December 18, 2015

Wade Vienneau
Executive Director, Facilities Division
Alberta Utilities Commission
Fifth Avenue Place
4th Floor, 425 – 1st Street SW
Calgary, Alberta T2P 3L8

Dear Mr. Vienneau:

Re: Application to Amend Alberta Utilities Commission ("Commission") Southern Alberta Transmission Reinforcement ("SATR") Needs Identification Document Approval No. U2014-461 (the "SATR NID Approval")

---

1. Pursuant to the *Electric Utilities Act,* S.A. 2003, c. E-5.1 ("EUA") and the *Alberta Utilities Commission Act,* S.A. 2007, c. A-37.2 ("AUCA"), the Alberta Electric System Operator ("AESO") applies to the Commission to amend the SATR NID Approval, to reconfigure certain of the Medicine Hat area 138 kV transmission system reinforcements approved in the SATR NID Approval, as more particularly described below ("Application"). The reconfiguration is required to respond to a system access service request ("SASR") submitted to the AESO by the City of Medicine Hat ("COMH").

Organization of this Application

2. This Application is organized as follows:

    - Background
      – SATR NID Approval
      – City of Medicine Hat Connection and the Approved SATR NID System Upgrades
    - Proposed Amendments
    - Rationale for Proposed Amendments
    - Additional Information
      - The Need for the Medicine Hat 138 kV Reinforcements Has Not Changed
      - Technical Considerations
      - Cost Considerations

- AESO Participant Involvement Program
- Information in Regards to Rule 007, Section 6.1 - NID13
- Request to Combine

- Request for Approval
- Attachment 1 – *Connection Engineering Study Report for AUC Application, City of Medicine Hat AIES Interconnection*
- Attachment 2 – AltaLink Cost Estimates
- Attachment 3 –Participant Involvement Program
- Attachment 4 – AltaLink Confirmation Regarding Rule 007, Section 6.1 - NID13

Background

SATR NID Approval

3. On December 30, 2008, the AESO applied to the Commission for approval of its needs identification document for transmission reinforcement in southern Alberta ("SATR NID"). The Commission approved the SATR NID in Decision 2009-126[1] and Approval No. U2009-340.

4. Pursuant to Decision 2009-126,[2] the AESO filed its finalized milestones and monitoring process for SATR with the Commission on December 7, 2009. The Commission approved the finalized milestones and monitoring process in Decision 2010-343[3] and Approval No. U2010-264.

5. Subsequent amendments to Approval No. U2010-264 culminated in the SATR NID Approval.

6. The SATR NID Approval reflects a three-stage approach to the SATR, and specific development activities are described in the SATR NID Approval under each stage.

7. Paragraph 8, Stage I of the SATR NID Approval approved the following 138-kV transmission system upgrades in the Medicine Hat area:

[1] Decision 2009-126: Alberta Electric System Operator *Needs Identification Document Application, Southern Alberta Transmission Reinforcement*, Application No. 1600862, Proceeding No. 171, September 8, 2009.

[2] Decision 2009-126 at paragraph 116

[3] Decision 2010-343: Alberta Electric System Operator *Finalized SATR Milestone Identification and Monitoring Process Filing*, Application No. 1606274, Proceeding No. 681, July 19, 2010.

2500, 330-5th Avenue SW, Calgary, Alberta T2P 0L4 Phone: 403-539-2450 Fax: 403-539-2949
www.aeso.ca www.poweringalberta.com

8. Medicine Hat 138-kV transmission system upgrades consisting of:

(a) a new 138-kV transmission line from Medicine Hat 2 substation to Medicine Hat 41S substation;

(b) rerouting of a 138-kV transmission line 760L from Medicine Hat substation to Chappice Lake 649S substation;

(c) extension of a 138-kV transmission line 892L from Medicine Hat substation to Suffield 895S substation;

(d) a new 138-kV transmission line from Medicine Hat 2 substation to Bullshead 523S substation; and

