



**Alberta Electric System Operator,  
ENMAX Power Corporation and  
AltaLink Management Ltd.**

**East Calgary Transmission Project and  
Shepard Energy Centre Interconnection**

**November 1, 2012**

**The Alberta Utilities Commission**

Decision 2012-283: Alberta Electric System Operator,  
ENMAX Power Corporation and AltaLink Management Ltd.  
East Calgary Transmission Project and Shepard Energy Centre Interconnection  
Applications No. 1607312, No. 1607400 and No. 1607446  
Proceeding ID No. 1229

November 1, 2012

Published by

The Alberta Utilities Commission  
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## **1 Introduction and background**

1. The Alberta Electric System Operator (AESO) filed Application No. 1607312 with the Alberta Utilities Commission (AUC or the Commission) on May 10, 2011, in accordance with Section 34 of the *Electric Utilities Act*, for approval of a needs identification document (NID). The NID application requested approval of the need for two simultaneous transmission developments, namely (i) the East Calgary transmission project and (ii) the connection of the Shepard Energy Centre to the Alberta Interconnected Electric System.

2. ENMAX Power Corporation (ENMAX) filed Application No. 1607400 with the AUC on June 10, 2011, in accordance with sections 14, 15, 18 and 21 of the *Hydro and Electric Energy Act* for approval to construct, alter and operate the transmission facilities required to meet the needs identified in the AESO's NID application.

3. AltaLink Management Ltd. (AltaLink) filed Application No. 1607446 with the AUC on June 27, 2011, in accordance with sections 14, 15, 18 and 21 of the *Hydro and Electric Energy Act* for approval to construct, alter and operate the transmission facilities required to meet the needs identified in the AESO's NID application.

4. The AESO, ENMAX and AltaLink requested that the AESO's NID application be combined for consideration with ENMAX's facility application and AltaLink's facility application in accordance with Section 15.4 of the *Hydro and Electric Energy Act*. The Commission considered the NID application and the facility applications jointly as Proceeding ID No. 1229.

5. The Commission issued a notice of applications for the proceeding on January 11, 2012. The Commission received eight statements of intent to participate in response to the notice from the following parties:

- Shakers Family Fun Centre Inc. (Shakers)
- CGC Inc.
- Mr. Blasetti
- Friendly Earth Building Products
- Equilibrium Environmental Inc.
- Impact Auto Auctions Ltd.
- Shamsane Pita Ltd.
- Mr. Wohlgeschaffen

6. On February 16, 2012, the Commission issued a letter to interested parties regarding standing for the proceeding noting that it had determined that Shakers had standing, and that CGC Inc. did not oppose the application, while Mr. Blasetti supported it. In the letter, the Commission requested additional information from five other parties who filed statements of intent to participate to indicate how they may be directly and adversely affected by a Commission decision pertaining to Proceeding ID No. 1229. The five parties were Friendly Earth Building Products, Equilibrium Environmental Inc., Impact Auto Auctions Ltd., Shamsane Pita Ltd. and Mr. Wohlgeschaffen. Mr. Wohlgeschaffen withdrew his objection on February 16, 2012. No response was received from the remaining four parties by the March 1, 2012, deadline.
7. The AESO advised the Commission, on April 13, 2012, that it was contemplating filing supplemental information to its NID application due to impacts that arose from the amendment to the NID application for the South Calgary 69-kilovolt (kV) transmission system upgrade being considered in Proceeding ID No. 234. The AESO filed supplemental information to its NID application on May 8, 2012. The supplemental information indicated that the transmission developments described in the amendment to the NID application for the South Calgary 69-kV transmission system upgrade were local, would involve only a small subset of an area development related to the AESO's Foothills Area Transmission Development plan and, more specifically, would not impact the AESO's NID application in this proceeding.
8. ENMAX, in a letter to the Commission dated May 8, 2012, requested that the Commission hold a pre-hearing conference prior to any public hearing in order to identify the issues to be considered at the hearing.
9. The Commission issued a letter to interested parties on May 16, 2012, requesting that all interested parties attend a pre-hearing conference, scheduled for June 5, 2012, in order for the Commission to better understand the nature of the outstanding issues filed to date in the proceeding, as well as to consider a schedule for a future hearing.
10. The Commission held the pre-hearing conference in its hearing room in Calgary on June 5, 2012. Shakers and Wesview Business Park Ltd. (Wesview) participated in the pre-hearing conference.
11. At the pre-hearing conference, ENMAX informed the Commission that either itself or AltaLink had been in communication with several parties who filed statements of intent to participate and that the applicants had either addressed the parties issues, or were in the process of resolving the issues. These businesses or persons were: CGC Inc., Raymond Blasetti, Friendly Earth Building Products, Impact Auto Auctions Ltd., Equilibrium Environmental Inc. (registered as Anthony Knafla), Shamsane Pita Ltd. and Mr. Wohlgeschaffen. ENMAX stated that it understood that none of these parties intended to participate further in the AUC's process. The Commission did not rule on standing for any of the aforementioned parties.

