



ENMAX Power Corporation

**Application to Address Noise Complaint at
ENMAX No. 28 Substation**

November 24, 2022

Alberta Utilities Commission

Decision 27444-D01-2022

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ENMAX No. 28 Substation

Proceeding 27444

Application 27444-A001

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Contents

1	Decision summary.....	1
2	Background	1
3	Application	3
4	Findings.....	5
5	Decision	9

List of figures

Figure 1.	ENMAX No. 28 Substation	4
Figure 2.	Substation noise level contributions	5

1 Decision summary

1. In this decision, the Alberta Utilities Commission finds that ENMAX No. 28 Substation is compliant with Rule 012: *Noise Control*, and that no Class A2 adjustment or mitigation measures are required.

2 Background

2. ENMAX Power Corporation owns and operates No. 28 Substation, which is located in southwest Calgary at the northeast corner of Glenmore Trail and Sarcee Trail.

3. In May 2019, ENMAX received a noise complaint from a resident of a townhouse complex in close proximity to the substation. ENMAX stated that it worked with the complainant to understand and assess the concern and retained Stantec Consulting Inc. to conduct the following assessments:

- A comprehensive sound level (CSL) survey at the dwelling of the complainant (designated as R1). Stantec measured a nighttime comprehensive sound level of 54.8 A-weighted decibels (dBA), which is 3.8 dBA above the nighttime permissible sound level (PSL) of 51 dBA, as set out in Rule 012.
- An ambient sound level (ASL) survey at two proxy locations.¹
- A computer noise modelling study which incorporates noise measurements of the transformers, the ambient sound level and the comprehensive sound level to derive the cumulative sound levels that determine Rule 012 compliance.
- An initial assessment based on certain assumptions of the likely efficacy of potential noise mitigation measures, including noise barriers and transformer replacement.

4. After consideration, ENMAX concluded that because No. 28 Substation began operating in 1969, while the townhouse complex was constructed in or about 1982, the New Dwelling Rule of Rule 012: *Noise Control* was applicable and that, as a result, noise levels were in compliance with Rule 012 and no further relief or action was required. ENMAX notified the AUC of the noise complaint, the results of its assessment and its interpretation of the New Dwelling Rule.

¹ Ambient sound level cannot include noise associated with energy facilities. ENMAX stated that it is not operationally feasible to shutdown the substation or the nearby AltaLink 42S Substation without impacting service levels, and thus conducted the ambient sound level survey at locations it considered had similar acoustical environments.

5. The New Dwelling Rule is set out in Section 2.3 of Rule 012:

2.3 Permissible sound level at new dwellings in proximity to an existing facility

- (1) Where a person builds a new dwelling or receives a permit to build within 1.5 km from the boundary of an existing and operational facility, the permissible sound level at the new dwelling will be the greater of the sound level existing at the start of the new dwelling construction, or the permissible sound level as determined in Section 2.1 of this rule. If there is a noise impact assessment for the facility, the phrase, “sound levels existing at the start of the dwelling construction,” refers to the modelled cumulative sound levels at the new dwelling. If there is no noise impact assessment for the facility, the phrase, “sound levels existing at the start of the new dwelling construction,” refers to the measured sound levels at the new dwelling. See example 4 in Appendix 6.
- (2) On the application of a person referred to in Subsection 2.3(1), the Commission may, in exceptional circumstances, grant an exemption from the rule established by that subsection.
- (3) If requested by a person, referred to in Subsection 2.3(1), the licensee must communicate information on the permissible sound level to that person. If there is a noise impact assessment for the facility, the licensee must provide a copy of the assessment and the modelled cumulative sound levels at the new dwelling to that person. If there is no noise impact assessment for the facility, the licensee must conduct a post-construction noise survey at the new dwelling and provide the noise survey results to that person.

...

6. On January 31, 2022, AUC Enforcement staff provided correspondence to ENMAX detailing the results of its investigation into a noise complaint at No. 28 Substation.²

4. In Enforcement staff’s view, Section 2.3 of Rule 012 establishes the PSL of a pre-existing facility as that determined in accordance with Section 2.1 of Rule 012 through two means. Either through (1) a noise impact assessment (NIA) for the facility conducted at the time of the application for the facility itself, or for subsequent amendments to the facility (in the case of the latter, the amendment application closest in time to the construction of the new dwelling); or (2) the measured CSL at the start of construction of the new dwelling.