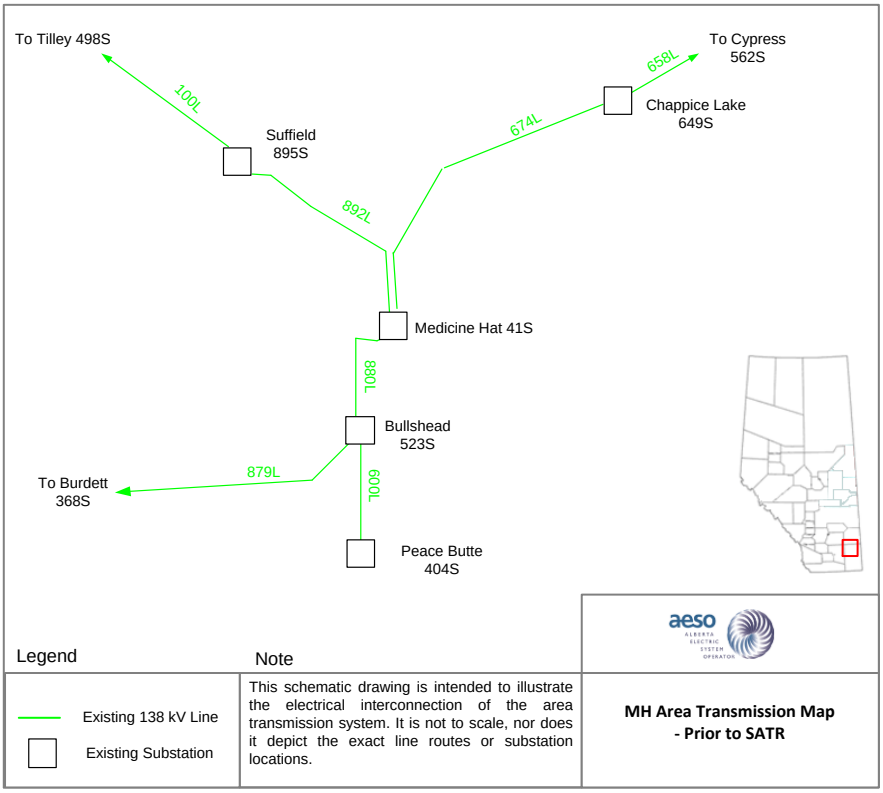
(e) a new 138-kV transmission line from Medicine Hat 2 substation to Burdett 368S substation.

City of Medicine Hat Connection and the Approved SATR NID System Upgrades

8. As shown in Figure 1 below, the COMH currently connects to the Alberta interconnected electric system ("AIES") through the Medicine Hat 41S substation.

2500, 330-5th Avenue SW, Calgary, Alberta T2P 0L4 Phone: 403-539-2450 Fax: 403-539-2949
www.aeso.ca www.poweringalberta.com

Figure 1: Medicine Hat Area Transmission System – Prior to Approved SATR NID System Upgrades



9. In the SATR NID, the AESO recommended 138 kV transmission system reinforcements in the Medicine Hat area including: (i) the new 240/138 kV "Medicine Hat 2 substation", now energized and designated as Bowmanton 244S substation and (ii) reconfiguring the 138 kV system in the area to connect the Medicine Hat 41S and Bullshead 523S substations to Bowmanton 244S substation.[4]

[4] SATR NID, Section 7.1.4

2500, 330-5th Avenue SW, Calgary, Alberta T2P 0L4 Phone: 403-539-2450 Fax: 403-539-2949
www.aeso.ca www.poweringalberta.com