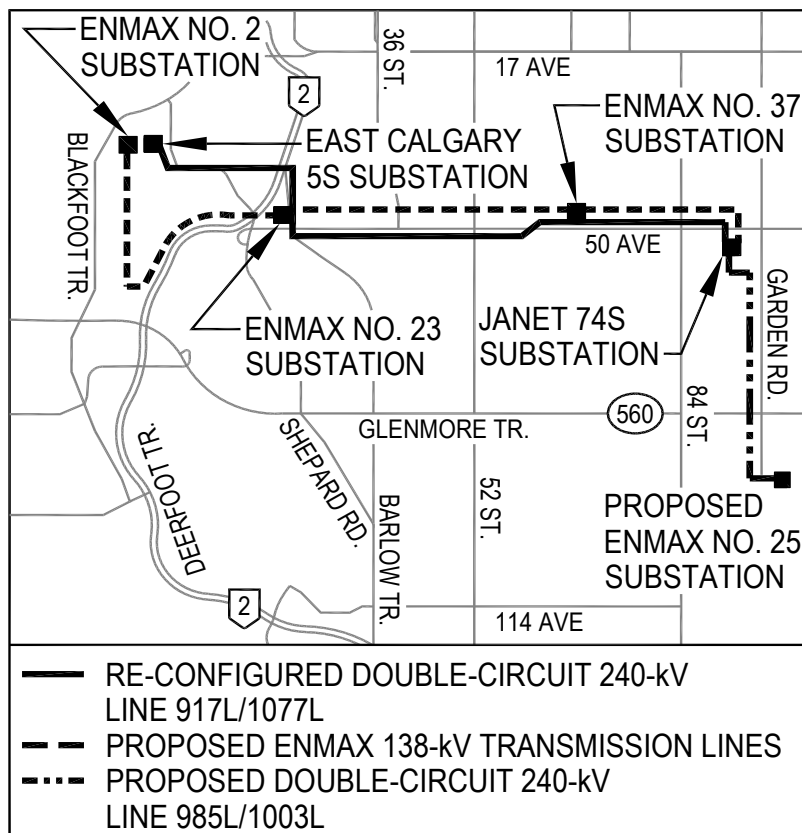
12. The Commission issued Decision [2012-168](#)<sup>1</sup> on June 15, 2012, stating the issues to be considered at the hearing and setting the hearing schedule, with the oral hearing to commence on Wednesday, September 26, 2012.
13. Shakers withdrew its objection to the applications on July 24, 2012.
14. The Commission issued a notice of hearing for the Proceeding ID No. 1229 on August 15, 2012.
15. Wesview withdrew its objection to the applications on August 28, 2012.
16. The Commission issued a letter on August 28, 2012, cancelling the hearing.

## 2 Discussion

### 2.1 NID Application No. 1607321

#### 2.1.1 East Calgary transmission development

17. The proposed facilities in the East Calgary Transmission Project are shown on Map 1 below.



**Map 1 – Proposed facilities in the East Calgary transmission project**

<sup>1</sup> Decision 2012-168: Alberta Electric System Operator, ENMAX Power Corporation, AltaLink Management Ltd. – East Calgary Transmission Project and Shepard Energy Centre Interconnection Pre-hearing Conference, Applications No. 1607312, No. 1607400 and No. 1607446, Proceeding ID No. 1229, June 15, 2012.

18. The AESO submitted that the NID application was required to address the need for 138-kV and 240-kV transmission upgrades in east Calgary. The AESO studied the existing transmission system and determined that the system would be unable to supply the forecast load growth. In addition, it determined that unacceptable transmission reliability criteria violations would occur for south Calgary and the High River planning area as early as 2014.

19. The AESO stated that the identified transmission reliability criteria violations would be due to increased south Calgary and High River area load, and lack of transmission capacity between the load and newly developed generation sources. Transmission planning requirements ensure that power from generation would reach consumers in Calgary and High River under normal operating conditions.

20. The AESO stated that it had performed broad system adequacy studies that covered south Calgary and the High River planning area in its Foothills Area Transmission Development (FATD) plan. This NID application is a component of the FATD plan.

21. For the East Calgary transmission development, the AESO identified the need as follows:

- (a) Replace the existing 336-megavolt-ampere (MVA) transformer at East Calgary 5S substation with two new 400-MVA, 240/138-kV transformers.
- (b) Rebuild ENMAX No. 2 substation by installing a new 138-kV switchyard with a breaker and a third configuration to accommodate the existing five 138-kV transmission lines, including provisions for terminating the future 138-kV transmission line 2.84L to the ENMAX Bonnybrook Energy Centre<sup>2</sup> and one additional future 138-kV transmission line; and adding four 138/13.8-kV transformers, one 138-kV capacitor bank into the station, and two 138-kV transformer infeed lines from AltaLink.
- (c) Connect portions of existing 240-kV transmission line 917L to existing 138-kV transmission line 2.80L to create a new 240-kV transmission line to be designated as 1077L. Transmission line 1077L would not be energized until subsequent FATD facilities are approved for development.
- (d) Salvage a north-south segment of existing 138-kV transmission line 2.81L and rebuild it on double-circuit structures to be shared with the new segment of transmission line 2.80L.
- (e) Construct a new 138-kV single-circuit transmission line from ENMAX No. 23 substation to ENMAX No. 2 substation to replace the existing transmission line 2.80L.
- (f) Maintain the existing 240-kV connection between East Calgary 5S substation and Janet 74S substation by connecting sections of the existing 240-kV transmission line 917L to the existing 138-kV transmission line 23.80L creating a 240-kV transmission line to be designated as 917L.
- (g) Construct a new 138-kV single-circuit transmission line from Janet 74S substation to ENMAX No. 23 substation to replace the existing transmission line 23.80L.

