the results for the above sensitivity using the area load forecasts from FC2009 were directly compared to the Engineering Study. A comparison shows that the changes in flows on area lines due to using the FC2009 forecast are not material.



Due to the minimal impact on results with the 8 % difference in forecast loads for 2012, the AESO considered that there was no need to perform a similar sensitivity with the 2 % difference in the 2013 forecast numbers.

The AESO considers the results provided in the attached Engineering Study as acceptable for determining the impact of the Wild Rose 1 and Wild Rose 2 projects to the system and that the difference in flows resulting from use of the FC2009 forecast are not material. Based on the results represented above as a check on the FC2009 area load forecasts, there will be no changes in the requirements for RAS or other project connection issues from those identified by the AESO using the results contained in the Engineering Study.

1.3 System Topology Assumptions

The Hanna Region Transmission Development Needs Identification Document was approved by the AUC in *Decision 2010-188* and *Approval No. U2010-135*. Due to the uncertainty of the schedule for the Hanna improvements at the time the Engineering Study was initiated, the Engineering Study was conservative in not including any of the Hanna Area upgrades in the models.

The AESO is also considering potential solutions to problems in the Calgary area. These improvements are referred to as the Foothills Area Transmission Development (FATD). At the time the study of the Wild Rose project commenced, there were no definitive proposals for these improvements. Therefore, the Engineering Study made assumed topology changes in the area to accommodate the analysis.

The Post-SATR improvements were associated with the a) connections from Bowmanton to Cassils and the associated switchyards, b) the reconnection of the 138kV system at Medicine Hat and c) the 240kV facilities west of Elkwater (264S) substation to and including the Whitla (251S) substation.

The AESO has reviewed and considers the system topology assumptions used in the Engineering Study to be acceptable.

AESO has reviewed the assumed transmission line ratings and believes the ratings used in Table 2-7 are appropriate.

1.4 Generation Dispatch Assumptions

The AESO has reviewed and considers the generation dispatch assumptions used in the Engineering Study to be acceptable.



1.5 Important Engineering Study Results

This Engineering Study for the Wild Rose connection underscores the urgency of need to complete the SATR and HATD development to allow the connection of wind generation in Southern Alberta and for it to have access to the market with reduced transmission congestion. This need is supported by the higher level of transmission system violations shown in the case topology without the SATR than are shown in the case topology that includes certain SATR facilities.

The results of the analysis for the pre SATR transmission topology indicate that system violations can occur with the levels of generation used in the model. These results point to the need for RAS to be developed as a protection for the system until improvements called for in the SATR and Hanna NIDs are implemented. Also, the results indicate that generation dispatch levels, interchange levels with BC and Saskatchewan and load levels will have to be carefully monitored and generation managed accordingly to maintain system reliability. The level of management is expected to decrease as system upgrades are made and load grows in the South system.

The results indicate that the line rating of the 138kV circuit between Empress and Cypress is inadequate. The Wild Rose 1 Interconnection project scope includes the upgrading of this circuit.

1.6 AESO Acceptance

The results of this analysis are consistent with studies performed for the SATR and Hanna area NIDs. In addition, known system issues, such as the south of Anderson stability concerns, have been shown in the analysis. The results also indicate the importance of the SATR to open the opportunity for additional wind generation to connect to the system without significant RAS and market operation curtailments.