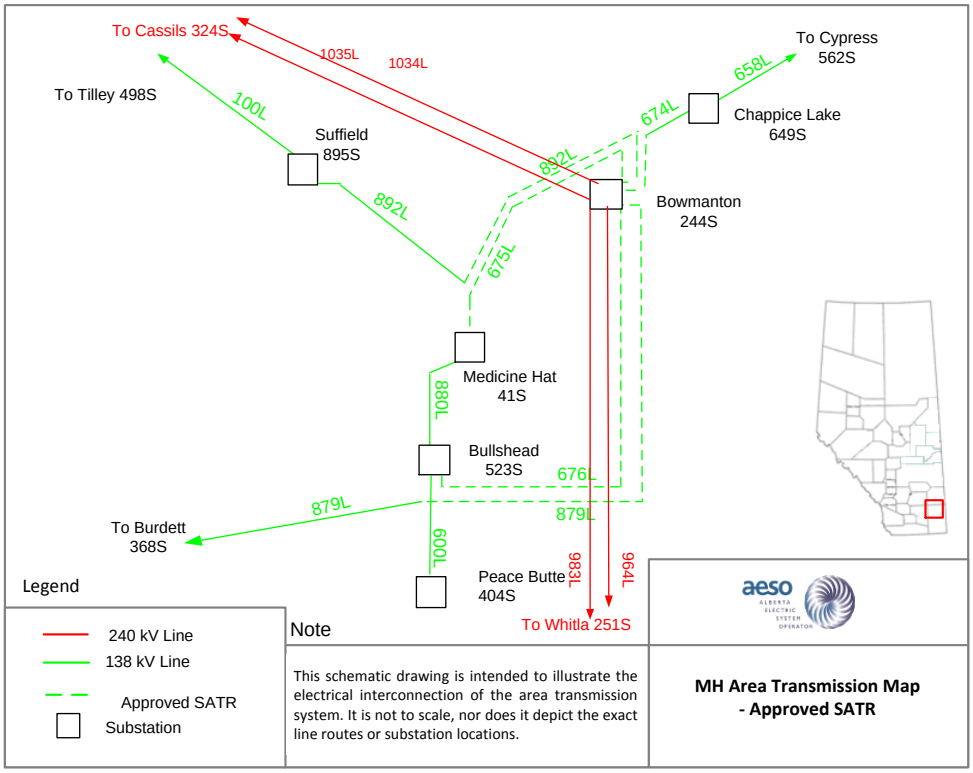
10. As shown in Figure 2, the Medicine Hat area 138 kV system reinforcements included:

    - a new 138 kV transmission line, now designated as 675L, to replace the existing 138 kV transmission line 674L between the Medicine Hat 41S and Bowmanton 244S substations;[5] and
    - extending the existing transmission line 892L from Suffield 895S substation to Bowmanton 244S substation and the removal of the approximately two kilometre southern section of 892L that would no longer be needed for transmission purposes.[6]

[5] SATR NID Approval Stage 1, Paragraph 8. (a).
[6] SATR NID Approval Stage 1, Paragraph 8. (c).

2500, 330-5th Avenue SW, Calgary, Alberta T2P 0L4 Phone: 403-539-2450 Fax: 403-539-2949
www.aeso.ca www.poweringalberta.com

Figure 2: Medicine Hat Area Transmission System – After Approved SATR NID System Upgrades



Proposed Amendments

11. For the reasons provided below, the AESO requests that the Commission delete paragraph 8 (a), Stage I of the SATR NID Approval in its entirety and replace it with the following (proposed amendments are shown in bold):

2500, 330-5th Avenue SW, Calgary, Alberta T2P 0L4 Phone: 403-539-2450 Fax: 403-539-2949
www.aeso.ca www.poweringalberta.com

8. Medicine Hat 138-kV transmission system upgrades consisting of:

(a) a new 138-kV transmission line, ***designated 675L, from Bowmanton 244S substation to the proposed Al Rothbauer 321S switching station***[7]*;*

12. The AESO also seeks to amend the SATR NID Approval to clarify the description of the approved developments by deleting paragraphs 8(b) – 8(e), Stage I of the SATR NID Approval in their entirety and replacing with the following:

8. Medicine Hat 138-kV transmission system upgrades consisting of:

(b) rerouting of a 138-kV transmission line ***674L*** *from* ***Bowmanton 244S*** *substation to Chappice Lake 649S substation;*

(c) extension of a 138-kV transmission line 892L ***from Suffield 895S substation to Bowmanton 244S substation****;*

(d) a new 138-kV transmission line from ***Bowmanton 244S*** *substation to Bullshead 523S substation; and*

(e) a new 138-kV transmission line from ***Bowmanton 244S*** *substation to Burdett 368S substation.*

13. The AESO also requests that the Commission amend paragraphs 4 and 5, Stage I of the SATR NID Approval to replace "Medicine Hat 2 substation" with "Bowmanton 244S substation", to reflect the current substation designation.

[7] Final termination of 675L at the Al Rothbauer 321S substation is to be addressed by the Commission's approval of Application 21189-A001.