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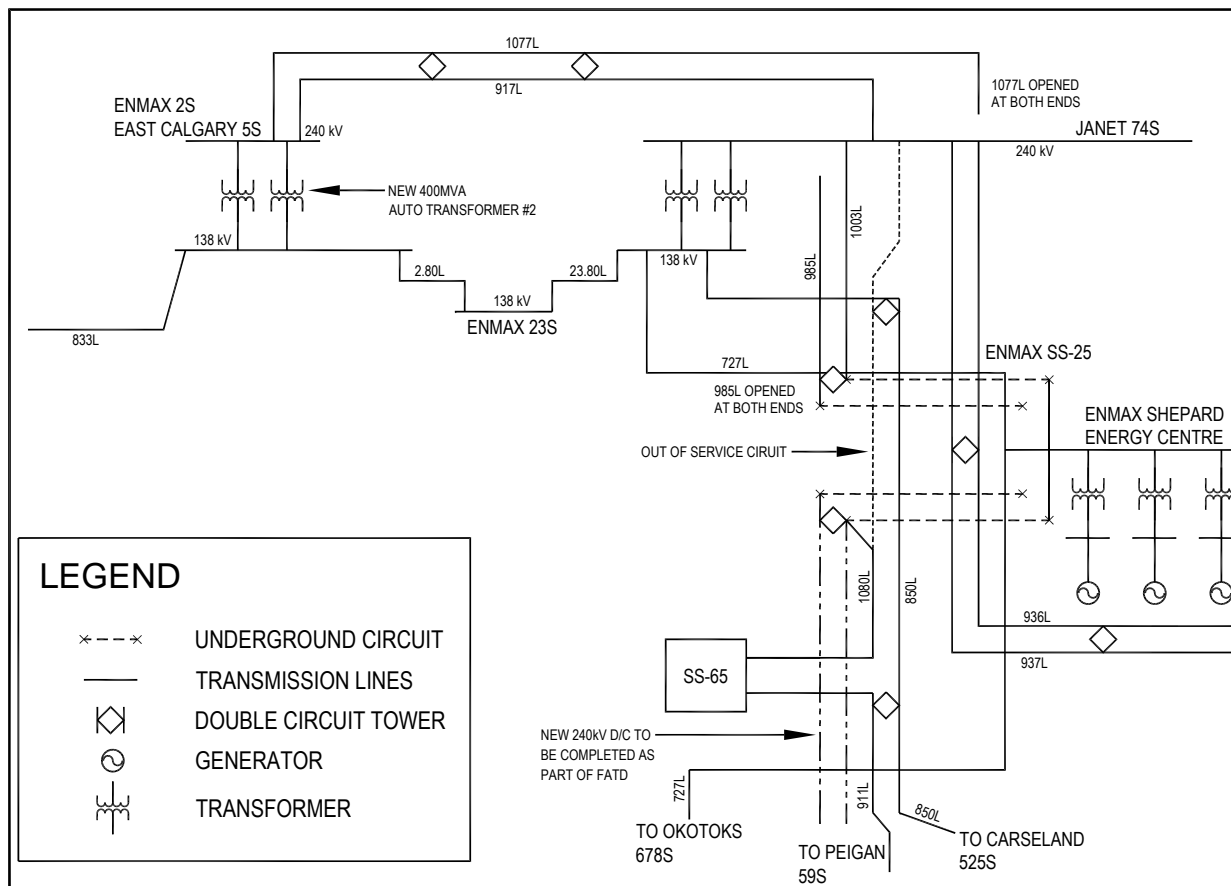
<sup>2</sup> The need for transmission line 2.84L is being applied for in NID Application No. 1608789, which is currently under review by AUC.



22. The AESO stated that the proposed developments were required to be in service by 2014. The estimated capital cost of the East Calgary system upgrades is \$90 million (+20%/-10%).

### 2.1.2 Shepard Energy Centre interconnection

23. The proposed facilities in the East Calgary transmission project are shown on Map 2 below.



**Map 2 - Shepard Energy Centre connection**

24. Pursuant to Section 29 of the *Electric Utilities Act*, the AESO has a duty to provide transmission system access on the transmission system in a manner that gives all market participants, such as the Shepard Energy Centre, a reasonable opportunity to exchange electric energy and ancillary services. The Shepard Energy Centre is a 800-megawatt (MW) natural gas-fired combined cycle generating facility.

25. ENMAX Shepard Inc., the owner of the Shepard Energy Centre, applied to the AESO for transmission access to connect its Shepard Energy Centre to the transmission system. The connection configuration proposed by the AESO includes the following major components:

- (a) Construct the new 240-kV ENMAX No. 25 switching substation.

- (b) Terminate the existing 240-kV transmission line 911L at ENMAX No. 25 switching substation. The segment of transmission line 911L between ENMAX No. 65 substation and ENMAX No. 25 switching substation would be re-designated as transmission line 1080L.
- (c) Construct a new 240-kV double-circuit transmission line, designated as 985L/1003L from ENMAX No. 25 switching substation to Janet 74S substation.
- (d) De-energize or salvage segments of the existing transmission line 911L between Janet 74S substation to ENMAX No. 25 switching substation. The final disposition of this segment of transmission line 911L would be determined by AltaLink, the transmission facility owner.

26. The AESO stated that the proposed developments were required to be in service by 2013. No other feasible alternatives were identified. The estimated capital cost of the Shepard Energy Centre interconnection is \$50 million (+20%/-10%), including costs in the order of \$35 million to be charged to ENMAX Shepard Inc.

27. ENMAX and AltaLink were directed by the AESO to assist the AESO in conducting a participant involvement program. ENMAX and AltaLink conducted a joint participant involvement program through a notification and personal consultation process for both the NID application and the facility applications. The AESO stated that no concerns had been raised regarding the need for the proposed development.

## 2.2 ENMAX Application No. 1607400

28. ENMAX requested approval of the following developments to meet the relevant portion of the need for two simultaneous transmission developments, namely (i) the East Calgary transmission project and (ii) the connection of the Shepard Energy Centre to the Alberta Interconnected Electric System as identified in the NID application:

- (a) Alter ENMAX No. 2 substation:
  - rebuild the 138-kV switchyard with a breaker and a third configuration using gas-insulated switchgear
  - rebuild the 13.8-kV switchgear using gas-insulated switchgear
  - other related activities<sup>3</sup>
- (b) Alter ENMAX No. 23 substation:
  - relocate terminations for the new 138-kV transmission line 2.80L and the existing transmission line 23.80L
  - replace one transmission structure to allow for clearance of transmission line 917L over the ENMAX No. 23 substation.

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<sup>3</sup> Details of the ENMAX No. 2 substation rebuilding activities are generally described on page 10 of the Functional Specification for East Calgary Transmission Project/ENMAX Shepard Energy Centre Interconnection filed with Application No. 1607400; and more particularly described in Application No. 1607400.

- (c) Construct ENMAX No. 25 switching substation:
  - construct a 240-kV switching station to facilitate interconnection of the Shepard Energy Centre facility to the Alberta Interconnected Electric System and four 240-kV line terminations in a breaker and a half configuration
- (d) Construct a new 138-kV transmission line 2.80L between ENMAX No. 2 substation and ENMAX No. 23 substation. A portion of the line would be built on the existing right-of-way for transmission line 2.81L.
- (e) Salvage the single-circuit 138-kV transmission line 2.81L between ENMAX No. 2 substation and Structure 26, and re-install conductors on new double-circuit structures sharing with transmission line 2.80L in its existing right-of-way.
- (f) Construct a new 138-kV transmission line 23.80L between ENMAX No. 23 substation and Janet 74S substation. A portion of the line would be built on the existing right-of-way for transmission line 37.82L.
- (g) Salvage the single-circuit 138-kV transmission line 37.82L between Janet 74S substation and ENMAX No. 37 substation and re-install conductors on new double-circuit structures with transmission line 23.80L.
- (h) Alter the existing transmission lines 2.80L, 23.80L, and 917L to form a complete 240-kV circuit from East Calgary 5S substation to Janet 74S substation. The new 240-kV circuit will be designated as 1077L.
- (i) Connect three 240-kV transmission lines from the Shepard Energy Centre to ENMAX No. 25 switching substation.
- (j) Connect two 240-kV AltaLink transmission lines (985L and 1003L) at ENMAX No. 25 switching substation.
- (k) Connect two 400-MVA transformers from AltaLink's East Calgary 5S substation to ENMAX No. 2 substation.
- (l) Connect AltaLink's transmission line 833L to ENMAX No. 2 substation 138-kV bus.
- (m) Connect AltaLink's 138-kV capacitor banks to ENMAX No. 2 substation 138-kV bus.