5. Although R1 reasonably falls within the definition of a “new dwelling,” in Enforcement staff’s view, Section 2.3 cannot be reasonably or practically applied in the circumstances given that both the substation and R1 predate that section by more than 40 years and the information that it contemplates is not reasonably available. Alternatively, even if Section 2.3 is applicable, the requirements of that section for establishment of a PSL other than the default PSL under Section 2.1 have not been met by ENMAX based on the information submitted.

6. Specifically, because the noise regulation did not appear until 1999, it is unlikely that an NIA was conducted at the time of the application for the substation or at the time of the last amendment to the substation, which would have been in 1979 (the 1979

² Exhibit 27444-X0002, Appendix A - AUC Enforcement Correspondence.

transformer was installed closest in time to construction of R1 in 1982). Further, although ENMAX has modeled a CSL based on the transformers that were operating in 1982, there is no measured CSL available from when R1 was constructed. Enforcement staff believe that the modelling results may not reflect the real operational conditions that existed 40 years ago, as the noise model was built using noise emissions determined based on measurements near the transformers in 2019.

7. In summary, although R1 qualifies as a “new dwelling” in the context of Rule 012, given the lack of historical measurements, lack of an NIA for the amendment to Substation 28 closest in time to the construction of R1, and uncertainties in modelling sound levels existing 40 years ago, it is, in Enforcement staff’s view, not feasible to use the approach set out in Section 2.3 of Rule 012 to establish the applicable PSL at R1.

7. Enforcement staff’s assessment was that it was not feasible to determine the PSL at R1 using the provisions of Section 2.3 of Rule 012. Enforcement staff noted that surveys indicated the ambient sound level may be higher than the assumed ambient sound level established by Rule 012, and that an A2 adjustment may result in the substation being compliant. However, Enforcement staff considered that only the Commission can approve an A2 adjustment, and that absent such, the substation was likely not in compliance with Rule 012. Enforcement staff concluded that it would temporarily suspend further enforcement action, pending ENMAX filing an application with the Commission for an A2 adjustment or a determination that R1 is subject to a higher PSL as a new dwelling under Section 2.3 of Rule 012.

3 Application

8. On June 10, 2022, ENMAX filed Application 27444-A001, which requested:

- a) That the Commission provide an interpretation of and direction on the application of the New Dwelling Rule in these circumstances; or
- b) If it is determined that the New Dwelling Rule does not apply:
 - i. approval of a Class A2 adjustment³ and direction on the installation of a barrier at one transformer to meet an A2-adjusted permissible sound level at relevant residences; or
 - ii. if a Class A2 adjustment is not granted, direction on the installation of barriers at three transformers to meet the permissible sound level at relevant residences; and
- c) Such further and other relief as may be required and appropriate in the circumstances.

9. In April 2022, Stantec conducted an updated comprehensive sound level survey. Stantec also undertook a computer noise modelling study to assess cumulative sound levels at 47 residences around the northern fence line of the substation to determine whether there would be other exceedances of permissible sound levels.

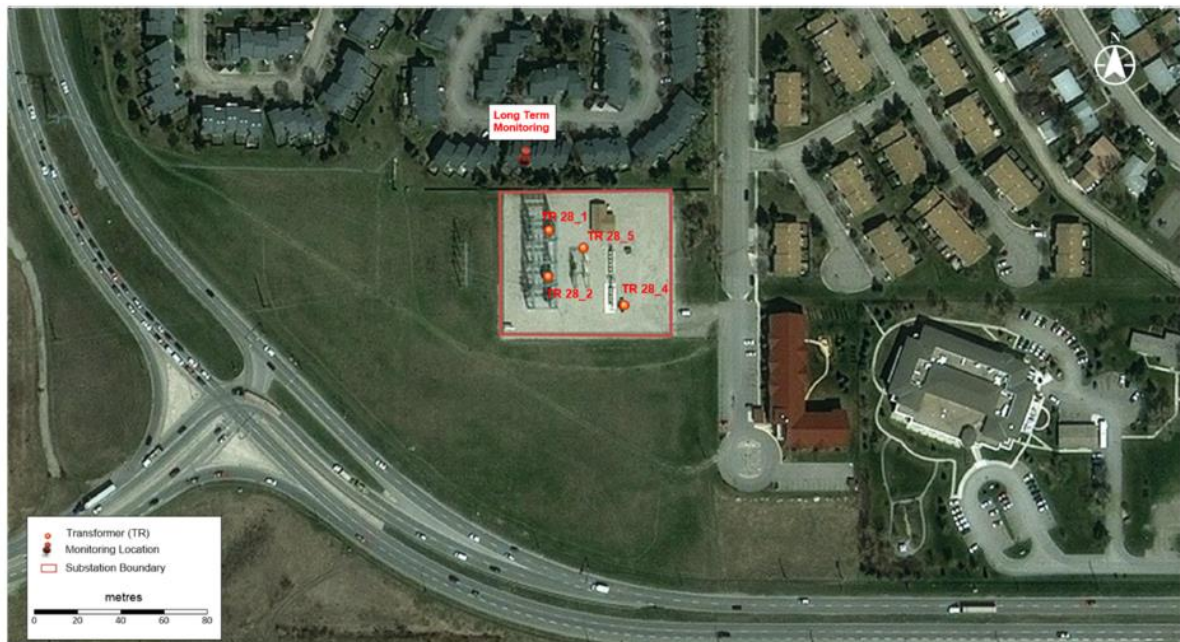
10. The measured overall nighttime comprehensive sound level at the monitoring fence line location FL1 was 60.7 dBA and the cumulative sound levels under the computer noise modelling