2500, 330-5th Avenue SW, Calgary, Alberta T2P 0L4 Phone: 403-539-2450 Fax: 403-539-2949
www.aeso.ca www.poweringalberta.com

Rationale for Proposed Amendments

14. On April 17, 2012, the COMH submitted a SASR to the AESO for the COMH's proposed MHS-7 substation, to be located approximately two kilometres north of the Medicine Hat 41S substation. In the SASR, the COMH also requested that its point of connection ("POC") with the AIES be relocated from the Medicine Hat 41S substation to the proposed MHS-7 substation that the COMH will construct, own and operate.

15. The Medicine Hat 41S substation will be discontinued from transmission use and the AESO understands that ownership of the Medicine Hat 41S substation will be transferred to the COMH**,** for use by the COMH within its service area.

16. In response to the COMH's SASR, the AESO identified the need for a new 138 kV switching station, designated as the Al Rothbauer 321S substation, to serve as the POC between the AIES and the COMH's MHS-7 substation. Consequently, the AESO submitted the *Al Rothbauer 321S Substation Needs Identification Document*, Application No. 21189-A001, Proceeding ID No 21189, for Commission approval on December 18, 2015 ("321S NID"). The AESO's preferred connection for the Al Rothbauer 321S substation is dependent upon the Commission's approval of the amendment sought in this Application.

17. In this Application, the AESO is seeking to amend the SATR NID Approval to reflect the reconfiguration of the 138 kV transmission system in the Medicine Hat area required to enable the Al Rothbauer 321S substation connection. Specifically:[8]

    - Prior to completion of the Al Rothbauer 321S substation, the new 138 kV transmission line 675L from the Bowmanton 244S substation will connect to the existing 138 kV transmission line 674L in the vicinity of the proposed Al Rothbauer 321S substation. This interim connection of transmission line 675L is required to maintain connectivity to the existing Medicine Hat 41S substation during construction of the Al Rothbauer 321S substation.

    - Upon completion of the Al Rothbauer 321S substation, transmission line 675L will be disconnected from the existing transmission line 674L and terminate at the Al Rothbauer 321S substation. Transmission line 675L will be approximately two kilometres shorter by terminating at the Al Rothbauer 321S substation instead of the Medicine Hat 41S substation, as originally approved.

[8] The proposed amendment affects facilities approved under the SATR NID Approval that have yet to be constructed.

2500, 330-5th Avenue SW, Calgary, Alberta T2P 0L4 Phone: 403-539-2450 Fax: 403-539-2949
www.aeso.ca www.poweringalberta.com

18. The termination of 138 kV transmission line 675L at the Al Rothbauer 321S substation is addressed by the 321S NID, along with the following:[9]

    - Discontinue the Medicine Hat 41S substation from transmission use.