29. ENMAX stated that it had existing interconnection agreements with AltaLink, with respect to the details of ownership and operation of facilities within the city of Calgary. It indicated that those facilities included ENMAX No. 2 substation, ENMAX No. 23 substation, AltaLink East Calgary 5S substation, and transmission lines 2.80L, 23.80L and 917L/1077L.

30. The proposed alterations at ENMAX No. 2 substation would be located within the existing property owned by ENMAX, but outside the existing fenced area. A new fence would be constructed to include the new facilities.

31. The report on the Phase I environmental site assessment for ENMAX No. 2 substation was filed with ENMAX Application No.1607400.<sup>4</sup> The Phase I environmental site assessment indicated that the substation site was developed in approximately 1962. Four transformers were noted on site, each containing 5,000 litres of mineral oil. Potential polychlorinated biphenyl (PCB) contamination around mounted transformers on the east of the site where there is a storage area<sup>5</sup> were found to be “high risk” areas and of concern. Potential PCB contamination at the adjacent AltaLink’s East Calgary 5S substation was described as a moderate risk, while potential groundwater contamination from an above-ground storage tank previously located nearby was identified as posing a low to moderate environmental risk.

32. A 2001 environmental site assessment reported that several spills of insulating oil occurred previously on site, including a spill from a transformer explosion. Release in excess of 100 gallons of transformer oil was reported to have occurred in the storage area. In response to some of these incidents, affected soil was reported to have been removed and sampled. The environmental site assessment concluded that previous environmental sampling had been limited to the perimeter of the substation and as a result the environmental issues at ENMAX No. 2 substation were ranked high risk; soil and groundwater sampling were recommended accordingly.

33. The report on the subsurface environmental investigation for ENMAX No. 2 substation was filed with ENMAX Application No. 1607400.<sup>6</sup> The investigation at the ENMAX No. 2 substation was conducted to evaluate the findings of the Phase I environmental site assessment that identified potential soil and groundwater contamination at ENMAX No. 2 substation. Dichloromethane was detected in three samples in excess of applicable soil quality guidelines, but all other parameters analyzed were reported as compliant with guidelines. Manganese and uranium concentrations exceeded applicable guidelines in each of two groundwater samples. All other parameters were reported to be within guidelines. It was concluded that the site had been adversely impacted possibly by the release of oils and fluids from transformers or site activities. The horizontal and vertical extent of soil contamination was not delineated. The report recommended further assessment of groundwater quality.

34. The proposed ENMAX No. 25 switching substation would be a new switching substation to connect the Shepard Energy Centre to the Alberta Interconnected Electric System. The ENMAX No. 25 switching substation would be located in the SW 20-23-28-W4M on the northwest corner of the Shepard Energy Centre property. No alternate site was considered feasible for the switching substation because it would be located within the boundaries of the Shepard Energy Centre.

35. In addition, in Application No. 1607400,<sup>7</sup> ENMAX filed the report on the Phase II environmental site assessment for the proposed Shepard Energy Centre. The assessment was conducted at the proposed Shepard Energy Centre site to assess and establish baseline soil and groundwater quality conditions prior to development. It was reported that the site was used for agriculture and it was understood that the site had not been previously used for commercial and

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<sup>4</sup> Exhibit 10.00.EPC-1229, Appendix E-1: Phase I Environmental Site Assessment for ENMAX No. 2 Substation.

<sup>6</sup> Exhibit 11.00.EPC-1229, Appendix E-1 a: Subsurface Environmental Investigation for ENMAX No. 2 Substation.

<sup>7</sup> Exhibit 13.00.EPC-1229, Appendix E-3: Phase II ESA proposed Shepard Energy Centre.

industrial purposes. An active gas well is located on the northeast portion of the site. A natural drainage pond, receiving runoff from the north, is located along the southern portion of the site.

36. The subsurface was reported to be silty clay with weathered siltstone bedrock encountered in some areas. Sandy silt to sandy clay was encountered at depth in some areas while in other areas these layers were found directly under the topsoil. All of the petroleum hydrocarbon fractions and target metals concentrations were reported to be less than the applicable guidelines for all soil samples. The sodium absorption ratio and soluble conductivity indicated that the soils were of poor quality and naturally saline or sodic.

37. All hydrocarbon parameters analyzed in groundwater were below applicable guidelines. Aluminum, arsenic, cadmium, copper, iron, manganese, mercury selenium, uranium and zinc concentrations in groundwater were above Alberta Tier 1 guidelines, with many of parameters at elevated concentration both on and off site. Total dissolved solids, dissolved sodium and sulphate were similarly at elevated concentrations both on and off site. It was concluded that the elevated metal concentrations in groundwater were indicative of natural background conditions.

38. Analysis of on-site surface water quality indicated that aluminum, arsenic, cadmium, iron, manganese, selenium, zinc, total dissolved solids, sulphate, pH, total coliforms, ammonia nitrogen and phosphorus exceeded guidelines. Many of those parameters were found to elevated concentrations in off-site surface water samples which suggested to ENMAX that the reported exceedances were due to the ponds being small, shallow, and with no outflow, and therefore influenced by natural qualities of the soil and groundwater rather than an on-site anthropogenic source of contamination.

39. In Application No. 1607400, ENMAX filed the report on Phase I environmental site assessment respecting 138-kV transmission line 2.80/9.82.<sup>8</sup> The environmental site assessment was submitted for the proposed three-kilometre 138-kV transmission line along Deerfoot Trail through the Highfield and Bonnybrook industrial areas. The area proposed for development was currently used for parks or recreation, commercial and industrial purposes.