³ An adjustment to the permissible sound level for locations where the measured ambient sound level is not representative of the assumed ambient sound levels in Rule 012.

study result in an exceedance of the nighttime permissible sound level of 51 dBA at a total of 14 of the residences (including the complainant's residence). Of these, residence R2, located approximately 10 metres east of the complainant's residence, is predicted to experience the highest nighttime noise of 57.6 dBA. During the daytime, sound levels were not predicted to exceed the daytime permissible sound level at any receptor.

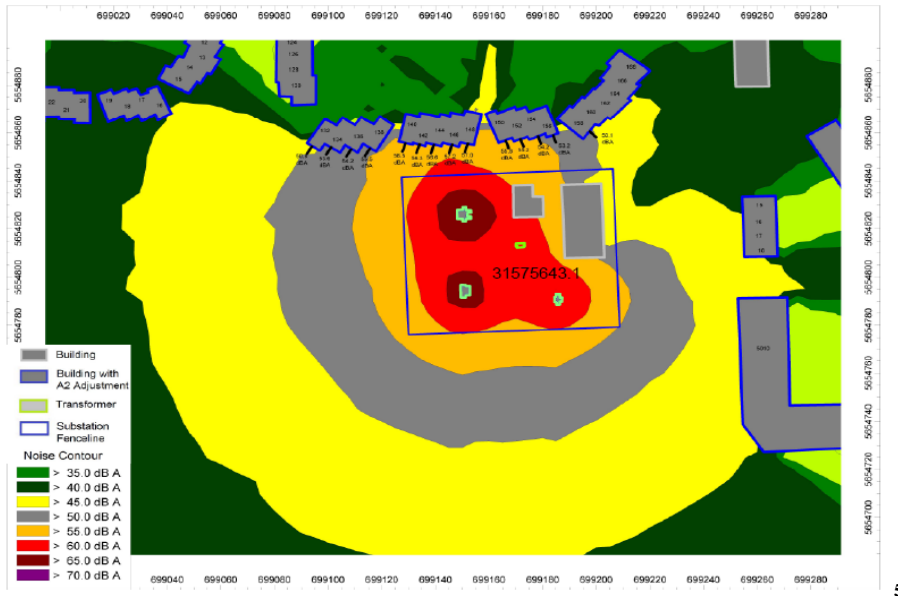
11. ENMAX explained that noise levels at the substation are primarily attributable to the transformers. The substation began operating in 1969 with one transformer. Additional transformers were added in 1970, 1979, 1992 and 2003, with the original 1969 transformer being removed in 2014. The two oldest transformers (28.1TR and 28.2TR) make the greatest contribution to noise, while the two newest transformers (28.4TR and 28.5TR) are smaller, distribution transformers that operate more quietly. The location of each transformer within the substation is shown in Figure 1, while their contribution to noise levels is shown in Figure 2:

Figure 1. ENMAX No. 28 Substation



⁴ Exhibit 27444-X0010, PDF page 49.

Figure 2. Substation noise level contributions



5

12. The Commission issued a notice of application in accordance with Rule 001: *Rules of Practice* and received one statement of intent to participate from Brian Adams. B. Adams was granted standing and the Commission established a written hearing process to consider the application.

