



ENMAX Power Corporation

**Southeast Substation and Transmission Line
Development Project**

March 2, 2021

Alberta Utilities Commission

Decision 25934-D01-2021

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Southeast Substation and Transmission Line Development Project

Proceeding 25934

Applications 25934-A001 to 25934-A004

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1 Decision summary

1. In this decision, the Alberta Utilities Commission denies applications from ENMAX Power Corporation to salvage equipment from the ENMAX No. 32 Substation and to replace that equipment at another substation, having found that, at this point in time, ENMAX has not provided sufficient evidence to demonstrate that approval of the applications is in the public interest.

2 Introduction and background

2. ENMAX owns and operates the ENMAX No. 32 Substation which is located on the banks of the Bow River in Calgary, as shown in the map and images below.





3. ENMAX explained that the substation flooded in June 2013 and asserted that the City of Calgary’s Land-Use Bylaw (Bylaw) prevents the construction or expansion of buildings within floodways.

4. ENMAX identified an arc flash hazard from the outdoor switchgear at the ENMAX No. 32 Substation that presents a safety concern to employees working at the substation. It requested approval to salvage the equipment from the substation to eliminate the hazard and to replace it with new equipment. ENMAX stated that the existing building has insufficient space to accommodate more indoor switchgear, and due to the substation’s location and the Bylaw, it cannot expand the building or construct a new building. ENMAX added that “even if the Bylaw does not apply to the substation, it would not be prudent to make a major investment at No. 32 Substation because it is located in a floodway and was completely isolated by water during the 2013 Calgary flood event.”

5. ENMAX applied to the Commission to salvage equipment from the ENMAX No. 32 Substation, and to replace that equipment at either a new substation, designated as ENMAX No. 45 Substation, or at the existing ENMAX No. 31 Substation. The applications were registered on October 9, 2020, as applications 25934-A001 to 25934-A004.

6. The Commission issued a notice of applications in accordance with Rule 001: *Rules of Practice*. No submissions were received by the submission deadline of November 18, 2020.

7. The Commission considers the close of record for this proceeding to be February 5, 2021, when ENMAX provided responses to the final round of information requests. The Commission also considers that to be the date that the Commission deemed the application complete.

3 Discussion

8. In its applications, ENMAX proposed to:

- salvage the outdoor switchgear at the ENMAX No. 32 Substation
- disconnect one of the substation's 30-megavolt ampere (MVA) transformers but leave it on-site as a spare
- de-energize the other 30-MVA transformer but leave it connected as a standby in the event of a contingency to the substation's 50-MVA transformer

9. ENMAX proposed two alternatives to replace the salvaged substation equipment. ENMAX's preferred alternative is to construct a new substation, ENMAX No. 45 Substation, in the community of Shepard Industrial near Quarry Park and to connect that substation to existing Transmission Line 138-31.84L by constructing approximately 800 metres of double-circuit 138-kilovolt (kV) transmission line.¹ The new substation would include:

- one 138/13.8-kV, 30/40/50-MVA transformer
- four outdoor 138-kV breakers and associated equipment
- one 15-kV class indoor arc-resistant air insulated metal-clad switchgear (AIS)
- one new building to house the AIS, protection and controls, SCADA, telecommunications equipment, and auxiliary systems on a site enclosed by a fence

10. In the alternative, ENMAX proposed to expand the existing ENMAX No. 31 Substation. This would include the addition of:

- one 138/13.8-kV, 30/40/50-MVA transformer
- one 138-kV circuit breaker
- one 15-kV class arc-resistant AIS, used to feed five outgoing distribution feeders
- one new building to house the AIS, protection and control, SCADA, telecommunications equipment, and associated equipment on an expanded site enclosed by a fence

11. ENMAX stated that the preferred option would have lower construction, safety, and operational risks, provide greater reliability, avoid costly and complex underground distribution feeder crossings, and would have a lower cost. It estimated the cost of the preferred and alternative options as \$62.6 million and \$68.2 million, respectively.

12. In response to information requests, ENMAX stated that it did not prepare a detailed cost estimate for replacing the switchgear on-site at ENMAX No. 32 Substation but based on similar projects, estimated the cost of the new switchgear, a new structure to house the switchgear and other associated costs to be approximately \$8.5 million.

13. ENMAX stated that it would likely pursue decommissioning ENMAX No. 32 Substation in the long term. In response to information requests, ENMAX provided cumulative present value calculations of its preferred option, inclusive of the flood mitigation and the eventual salvage costs, and for decommissioning the entirety of the substation now. ENMAX assumed that for its preferred option, the remainder of the substation would be salvaged in 2058, and

¹ ENMAX also proposed to redesignate the transmission line from ENMAX No. 31 Substation to ENMAX No. 45 Substation as Transmission Line 31.80L and the transmission line from ENMAX No. 45 Substation to ENMAX No. 32 Substation as Transmission Line 32.80L.

calculated the cumulative present value of revenue requirement to be approximately \$64.8 million. It calculated the cumulative present value to decommission and relocate the entire substation now to be approximately \$79.6 million.

