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# Alberta Electric System Operator

## Thickwood Hills 240-kV Transmission Development Needs Identification Document

**March 12, 2015**

**Alberta Utilities Commission**
Decision 3588-D01-2015
Alberta Electric System Operator
Thickwood Hills 240-kV Transmission Development
Needs Identification Document

Proceeding 3588
Application 1611089-1

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Alberta Utilities Commission
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## 1 Introduction and background

1. The Alberta Electric System Operator (AESO) filed an application with the Alberta Utilities Commission for approval of the needs identification document (NID) for a 240-kilovolt (kV) transmission development in the Thickwood Hills area. The application was registered on December 16, 2014 as Application 1611089-1.

## 2 Discussion

2. The AESO stated that the Thickwood Hills 951S substation is required to establish a northern termination point for two single-circuit 500-kV AC transmission lines between the Edmonton and Fort McMurray areas. It explained that these transmission lines and the 500-kV components of the Thickwood Hills 951S substation were designated as critical transmission infrastructure (CTI) by the government of Alberta and do not require the NID applications. The associated 240-kV components and development were not designated as critical transmission infrastructure and require the NID applications from the AESO.

3. The AESO stated that the traditional transmission system studies were not required to establish the need for the 240-kV transmission developments, or to demonstrate that the 240-kV transmission developments address the identified need, because the need for the 500-kV CTI facilities has already been approved by the government. The AESO did not evaluate other transmission options because Section 4(a) of the Schedule to the *Electric Utilities Act* limited the northern termination of the 500-kV CTI facilities to "a new substation to be built in the Thickwood Hills area, approximately 25 kilometres west of the Fort McMurray Urban Service Area". In order to reliably integrate power transferred into the area by the 500-kV CTI facilities without causing overloads on existing transmission system, the AESO selected a configuration that connected to the highest capacity of the 240-kV transmission lines available in the specified area and split power to the two largest substations in the area. The AESO explained that this configuration would allow for future 240-kV transmission circuits to be added, as required, to serve future area load growth, and did not identify other viable options for the integration of the 500-kV CTI facilities into the interconnected electric system.

4. The AESO proposed the development of the 240-kV system to integrate the two 500-kV lines in two phases. The first line, Fort McMurray West, is expected to be in service on June 1, 2019. The second line, Fort McMurray East, has not begun the competitive process to determine the operator. The AESO stated that it would direct assign the 240-kV transmission developments to the incumbent transmission facility owner. The AESO also stated that within the Thickwood Hills 951S substation, the point between the 240-kV side of the 500/240-kV transformers and the 240-kV buswork is the efficient and appropriate demarcation point for the

infrastructure that will be owned respectively by the winner of the competitive process and the existing system owned by the incumbent transmission facility owner.

5. The AESO clarified the timing of the facility proposal and the CTI proposal in a letter dated March 10, 2015. The AESO stated that it intends to direct the incumbent transmission facility owner to submit the 240-kV facility proposal on or about the same date that the facility proposal for the Fort McMurray West Line is submitted to provide the Commission an opportunity to combine and consider the two applications jointly.

6. The 240-kV development to integrate the two 500-kV transmission lines was proposed to occur in two stages. Stage one would consist of adding a new 240-kV switching substation, which is proposed to contain a +200/-100 megavolt-ampere reactive (MVAr) static var system (SVS) and capacitor banks with a total capacity of 100 MVAr. The switching substation would become functionally integrated with the CTI components to form the Thickwood Hills 951S substation. The existing transmission lines 9L01 and 9L07 would also be split and terminated with an in-out configuration into the new switching substation. The portion of 9L01, from Ruth Lake 848S substation to Thickwood Hills 951S substation, would retain the 9L01 designation and the portion from Thickwood Hills 951S substation to Dover 888S substation would be redesignated as 9L30. The portion of 9L07 between Dawes 2011S substation and Thickwood Hills 951S substation would retain the 9L07 designation and the portion from Thickwood Hills 951S substation to Dover 888S substation will be redesignated as 9L112.