40. Several areas of potential environmental concern were identified along the route proposed for development. The former Imperial Oil refinery property was reported to be a high risk area due to the presence of free-phase non-aqueous liquids, and petroleum hydrocarbons in the soil and groundwater at concentrations that exceeded guidelines. Negative environmental conditions near the Bonnybrook Wastewater Treatment facility were rated as moderate to high due to past releases of heavy metal contaminated water and possible past use of underground storage tanks. The potential for negative environmental conditions near the light industrial area (1110 and 1222 - 58 Avenue S.E.) was rated as moderate due to possible contamination from a variety of petroleum hydrocarbons and metals. The former ATCO Electric Ltd. regulating station was rated as having a moderate to high potential for negative environmental conditions because the remediation status was unknown for on-site soil and soil found to the west that contained lead concentrations, which exceeded guidelines. A metal scrap yard and auto wrecker yard were rated as moderate to high potential for negative environmental conditions due to the presence of above and underground storage tanks, releases of contaminated air and water, and a number of past environmental infractions. In some locations it was recommended that the sampling of soil and

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<sup>8</sup> On May 22, 2012, the AESO amended the 69-kV Conversion Project NID (AUC Proceeding ID No. 234). The proposed 138-kV transmission 9.82L was dropped from the NID.

groundwater quality at proposed tower locations and the development of appropriate management plans be initiated. Elsewhere it was recommended that potentially affected soil be examined by a qualified professional during excavation and that the affected soil be stored in a liner for future laboratory analysis. Development of a soil management or disposal plan might possibly be required. The line would traverse three environmentally sensitive areas that were rated as posing a moderate to high risk of negative conditions. Further, prior to development, a specialized environmental assessment was recommended for the Western Headworks Main Canal, immediately east of Ogden Road, the Bow River and the natural area at the former Imperial Oil refinery.

41. ENMAX filed the report on the land impact assessment<sup>9</sup> with respect to 138-kV transmission line 2.80L/9.82L. The land impact assessment included a comparison of four potential route options for the proposed transmission line 2.80L/9.82L. An option with the least environmental impact could not be distinguished based upon the environmental metrics assessed. All routes considered would occur on or parallel to existing linear disturbances, contain slopes greater than 15 per cent and would cross environmentally significant area #289. All routes would traverse or parallel existing railroad rights-of-way and traverse land that have been used for industrial activities. Route options 1, 2 and 4 would be in proximity to the former Imperial Oil refinery and route option 4 near the Bonnybrook Wastewater Treatment facility. Route option 2 was considered to have the greatest environmental impact because it was proposed to cross Beaverdam Flats, a city of Calgary park, and a wetland described as a unique ecological feature. Route options 2 and 3 were not recommended due to the possibility of residential, visual and environmental impacts<sup>10</sup>. Detailed design of route options 1 and 4 were recommended.

42. A Phase I environmental site assessment<sup>11</sup> of the potential site of the 138-kV transmission line 23.80L was conducted, spanning the SW and SE 2-24-29-W4M. A wetland and former Canadian National Railway spur line, 120 metres south, would intersect the proposed transmission line. Prior environmental assessment records indicated that the site had been contaminated with heavy metals and hydrocarbons due to railroad operation. Potentially affected soil was stockpiled in the southeast corner of the Canadian National Railway site where hexavalent chromium contamination had not been addressed and that hydrocarbon and metals concentrations exceeded current guidelines. The Canadian National Railway site was identified as an off-site area of concern because contaminants could migrate to the area proposed for development. Soil and groundwater investigation was recommended. The risk of potential negative environmental conditions existing on the proposed route would be low to moderate. A wetland was identified as an environmentally sensitive area. Consultation with ecological or environmental specialists prior to construction was recommended.

43. ENMAX stated that almost all of the proposed construction of, or alteration to, transmission lines 2.80L and 23.80L would be located within existing corridors and rights-of-way. The location of the new transmission line 2.80L from the intersection of 11 Street and 58 Avenue S.E. to ENMAX No. 23 substation, and the portion of new transmission line 23.80L between ENMAX No. 23 substation and ENMAX No. 37 substation would be the exceptions.

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<sup>9</sup> Exhibit 16.00.EPC-1229, Appendix E-6: Land Impact Assessment respecting transmission line 2.80/9.82.

<sup>10</sup> Ibid

<sup>11</sup> Exhibit 15.00.EPC-1229, Appendix E-5: Phase I Environmental Site Assessment respecting transmission line 23.80L.

44. ENMAX submitted that its final proposed route option for both transmission lines 2.80L and 23.80L was considered to be the best overall socially, economically, environmentally, and technically acceptable solution.

45. As part of its application, ENMAX submitted a cumulative noise impact assessment for noise attributable to the proposed alteration to the ENMAX No. 2 substation and the adjacent AltaLink East Calgary 5S substation. The noise impact assessment concluded that anticipated noise levels due to both substations would be within the permissible sound levels as specified in AUC Rule 012: *Noise Control* (AUC Rule 012).

46. A noise impact assessment was not conducted for the proposed ENMAX No. 25 switching substation because there would not be any equipment producing continuous noise in the substation.<sup>12</sup>

47. ENMAX submitted that *Historical Resources Act* clearance was requested with all environmental site assessments. Alberta Culture and Community Spirit requested that ENMAX conduct a Historical Resources Impact Assessment along a portion of the proposed transmission line 2.80L route because there may be significant historical resources in the area. After a review of the Historical Resources Impact Assessment, on July 25, 2011, Alberta Culture and Community Spirit granted *Historical Resources Act* clearance to ENMAX.

48. ENMAX coordinated with the AESO and AltaLink to complete a participant involvement program for the NID application and the facility applications. ENMAX stated that public notification was sent to landowners, business owners and occupants within 800 metres of the proposed project sites. Personal consultation was conducted with stakeholders directly facing the proposed project sites.

49. ENMAX estimated the cost of the project to be \$65.6 million (+20/-10%).

### **2.3 AltaLink Application No. 1607446**

50. To meet the need for two simultaneous transmission developments, the East Calgary transmission project and the connection of the Shepard Energy Centre to the Alberta Interconnected Electric System as identified in the NID application, AltaLink requested approval for the following:

(a) Alter the East Calgary 5S substation as follows:

- expand East Calgary 5S substation 240-kV switch yard to a break and a half configuration
- replace the existing 240/138-kV 336-MVA transformer with a new 240/138-kV 240/320/400-MVA LTC auto-transformer
- install a new 240/138-kV 240/320/400-MVA LTC auto-transformer

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<sup>12</sup> This was stipulated in AUC Rule 012 (2011) which was in effect when ENMAX Application No. 1607400 was filed.

