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Project/File: AUC 2022-12 Bulletin

Joan Yu

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1400, 600 Third Avenue S.W.
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Dear Joan Yu,

Reference: AUC Bulletin 2022-12: Further consultation for potential changes to AUC Rule 012: Noise Control

Stantec Consulting Ltd. (Stantec) provides the following in response to the AUC Bulletin 2022-12: Further consultation for potential changes to AUC Rule 012: Noise Control.

1. Do you believe changes are required to Rule 012 to specifically address PSLs for urban environments in light of Decision 27276-D02-2022 or otherwise? Please explain.

Stantec believe changes are required to Rule 012 to address PSLs for urban environments. The definition of an urban receptor and urban PSL should be considered by the AUC. In addition, further clarification on the new dwelling rule in urban environment is recommended. More details are presented in the responses in the following sections.

2. If you believe changes are required to Rule 012 to specifically address PSLs for urban environments:

2.1. Please discuss whether the existing provisions in Rule 012 for assessing ambient sound levels and the use of A2 adjustments are adequate to determine appropriate PSLs for urban environments. Please include a discussion of the pros and cons associated with using the existing provisions to determine PSLs for urban environments.

The existing provisions in Rule 012 for assessing ambient sound levels and the use of A2 adjustments are not adequate for urban environment due to the following challenges:

- Current Table 1 in Rule 012 with discrete adjustment is appropriate for rural environment is not representative in an urban setting. For example, a 5 dB increase between 30 m and 29 m from a heavy travelled road, rail lines, and frequent aircraft flyovers. Please note that the BC OGC noise guideline revised the Proximity to Transportation classification Category 3 minimum threshold distance to 100 m instead of 30 m.
- Health Canada noise guideline suggests the baseline sound level of 45 day-night sound level or L_{dn} (equivalent to 45 daytime $\{L_d\}$ and 35 dBA nighttime $\{L_n\}$) for a quiet rural area. The suggested baseline sound levels for suburban residential areas are higher as follows:

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Description	L _{dn} (dBA)
Quiet suburban residential	48 to 52
Normal suburban residential	53 to 57
Urban residential	58 to 62
Noise urban residential	63 to 67
Very noise urban residential	68 to 72

- Adjustment for the proximity to transportation category classification only applies to either road, rail, or aircraft flyovers. The adjustments are not cumulative. A receptor in a municipality may be subjected to noise effects from road, rail, and aircraft flyovers all at the same time.
- An applicability of an A2 adjustment for multiple receptors with similar acoustic environment could be challenging in a densely populated urban environment. To be deemed similar acoustic environment, Rule 012 currently prescribes that justification must be provided demonstrating that the difference in daytime or nighttime ambient sound level at the receptor(s) is no greater than +/- 3 dB from the measured ambient sound level. Many anthropogenic activities within a small area in an urban environment may affect the ambient sound level at a receptor.

2.2. Please comment on how to define an urban receptor in Rule 012.

Stantec recommends that an urban receptor should reside in a municipality or a city. Further classification of urban receptor can be defined by city zoning and limits. There are 19 municipalities in Alberta that have been granted city status. To qualify as a city in Alberta, there must be sufficient population size present with over 10,000 people.

2.3. Please provide any recommendations for determining appropriate PSLs for urban environments, including any specific considerations for industrial versus residential areas. Please include a discussion of the pros and cons associated with the recommended method to determine PSLs for urban environments.

In the determination of an appropriate PSL for urban environments, Stantec recommends a combination or all of the following approaches to be considered:

- The implementation of a non-cumulative facility-only urban PSL. This approach is similar to the City of Vancouver (Noise Control By-Law No. 6555) and the Ontario Ministry of Environment, Conservation and Parks (MECP) noise regulation NPC-300.
- Revision to Table 1 of Rule 012 to consider the cumulative noise effects of higher population density (e.g., greater than 160 dwellings per quarter section), transportation corridor (e.g., current and future traffic volume, vehicle class, and speed), rail (e.g., heavy and light), and aircraft flyover. In the long term, consider an urban noise model that will forecast a noise map based on future road, rail, and aircraft volume (<https://noise.eea.europa.eu/>).
- A zone-based approach can be considered. The City of Vancouver Noise Control By-Law No. 6555 uses zone-based thresholds for different zones (i.e., activity or event zone, intermediate zone, and quiet zone). Alternatively, different classification used in the Ontario MOECC NPC-300 with Class 2, 3, and 4 for suburban, urban, and development adjacent to existing industry, respectively.
- Use of measured Ambient Sound Level (ASL) to determine the Basic Sound Level (BSL). In addition, reconsider that the current A2 adjustment is limited to plus and minus 10 dB. There may be situations

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where the maximum A2 adjustment is not sufficient to represent the ambient sound level in an urban environment.