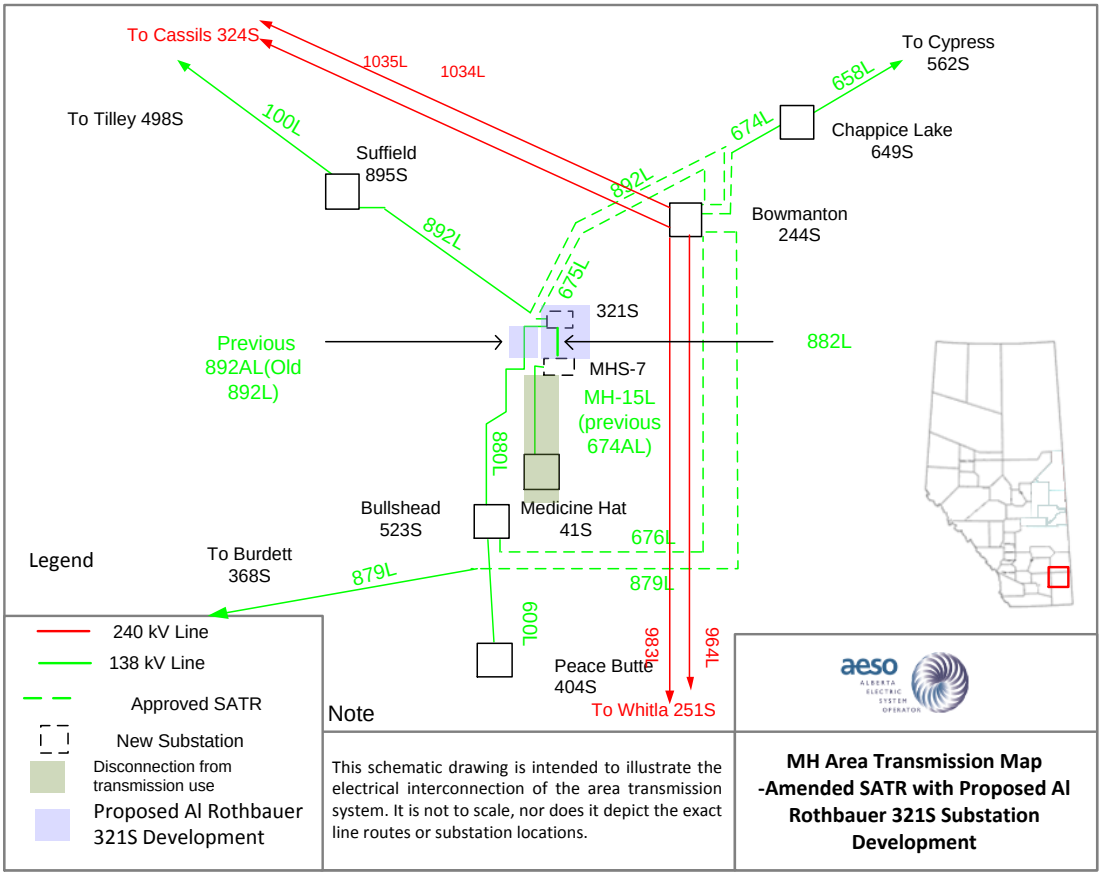
    - Existing transmission line 880L will be disconnected from the Medicine Hat 41S substation and connected to the Al Rothbauer 321S substation to maintain connectivity to the Bullshead 523S substation. The existing transmission line 892L in the vicinity of the Medicine Hat 41S substation that was planned to be removed under the approved SATR configuration, will now be retained and form part of the 138 kV transmission line 880L.

19. Figure 3 shows the Medicine Hat area transmission system following the reconfiguration proposed in this Application and the developments proposed in the 321S NID.

[9] A complete description of the Al Rothbauer 321S switching station connection is included in the 321S NID.

2500, 330-5th Avenue SW, Calgary, Alberta T2P 0L4 Phone: 403-539-2450 Fax: 403-539-2949
www.aeso.ca www.poweringalberta.com

Figure 3: Medicine Hat Area Transmission System – After the Reconfigured SATR NID Medicine Hat area 138 kV System Reinforcements and the Proposed Al Rothbauer 321S Switching Station Development



2500, 330-5th Avenue SW, Calgary, Alberta T2P 0L4 Phone: 403-539-2450 Fax: 403-539-2949
www.aeso.ca www.poweringalberta.com

Additional Information

The Need for the Medicine Hat 138 kV Reinforcements Has Not Changed

20. In the SATR NID, the AESO explained that the 138 kV reinforcements in the Medicine Hat area provide the benefit of creating a new supply source for the region, as well as serving as a collection point for new generation in the area.[10]

21. This Application seeks to amend specific components of the Medicine Hat 138 kV reinforcements to accommodate a local interconnection to the transmission system. The amendment does not result from a change in the need for the expansion or enhancement of the capability of the transmission system described in the SATR NID, nor does the amendment change the need on which the SATR NID Approval is based.

Technical Considerations

22. In preparation of the 321S NID, the AESO conducted power flow, voltage stability, transient stability and short circuit analyses to assess the transmission system performance prior to and following the reconfiguration proposed in this Application and the connection of the proposed Al Rothbauer 321S substation (*Connection Engineering Study Report for AUC Application, City of Medicine Hat AIES Interconnection*, dated December 17, 2015, included as Attachment 1).

23. The analyses indicate that this Application is consistent with the AESO's long-term transmission system plans for the area and that the studied developments will not cause thermal overloads or voltage violations, the system has sufficient voltage stability margins for the COMH to import from and export to the AIES, and the system remains stable under normal fault clearing conditions.