- (b) Alter the Janet 74S substation as follows:
- construct a transmission line 1077L bypass
  - terminate the new 240-kV transmission line 1003L in the substation
  - terminate 138-kV transmission line 23.80L in the substation
- (c) Convert the segment of transmission line 23.80L between Structure 1 and Structure 26 to be part of 240-kV transmission line 917L. Transmission line 917L would then be continuously strung on one side of double-circuit structures between East Calgary 5S substation and Janet 74S substation.
- (d) Designate the other circuit sharing double-circuit structures with transmission line 917L as transmission line 1077L.
- (e) Construct a 240-kV double-circuit transmission line 985L/1003L between Janet 74S substation and ENMAX No. 25 switching substation. A portion of transmission line 985L/1003L was proposed for underground construction to cross under 100 Street S.E. and transmission lines 1080L/850L, 936L/937L and 727L, and would be terminated at ENMAX No. 25 switching substation.
- (f) Alter transmission line 1080L (currently designated as 911L) by installing approximately 200 metres of 240-kV underground transmission line from Structure 14 to ENMAX No. 25 switching substation.
- (g) Install 200 metres of 240-kV underground transmission line to cross under 100 Street S.E., transmission lines 1080L/850L, 936L/937L and 727L terminating at ENMAX No. 25 switching substation. The transmission cable would be for future use in the FATD project.

51. AltaLink stated that there are existing double-circuit transmission structures between East Calgary 5S substation and Janet 74S substation where AltaLink currently operates 240-kV transmission line 917L. ENMAX currently operates two segments of 138-kV transmission lines (2.80L and 23.80L) on the double-circuit structures. Ownership of the double-circuit structures is divided between ENMAX and AltaLink.

52. In the East Calgary transmission project, AltaLink proposed to alter transmission line 917L so that it would use the south side of the double-circuit line, using the conductors that were previously used for 138-kV transmission line 23.80L. Transmission line 917L would remain terminated at the same location within Janet 74S substation.

53. The ownership of transmission line 917L would change at Structure 26. AltaLink applied for a licence to operate transmission line 917L between Janet 74S substation and Structure 26. ENMAX applied for a licence to operate transmission line 917L between East Calgary 5S substation and Structure 26.



54. As identified by the AESO in the NID, a new 240-kV transmission line 1077L between East Calgary 5S substation and Janet 74S substation would be built between East Calgary 5S substation and on the north side of the double-circuit structures shared with transmission line 917L. A underground segment would be added to transmission line 1077L at Janet 74S substation to cross under four existing 240-kV transmission lines, 932L/929L and 925L/901L, and connected to a dead-end riser located to the east of the Janet 74S substation located on AltaLink property. Transmission line 1077L would remain de-energized until it could be incorporated in the FATD project.

55. The ownership of transmission line 1077L would be under the same arrangement as the ownership of transmission line 917L, as discussed in paragraph 51 above.

56. Proposed double-circuit 240-kV transmission line 985L/1003L would be located on land owned by AltaLink or within the existing right-of-way owned by AltaLink. Transmission line 985L/1003L would be constructed with tubular steel structures due to the limited amount of rights-of-way available because there are two existing steel lattice double-circuit transmission lines between ENMAX No. 25 switching substation and Janet 74S substation. At the south end of the transmission line, to the west of the Shepard Energy Centre, transmission line 985L/1003L would be constructed with underground cables to cross under existing transmission lines 850L/1080L, 936L/937L, 100 Street S.E. and existing transmission line 727L.

57. AltaLink submitted that no alternative routes were developed for 985L/1003L because the proposed route is the shortest and most direct route between Janet 74S substation and ENMAX No. 25 switching substation. AltaLink stated that it assessed the situation and concluded that locating the proposed transmission line in the existing rights-of-way would result in the least potential impacts than the other alternative routing options.

58. Existing transmission line 1080L would be altered to terminate at ENMAX No. 25 switching substation, instead of at Janet 74S substation. Starting directly to the west of the Shepard Energy Centre, the transmission line would be constructed with underground cables to cross under existing transmission lines 850L/1080L, 936L/937L, 100 Street S.E. and existing transmission line 727L.

59. AltaLink also proposed to install an underground 240-kV three-phase cable segment to cross under existing transmission lines 850L/1080L, 936L/937L, 100 Street S.E. and existing transmission line 727L terminating at ENMAX No. 25 switching substation. The underground cable segment would be for future use in the FATD project.

60. East Calgary 5S substation is located in LSD 6-11-24-1-W5M. AltaLink submitted that the proposed alterations at East Calgary 5S substation would require an additional five metres added to each of the east and south sides of the substation fence.

61. AltaLink coordinated with the AESO and ENMAX to complete a participant involvement program for the NID application and the facility applications. AltaLink stated that public notification was sent to landowners, business owners and occupants within 800 metres of the proposed project sites and personal consultation was conducted with stakeholders directly facing the proposed project sites.

62. An environmental assessment of the East Calgary Transmission Project was submitted for a variety of system upgrades, and for the development of a new transmission line and substation facilities, in and immediately east of Calgary. The area proposed for development would be in an existing AltaLink right-of-way and property located in an industrial (both heavy and light) and commercial development, intermixed with smaller portions of cultivated fields and pasture. Existing impacts to land use were evident and the capability of remnant natural areas to support rare vegetation or wildlife species would be limited.

63. The transformer addition, transformer replacement, A-frame replacement and foundation removal at the East Calgary 5S substation would occur within the previously disturbed fenced area situated in an industrial/commercial zone of Calgary. AltaLink further indicated that the East Calgary to Janet re-energization, connecting and re-energizing existing transmission lines and an underground section, would not require construction activities on the existing right-of-way and that consequently environmental impacts were not assessed.