13. B. Adams identified himself as the original complainant and explained that he had moved into the residence near the substation in 2017. He described that the noise from the substation is excessive and that he can hear the transformers every day and every night. He stated the noise penetrates the walls of his home and prohibits his ability to relax in his yard. He also outlined conversations he had with his neighbours that shared concerns with him about the noise from the substation.

14. B. Adams stated that he had been routinely advised that ENMAX was working on a solution to the problem and expressed concerns that ENMAX is seeking a “work around” through Rule 012, rather than mitigating the noise itself.

4 Findings

15. For the reasons outlined below, the Commission finds that the New Dwelling Rule is applicable and that No. 28 Substation is compliant with Rule 012.

16. The comprehensive sound level surveys conducted by Stantec show that noise levels at residences in close proximity to No. 28 Substation, including B. Adams’ residence, were predicted to exceed the nighttime permissible sound level. B. Adams did not dispute the sound level surveys but disagreed that the New Dwelling Rule should apply in the circumstances. ENMAX acknowledged that, absent application of the New Dwelling Rule, sound levels were in excess of the permissible sound level and would need to be mitigated in some manner.

⁵ Project noise only. Exhibit 27444-X0010, PDF page 33.

Accordingly, the first question the Commission must answer is whether the New Dwelling Rule applies.

17. In its letter, Enforcement staff acknowledged that B. Adams' residence qualifies as a new dwelling but then concluded that the New Dwelling Rule can not be reasonably applied because the substation and residence predate that section of the rule and because there is no noise impact assessment or measured sound levels from the time of construction to determine the permissible sound level. The Commission disagrees. It finds that this is an overly narrow interpretation that ignores the spirit and intention of the rule.

18. B. Adams submitted that the rules currently in effect "should not be used to adjudicate a situation in 1982" and objected to any use of Rule 012 that would not result in a reduction to sound levels at his residence. However, the Commission must interpret and apply its rules in a manner that does not frustrate their intended purpose. The version of Rule 012 currently in effect includes the New Dwelling Rule, which on a plain reading, is intended to provide regulatory certainty to owners and operators of existing and operational electric facilities that newly constructed or permitted dwellings are to be subject to the existing acoustical environment as it relates to noise emitted from those facilities. Further, the Commission does not consider the fact that the facilities in question predate the New Dwelling Rule to preclude its application and finds that such an approach would unreasonably restrict the spirit and intent of the rule.

19. The Commission agrees with ENMAX's assessment that the rule contains no restrictions or exclusions with respect to the type or age of facilities, other than the high-level requirement that the rule is triggered where there is an existing and operational facility that pre-dates the construction of nearby dwellings. In this case, ENMAX's substation pre-dates the residences in question, including B. Adams' residence, resulting in the very scenario to which the rule is intended to apply.

20. Enforcement staff also rejected the applicability of the rule because no noise impact assessment for the substation was conducted prior to the construction of the residences, nor was there a comprehensive sound level survey completed at the time the residences were constructed.

21. ENMAX stated that the New Dwelling Rule does not specify any timeline within which measurements must be undertaken relative to the construction of the new dwelling or otherwise. It submitted that subsection 2.3(3) suggests that measurements be obtained as part of a post-construction noise survey at the new dwelling, however, "post-construction" is not defined and could reasonably be interpreted as any time after construction of the new dwelling is complete.

22. The Commission finds persuasive ENMAX's submission that "it is not reasonable to expect that sound level measurements will always (or often) be taken at the start of the dwelling construction or in the initial post-construction period, particularly in the case of decades-old facilities or in an urban environment where the residential landscape can change on a regular basis."⁶ The Commission considers that this approach would be onerous, impractical and cost prohibitive to the utility and the customers in aggregate. Requiring facility owners, particularly those operating in an urban area, to constantly monitor for new dwelling construction and routinely or proactively conduct comprehensive sound level surveys and noise impact

⁶ Exhibit 27444-X0035, EPC Argument filed September 21, 2022, PDF page 12, paragraph 50.

assessments is not an efficient use of resources and does not align with the spirit and intent of the New Dwelling Rule.

23. The Commission finds that ENMAX responded appropriately by obtaining comprehensive sound level surveys as soon as it was made aware of the complaint and modelling sound levels at all applicable receptors. The modelled results are consistent with the measured results at location FL1. Further, ENMAX's evidence demonstrates that the sound levels associated with the substation have decreased since the construction of the residences as a result of the original 1969 transformer being removed in 2014. The Commission is satisfied that this information, taken together, is sufficiently representative of the sound levels existing at the start of construction of the townhouse complex for the purpose of establishing a permissible sound level under subsection 2.3(1) of Rule 012.