Cost Considerations

24. Pursuant to Section 39 of the EUA, the AESO directed the transmission facility owner, AltaLink Management Ltd. ("AltaLink"), to prepare a report describing the cost differences of the approved Medicine Hat 138 kV transmission system upgrades and the reconfiguration proposed in this Application. A copy of AltaLink's cost estimates and explanation of the cost differences are included in Attachment 2.

[10] SATR NID Section 7.1.4.

2500, 330-5th Avenue SW, Calgary, Alberta T2P 0L4 Phone: 403-539-2450 Fax: 403-539-2949
www.aeso.ca www.poweringalberta.com

25. As noted in paragraph 17, the proposed reconfiguration would reduce the length of 138 kV transmission line 675L by approximately two kilometres and avoid approximately two kilometres of 138 kV transmission line 892L removal. AltaLink has estimated the transmission system cost savings associated with this Application to be approximately $4 million (2016$, +20%/-10%).

AESO Participant Involvement Program

26. Pursuant to Section 39 of the of the EUA, the AESO directed AltaLink to assist the AESO in conducting a participant involvement program ("PIP") in accordance with the requirements of NID14 and Appendix A2 of Commission Rule 007: *Applications for Power Plants, Substations, Transmission Lines, Industrial System Designations and Hydro Developments* ("Rule 007"). Between July and December 2015, AltaLink and the AESO notified stakeholders of the proposed SATR NID Approval amendments, including industry and landowners, occupants, residents and agencies in the area of the proposed reconfiguration. The AESO is not aware of any concerns related to the proposed SATR NID Approval amendments. Additionally, the AESO notified the public in the area of the proposed reconfiguration of its intention to file this Application with the Commission for approval. No concerns or objections have been raised regarding the need for the proposed SATR NID Approval amendments. A report summarizing the AESO's PIP is included as Attachment 3.

Information in Regards to Rule 007, Section 6.1 - NID13

27. Pursuant to Section 39 of the EUA, the AESO directed AltaLink to prepare a facility proposal amendment ("Facility Proposal Amendment") in connection with this Application. The AESO has been advised by AltaLink that the Facility Proposal Amendment will address the major aspects listed in Rule 007, Section 6.1 – NID13. As a result, and based on the request below that this Application be combined with the Facility Proposal Amendment, the AESO has not undertaken a separate assessment of the matters identified in Rule 007, Section 6.1 – NID13. A copy of AltaLink's confirmation letter is included as Attachment 4.

Request to Combine

28. The AESO understands that AltaLink's Facility Proposal Amendment will be filed shortly. Accordingly, the AESO requests that this Application be combined with AltaLink's Facility Proposal Amendment for consideration by the Commission in a single process. This request is consistent with Section 15.4 of the *Hydro and Electric Energy Act* and Section 6 of Commission Rule 007.

29. The AESO also requests that this Application be combined and considered with Proceeding ID No. 21189, which consists of the 321S NID and the AltaLink Al Rothbauer 321S Substation Interconnection Facility Application.

2500, 330-5th Avenue SW, Calgary, Alberta T2P 0L4 Phone: 403-539-2450 Fax: 403-539-2949
www.aeso.ca www.poweringalberta.com

Request for Approval

30. Having regard to:

    - the relevant provisions of the EUA and the AUCA;
    - the transmission responsibilities of the AESO as set out in the EUA and the *Transmission Regulation*;
    - the estimated cost reduction associated with this Application;
    - the AESO's PIP;
    - technical considerations; and
    - the AESO's long-term transmission system plans,

    the AESO submits that this Application is technically complete and in the public interest.

31. Accordingly, the AESO respectfully requests that the Commission:

    (a) approve this Application, and

    (b) grant such further relief as may be necessary to give effect to such approval.

32. In the event that the proposed reconfiguration is not completed by June 30, 2018, being one year following the proposed in-service date of the associated Al Rothbauer 321S Substation, the AESO will inform the Commission in writing if the need to reconfigure the transmission system as described in this Application continues, and if the reconfigurations described in this Application continue to be the AESO's preferred option to address the need.

Please address all correspondence concerning this Application to:

Brenda J. Hill
Regulatory Coordinator
need.applications@aeso.ca
403-539-2850

Sincerely,

Warren Clendining.
Manager, Regulatory Transmission