64. Construction activities of the proposed transmission lines could possibly result in adverse effects to soil quantity and quality due to compaction, rutting and admixing (mixing of soil horizons). Retention of native vegetation, avoiding work when soils are wet and, in areas of high soil compaction restricting vehicle use, low-ground pressure vehicles and matting, were identified as means to mitigate compaction and rutting effects. Project construction could possibly change the abundance or distribution of vegetation communities and vegetation species. Those effects would be mitigated by reducing soil compaction, rutting and admixing, and post-construction reclamation and re-vegetation. AltaLink's weed management program would reduce the introduction and spread of invasive plant species and weeds.

65. The potential for reduced wetland abundance as well as altered wetland community composition and function was also indentified as an effect of the project. Avoidance of wetlands was recommended.<sup>13</sup>

66. Construction activities and the operation and maintenance of the proposed transmission lines were predicted to potentially affect wildlife habitat, as well as result in sensory disturbance and direct mortality to wildlife. To reduce or avoid these potential effects, the proposed project would be located to parallel existing disturbances. Construction is proposed during suitable ground conditions, and would be scheduled to occur outside of restricted activity periods for prescribed wildlife.

67. AltaLink submitted a noise impact assessment that considered the proposed alterations at East Calgary 5S substation. The major noise sources are two transformers in East Calgary 5S substation and four transformers, two rated at 138/14.9-kV 18/24/30-MVA, and two rated at 132/13.2-kV and 18/24/30-MVA, in the adjacent ENMAX substation. For the noise impact assessment, ONAF<sup>14</sup> operating conditions were assumed for all transformers during the daytime and nighttime hours.

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<sup>13</sup> Exhibit 29.00 AML -1229, Appendix J – Environmental Evaluation, Section 5.3.1 Potential effects, page 45.

<sup>14</sup> ONAF stands for Oil-natural Air-forced. It is referring to the operating condition when cooling fans on radiators of the transformer are required to run to cool the insulation oil of the transformer with louder noise emissions.

68. The closest dwelling is at 600 metres northwest of the ENMAX substation fence line. The density is greater than 160 dwellings per quarter section. Therefore, the daytime permissible sound level would be 56 dBA  $L_{eq}$  and the nighttime permissible sound level would be 46 dBA  $L_{eq}$ .

69. The results of the computer noise model indicated that the predicted sound level contribution from the AltaLink and ENMAX substation facilities alone would be 29.9 dBA  $L_{eq}$  at the closest dwelling. The predicted cumulative sound level (substation facilities sound level plus the assumed ambient) at the nearest dwelling would be 41.3 dBA  $L_{eq}$  daytime and 51.0 dBA  $L_{eq}$  nighttime. The cumulative sound level, including noise from both the AltaLink East Calgary 5S substation and the ENMAX No. 2 substation, was predicted to be in compliance with the permissible sound levels by a margin of approximately five dBA  $L_{eq}$  at the closest dwelling.

70. Based on the results of the noise impact assessment, AltaLink concluded that anticipated noise levels for the substation would be within the permissible sound levels as specified in AUC Rule 012.

71. AltaLink estimated the cost of the project to be approximately \$65.639 million (+20/-10%), with the system-related portion estimated at \$47.170 million and the customer-related portion estimated at \$18.469 million.

### 3 Findings

72. The Commission reviewed the NID application and determined that the NID application contains the information required by the *Electric Utilities Act*, the *Transmission Regulation* and AUC Rule 007: *Applications for Power Plants, Substations, Transmission Lines, and Industrial System Designations* (AUC Rule 007).

73. Because no interested person demonstrated that the AESO's assessment of the need for transmission system access is technically deficient or that approval of the NID application would not be in the public interest, the Commission considers that the NID complies with subsection 38(e) of the *Transmission Regulation* and approves the AESO's NID application.

74. The Commission reviewed the facility applications and determined that there are no technical concerns associated with the applications and that the proposed facility additions and reconfigurations are consistent with the transmission system development determined by the AESO in the NID application.

75. The Commission accepts that the forecast cumulative noise levels attributable to the substations and transmission line associated with the applied-for development will be within the permissible sound levels as specified in AUC Rule 012.

76. The Commission accepts that the joint participant involvement program for the applications, conducted by the AESO, ENMAX and AltaLink, meets the requirements of AUC Rule 007.

77. The Commission recognizes the withdrawal of objections from all intervening parties pertaining to the applications.

78. The Commission agrees with ENMAX's assessment that its final proposed route option for both transmission line 2.80L and 23.80L is the overall socially, economically, environmentally and technically acceptable solution.

79. In addition to other work, the Commission recognizes that ENMAX is applying to rebuild its No. 2 substation with four 138/13.8 kV transformers and that all associated current and power transformers are to be re-located. The ENMAX No. 2 substation had been operated for at least 20 years using PCB insulating oil in transformers. Several releases of PCB and other incidents have occurred on-site, including a transformer explosion. In view of all of the above, the Commission agrees with the conclusion of the environmental assessment<sup>15</sup> that the potential for subsurface contamination is "high risk" and therefore, additional sampling, and if needed remediation of accessible and affected soil, is required prior to re-installing the transformers.

80. The Commission recognizes that in Application No. 1607446, AltaLink is applying to replace one 336-MVA transformer, but also that the facility had been operated for at least ten years using PCB insulating oil. In regard to the environmental aspect of the application, AltaLink provided no evidence to suggest that the potential for encountering soil contamination had been considered during project planning. In order to ensure that due consideration of the environmental effects of past operations for the substation is provided, the Commission finds it prudent to require that sampling, and if needed, remediation of accessible affected soil, be conducted prior to installing the new transformer.

81. The environmental assessment<sup>16</sup> of the new transmission line between the Janet 74S substation and ENMAX No. 25 switching station suggested additional field surveys prior to construction to refine and update the information submitted in support of the application. While the Commission recognizes that development is proposed only within the existing right-of-way, protection of wildlife is an important consideration for both construction and operation. The Commission accepts AltaLink's commitment to conduct additional environmental assessments prior to construction of the proposed transmission line and expects those assessments to be conducted according to the *Sensitive Species Inventory Guidelines*<sup>17</sup> and used to refine the environmental protection plan to be implemented for this development. Similarly, the Commission has taken into consideration the numerous mitigation measures specified in the application<sup>18</sup> to avoid or minimize environmental effects and expects those measures to be implemented as described.