24. While the Commission is mindful of B. Adams' concerns, it seeks to find a solution in the public interest that balances the interests of all stakeholders, including facility owners and the ratepayers that would bear the costs of additional mitigations. The Commission is persuaded that not applying the New Dwelling Rule in this circumstance would set an unreasonable precedent, that would effectively nullify the intent of the rule.

25. Pursuant to subsection 2.3(2) of Rule 012, the Commission may grant an exemption from the New Dwelling Rule under exceptional circumstances on the application of a person referred to in subsection 2.3(1) of Rule 012. While B. Adams did not explicitly apply for relief under this subsection, the Commission considers that the evidence that has been provided in this proceeding does not demonstrate that a departure from subsection 2.3(1) of Rule 012 is warranted. Rather, as stated above, the circumstances before the Commission in this proceeding results in the very scenario to which subsection 2.3(1) of Rule 012 is intended to apply.

26. Further and in the alternative to its above interpretation of the New Dwelling Rule, the Commission exercises its discretion to apply the New Dwelling Rule in these circumstances. This authority is set out in subsection 1.4(3) of Rule 012 which provides that "[t]he Commission may dispense with, vary, or supplement all or any part of these rules if it is satisfied that the circumstances require it." In this case, the application of the New Dwelling Rule is supported by the fact that ENMAX's No. 28 Substation predates the construction of B. Adams' residence and has been operating in accordance with all applicable regulatory requirements since its construction. Further supporting the Commission's exercise of discretion are the circumstances detailed in paragraphs 22 to 24, above, including evidence demonstrating sound levels associated with the substation have decreased since the construction of the residences, concerns with undermining regulatory certainty and that ratepayers would bear the cost of additional mitigations.

27. Having determined that the New Dwelling Rule applies, the next step is to determine the permissible sound levels. ENMAX submitted that under the New Dwelling Rule the daytime permissible sound level would be 61 dBA (as determined by Section 2.1 of Rule 012) and the nighttime permissible sound levels would be the cumulative sound levels set out in Table D.1 of the Stantec Report.⁷

⁷ Exhibit 27444-X0010, Appendix I - ENMAX Substation 28 Stantec Noise Report, PDF pages 66-69.

28. The Commission accepts ENMAX's submissions with respect to the applicable permissible sound levels. The Commission is satisfied that this data is accurate given that the modelled and measured data at FL1 are in alignment. Further, it considers these values to be conservative given the evidence that the sound levels associated with the substation have decreased since the construction of the residences. Accordingly, the permissible sound levels are set out in Table 1.

Table 1. Permissible sound levels

Receptor ID ⁸	Permissible sound level (dBA)		Receptor ID ⁹	Permissible sound level (dBA)	
	Daytime	Nighttime		Daytime	Nighttime
132	61	52.2	146 (R2)	61	57.6
134	61	54.4	148	61	57.3
136	61	54.8	150	61	56.2
138	61	56.0	152	61	55.7
140	61	56.9	154	61	54.8
142 (R1)	61	56.7	156	61	54.0
144	61	57.0	158	61	51.6

29. ENMAX indicated that one of the transformers is proposed to be replaced with a quieter transformer in the next few years. The Commission expects that this will alleviate the substation noise to some extent, including a reduction in tonality noise often associated with older transformers, and encourages ENMAX to continue to consider sound levels as a factor in selecting the transformer replacement.

30. The Commission recognizes that there is a specific opportunity for improved clarity respecting the New Dwelling Rule in Rule 012, as well as a general opportunity to revisit the process to establish urban permissible sound levels. As such, the Commission recommends that as part of the review of Rule 012 that is currently underway, or a future review of Rule 012, the wording associated with the new dwelling rule and the overall approach to the determination of urban permissible sound levels be further examined.

⁸ As indicated in Exhibit 27444-X0010, Appendix I - ENMAX Substation 28 Stantec Noise Report.

5 Decision

31. Based on the foregoing, the Commission has determined that the New Dwelling Rule applies, and that the substation is compliant with Rule 012. As such, there is no need for an A2 adjustment or mitigation measures, such as the contemplated sound barriers.

Dated on November 24, 2022.

Alberta Utilities Commission

(original signed by)

Cairns Price
Commission Member