4 Findings

14. The Commission finds that ENMAX has not provided sufficient evidence to demonstrate that either its preferred or alternate option are in the public interest.

15. The Commission recognizes that a safety issue exists at the substation and to eliminate the identified hazard, equipment needs to be salvaged and replaced at some point in time. The Commission also recognizes that ENMAX has implemented measures to mitigate that risk at the present time, including requiring crews working at the substation to wear personal protective equipment rated for the increased arc flash levels and implementing a temporary relay setting, which reduces arc flash levels while crews perform higher risk maintenance activities.

16. While the Commission understands ENMAX's reluctance to install new equipment at a substation within a floodway, the Commission has difficulty with that position when ENMAX is proposing to install further flood mitigation and plans to leave certain equipment at the substation, possibly until 2058. Further, ENMAX undertook major upgrades to this substation in 2012-2013 while aware of the risks of the site of the substation within a floodway. If the flood mitigations will adequately protect the equipment that remains, the Commission questions the need to spend significant capital to relocate substation equipment to an alternate site at this time.

17. To be clear, the safety issue relating to arc flashing can be completely solved by new switchgear moved to an indoor location, and at the existing site this would cost approximately \$8.5 million. The Commission is not satisfied that ENMAX has adequately explored options to install the equipment on-site to resolve the safety issue which, according to ENMAX's estimates, would cost approximately \$55 million less to ratepayers than any other options it applied for.

18. ENMAX commented on the Bylaw, submitting that it restricts its ability to construct or expand a building at the existing site. However, ENMAX stated that it could not speculate on how the City of Calgary would view the prohibition on expanding the footprint of the existing building. ENMAX also indicated that it is aware that Section 3(a) of the *Planning Exemption Regulation* purports to exempt transmission lines, which would include substations, from Part 17 of the *Municipal Government Act* (under which the Bylaw is enacted). However, ENMAX stated that it is not clear whether this exemption applies to the Bylaw. As ENMAX relies on the Bylaw restrictions to justify its preferred alternative, the Commission considers that ENMAX should have taken steps to confirm whether the Bylaw applies to it. In any event, given the significant difference in costs between replacing the equipment on-site or at a different location, it is the Commission's opinion that ENMAX should have engaged the City of Calgary to discuss, in light of the mitigations ENMAX has implemented and its plans to further mitigate the flood risks, whether the City of Calgary would permit further development at the ENMAX No. 32 Substation. The Commission expected ENMAX to submit some documentation of its discussions with the City of Calgary in this regard, which could have clarified the City of Calgary's understanding of the Bylaw's applicability and its views on the possibility of developing the site.

19. The Commission has considered ENMAX's statement that it would not be prudent to make a major investment in a substation that is located in a floodway and that was completely isolated by water during the 2013 flood, but does not believe, given the circumstances, that \$8.5 million to resolve a safety risk on-site constitutes a major investment. As stated earlier, the alternatives presented by ENMAX in this case are approximately \$55 million higher. This necessitates a more thorough investigation into what is in the public interest. Further, ENMAX's statement does not adequately take into account the mitigations it implemented in 2012 and 2013 and since the 2013 flood or the mitigations it is proposing to make in the future. Nor does it consider any additional upstream mitigations that have been implemented or that are being considered that would help to mitigate flood risk at the substation. The Commission notes that ENMAX was aware of the flood risks to the substation when it applied for upgrades in 2011 but nonetheless considered that upgrading the substation at the existing location was the preferred option, while indicating that it would investigate mitigation measures to protect substation equipment from the high-water levels of a flood.

20. Optimizing the lifetime of the assets already in place at the ENMAX No. 32 Substation is an important consideration given the remaining life of some of the assets. Given that major upgrades occurred at the substation less than 10 years ago, an understanding of the optimal time to salvage the equipment and fully decommission the ENMAX No. 32 Substation does not appear to be well developed. The Commission questions if it would be more cost effective to ratepayers to replace the switchgear on-site and decommission the entire substation at a later date, when more of the equipment is near its end of life. The Commission considers that additional analysis to determine the optimal time to relocate the substation is needed and encourages ENMAX to clarify these points in a future application.

21. Based on the foregoing, the Commission denies the applications.

22. The Commission's denial of these applications is without prejudice to any future application in which ENMAX proposes to resolve the arc flash hazard at ENMAX No. 32 Substation. The Commission encourages ENMAX to address this safety issue in another application as soon as reasonably practicable, and in any event within one year of the date of this decision.

Dated on March 2, 2021.

Alberta Utilities Commission

(original signed by)

Carolyn Dahl Rees
Chair

(original signed by)

Cairns Price
Commission Member