82. Regarding the underground segment proposed to be added to transmission line 1077L at Janet 74S substation, and the underground 240-kV three-phase cable segment at ENMAX No. 25 switching substation to cross under existing transmission lines 850L/1080L, 936L/937L, 100 Street S.E., the Commission recognizes that their final location will be impacted by its decision on the FATD project applications which are currently before the Commission. Hence, the Commission is withholding the related permits and licences pending its decision on the FATD project applications.

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<sup>15</sup> Exhibit 10.00.EPC-1229, Appendix E-1: Phase I Environmental Site Assessment for ENMAX No. 2 Substation.

<sup>16</sup> Exhibit 29.00 AML – 1229, Appendix I – Environmental Evaluation Section 4.1 Baseline Methods, page 29.

<sup>17</sup> Sustainable Resource Development (now Alberta Environment and Sustainable Resource Development), August 2010 update, available online at <http://www.srd.alberta.ca/FishWildlife/WildlifeManagement/SensitiveSpeciesInventoryGuidelines.aspx>.

<sup>18</sup> Exhibit 29.00.EPC-1229, Appendix I: Environmental Evaluation.

83. AltaLink is required to file applications for approval of the final disposition of transmission line 911L between Janet 74S substation and ENMAX No. 25 substation that are not incorporated into the FATD development.

#### 4 Decision

84. The Commission approves the AESO's NID application, pursuant to Section 34(1)(c) of the *Electric Utilities Act* and Section 38 of the *Transmission Regulation*, and grants the approval set out in Appendix 1 – Need Identification Document Approval No. U2012-500 – November 1, 2012 (Appendix 1 will be distributed separately).

85. Subject to the conditions stated above, the Commission approves ENMAX's facility application pursuant to Section 19 of the *Hydro and Electric Energy Act* and pursuant to sections 14, 15, 18 and 21 of the *Hydro and Electric Energy Act* grants the following approvals to ENMAX:

- Transmission Line Permit and Licence No. U2012-502 to construct, alter and operate 138-kV transmission line 2.80L (Appendix 2).
- Transmission Line Permit and Licence No. U2012-503 to construct, alter and operate 138-kV transmission line 2.81L (Appendix 3).
- Transmission Line Permit and Licence No. U2012-504 to construct, alter and operate 138-kV transmission line 23.80L (Appendix 4).
- Transmission Line Permit and Licence No. U2012-505 to construct, alter and operate 138-kV transmission line 37.82L (Appendix 5).
- Transmission Line Permit and Licence No. U2012-506 to construct and operate a portion of 240-kV transmission line 917L on one side of double-circuit structures (Appendix 6).
- Transmission Line Permit No. U2012-507 to construct and operate a portion of 240-kV transmission line 1077L on one side of double-circuit structures (Appendix 7).
- Substation Permit and Licence No. U2012-508 to alter and operate ENMAX No. 2 substation (Appendix 8).
- Substation Permit and Licence U2012-509 to alter and operate ENMAX No. 23 substation (Appendix 9).
- Substation Permit and Licence No. U2012-510 to alter and operate ENMAX No. 25 switching substation (Appendix 10).

86. The Commission grants the following connection orders to ENMAX:

- Connection Order No. U2012-511 to connect ENMAX No. 2 substation to AltaLink East Calgary 5S substation (Appendix 11).
- Connection Order No. U2012-512 to connect ENMAX No. 25 switching substation to AltaLink transmission line 1080L (Appendix 12).
- Connection Order No. U2012-513 to connect ENMAX No. 25 switching substation to AltaLink transmission line 1003L (Appendix 13).

- Connection Order No. U2012-514 to connect ENMAX No. 25 switching substation to three ENMAX Shepard Inc. transformers (Appendix 14).
- Connection Order No. U2012-515 to connect ENMAX transmission line 917L to AltaLink transmission line 917L (Appendix 15).
- Connection Order No. U2012-516 to connect ENMAX transmission line 1077L to AltaLink transmission line 1077L (Appendix 16).
- Connection Order No. U2012-517 to connect ENMAX transmission line 23.80L to AltaLink Janet 74S substation (Appendix 17).
- Connection Order No. U2012-528 to connect ENMAX transmission line 37.82L to AltaLink Janet 74S substation (Appendix 18).
- Connection Order No. U2012-518 to connect ENMAX transmission line 917L to AltaLink East Calgary 5S substation (Appendix 19).
- Connection Order No. U2012-519 to connect ENMAX transmission line 1077L to AltaLink East Calgary 5S substation (Appendix 20).

87. The Commission approves AltaLink's facility application pursuant to Section 19 of the *Hydro and Electric Energy Act* and pursuant to sections 14, 15, 18 and 21 of the *Hydro and Electric Energy Act* grants the following approvals to AltaLink:

- Substation Permit and Licence No. U2012-520 to alter and operate East Calgary 5S substation (Appendix 21).
- Transmission Line Permit and Licence No. U2012-521 to alter, construct and operate a portion of 240-kV transmission line 917L on one side of double-circuit structures (Appendix 22).
- Transmission Line Permit No. U2012-522 to construct and operate a portion of 240-kV transmission line 1077L on one side of double-circuit structures (Appendix 23).
- Transmission Line Permit No. U2012-523 to construct 240-kV transmission line 985L on one side of double-circuit structures (Appendix 24).
- Transmission Line Permit and Licence No. U2012-524 to construct 240-kV transmission line 1003L on one side of double-circuit structures (Appendix 25).
- Transmission Line Permit and Licence No. U2012-525 to alter and operate a 240-kV transmission line 1080L (Appendix 26).

88. The Commission grants the following decommission and salvage approvals to ENMAX:

- Decommission and Salvage Approval No. U2012-526 to salvage the existing 138-kV transmission line 37.82L from ENMAX No. 37 substation to AltaLink Management Ltd. Janet 74S substation in the city of Calgary (Appendix 27).
- Decommission and Salvage Approval No. U2012-527 to salvage the portion of the transmission line from ENMAX No. 2 substation to Structure 138-2.81-26 (Appendix 28).

89. Permits and licences, decommission and salvage approvals and connection orders for ENMAX and AltaLink will be distributed separately.

Dated on November 1, 2012.

**The Alberta Utilities Commission**

*(original signed by)*

Anne Michaud  
Commission Member