7. Stage two of the development would be required to integrate the second 500-kV AC line and would require a second bank of capacitors, with a capacity of 100 MVAr, at the Thickwood Hills 951S substation.

8. The AESO proposed that stage one be completed six to nine months in advance of the in-service date of the Fort McMurray West Line; currently set for June 1, 2019. The completion date for stage two has not been set because the schedule of the Fort McMurray East Line has not been set.

9. The AESO estimated the capital cost of stage one to be approximately $157 million ($2018, +/- 30%), stage two to be approximately $5 million ($2018, +/- 30%) and determined all costs are designated as system-related.

10. The AESO conducted a participant involvement program as part of its application. The program consisted of notification of the regional municipality and county, members of the Legislative Assembly, First Nations and Métis Nations. The AESO mailed out a project newsletter and advertised the development in the Fort McMurray Today and Fort McMurray Connect newspapers. The AESO also setup a dedicated telephone line and email address. The AESO stated that no issues or concerns were raised in relation to this transmission development.

11. The AESO directed the incumbent transmission facility owner, ATCO Electric Ltd. (ATCO), to conduct an assessment of major aspects related to the 240-kV development. The land impact assessment discussed the potential impacts of future routing and siting within a broadly defined geographic area. The assessment evaluated potential agricultural, residential, environmental and visual impacts.

12. ATCO stated that agricultural impacts would not be a significant factor as the majority of the land is undesirable for agricultural use and potential impacts could be mitigated through tower placements and consultation. The potential for residential impacts was assessed to be minimal and consisting primarily of trapper cabins and work camps. Surface water bodies, wetlands, environmentally significant areas, aquatic environmentally significant areas and caribou habitat were found in the study area. ATCO stated that siting, routing and construction timing restrictions could minimize disturbances. Visual impact is anticipated to be minimal due to the remote location and the opportunity to parallel existing linear disturbances.

13. The project area is within the area covered by the Lower Athabasca Regional Plan. The AESO stated the transmission development aligned with the seven regional outcomes described in the regional plan and confirmed that the transmission development would not be located in a new conservation area or provincial recreation area and would not impact air quality. The project does not use groundwater and would not affect ambient groundwater quality.

14. ATCO determined the potential for project impacts exists but found no obstacles or anticipated impacts that would preclude the development. As part of the future facility application, the transmission facility owner should undertake a more detailed assessment.

15. The Commission issued a notice of application on February 3, 2015. The notice was mailed to municipalities, MLAs, First Nations and Métis Nations in the area, mailed to postal codes in the project area, published in the Fort McMurray Today and Fort McMurray Connect newspapers, distributed electronically to market participants, and published on the AUC website. No objections were received by the February 24, 2015 deadline for submissions.

## 3 Findings

16. The Commission has reviewed the application and has determined that it meets the information requirements of a NID. The Commission acknowledges the AESO's submission that a participant involvement program has been conducted and finds that there are no outstanding public or industry objections or concerns.

17. The Commission finds that the NID application contains all the information required by the *Electric Utilities Act*, the *Transmission Regulation* and Rule 007: *Applications for Power Plants, Substations, Transmission Lines, Industrial System Designations and Hydro Developments*.

18. No interested party demonstrated that the AESO's assessment of the need for 240-kV components to integrate the 500-kV CTI facilities is technically deficient or that approval of the needs identification document application is not in the public interest. Therefore, the Commission considers the AESO's assessment of the need to be correct, in accordance with subsection 38(e) of the *Transmission Regulation* and approves the AESO's needs identification document application.

19. The Commission expects that the AESO will direct ATCO to time the filing of the 240-kV facility proposal with the filing of the Fort McMurray West Line, as it stated in its letter dated March 10, 2015.

## 4 Decision

20. Pursuant to Section 34 of the *Electric Utilities Act*, the Commission approves the NID for the project and grants the AESO approval for the Thickwood Hills 240-kV Transmission Development Needs Identification Document as set out in Appendix 1 – Approval 3588-D02-2015 – March 12, 2015 (Appendix 1 will be distributed separately).

Dated on March 12, 2015.

**Alberta Utilities Commission**

*(original signed by)*

Tudor Beattie, QC
Commission Member