- Consideration of whether the urban PSL would be applicable to AER regulated facilities.

2.4. Please comment on any other factors that should be considered in the context of establishing PSLs for urban environments.

More specific information for the PSL compliance location is recommended for multi-storey residential buildings. Stantec recommends further clarification on the noise measurement location in Section 4.1 (2) of Rule 012:

For the purpose of determining compliance with this rule, noise is measured at a distance of 15 metres (m) from the most affected dwelling(s) in the direction of the facility, rather than at the property line of the land on which the dwelling is located. Other measurement locations may be used if it is physically impracticable or acoustically illogical to measure where specified.

The 15 m from the most affecting dwelling may not be the best approach for urban dwellings with multiple stories. The NPC-300 also consider the Plane of Window (POW) approach for compliance noise level reference location. Ontario noise guidelines are based on the following:

Location in the centre of any window on a noise sensitive space of a dwelling or a building used for a noise sensitive institutional purpose or a noise sensitive commercial purpose; the location should be a minimum of 1.5 metres above ground for a first storey window, a minimum of 4.5 metres above ground for a second storey window, a minimum of 7.5 metres above ground for a third storey window, and the height of the vertical midpoint of the nearest and most exposed storey for a high-rise multi-unit building.

3. Do you believe that changes are required to update the sections of Rule 012 that address PSLs for new dwellings (i.e., sections 2.3, 2.4 and 2.5 and the definition of new dwelling in Appendix 1 – Glossary) in light of Decision 27444-D01-2022 or otherwise? Please explain.

Stantec recommends changes to Section 2.3 due to the following reasons:

- Further clarification on time frame to measure sound levels at the new dwelling for the “sound levels existing at the start of the new dwelling construction”.
- If there is no noise impact assessment for the facility and the existing acoustic environment is not feasible to measure representative “sound level existing at the start of the new dwelling construction”, other alternative methods should be considered by the AUC (e.g., noise modelling).
- Ongoing obligation to monitor for new dwelling construction and undertake a Noise Impact Assessment each time construction at a new dwelling commences would be onerous and impractical in urban environment.

AUC may consider revising Sections 2.4 and 2.5 to clarify that whether both sections only apply to facilities/dwellings that are not yet constructed today. It is not clear both sections apply to historical facilities that were permitted, but not built before the dwelling was permitted/built. In addition, both sections do not address the scenario where there is no noise impact assessment conducted for the facility.

Stantec has no recommendations for the definition of new dwelling in Appendix 1 – Glossary.

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4. If you believe changes are required to update the sections of Rule 012 that address PSLs for new dwellings:

4.1. Please specify which paragraphs or sections of Rule 012 should be updated and provide any recommended updates. Please include a discussion of the pros and cons associated with the existing provisions and any recommended updates.

In Section 2.3(1), the paragraph should include the scenario where there is a noise impact assessment, but the assessment does not represent the sound levels at the facility at the start of new dwelling constructions. For example, facility modifications that occurred between the assessment and the new dwelling construction.

In Section 2.3(2), if there is no noise impact assessment for the facility, alternative methods should be considered by the AUC as follows:

- Measured sound levels at the location of the new dwelling which represent the sound levels from the facility at the start of new dwelling construction; and/or
- A noise model that represents the sound levels from the facility at the start of the new dwelling construction

In Section 2.3(3), Stantec suggests the following (yellow highlighted are new text):

*If there is no noise impact assessment for the facility, the licensee can either conduct a noise impact assessment or a post-dwelling construction noise survey **at the new dwelling in accordance with Subsection 2.3(1)** must conduct a post-construction noise survey at the new dwelling and provide the noise survey results to that person.*

4.2. Please explain how you believe PSLs for new dwellings should be established. In particular, please describe recommendations to provide enhanced clarity to the existing new dwelling provisions in Rule 012.

In a complaint situation at a new dwelling where there is no noise impact assessment or the noise impact assessment is not representative, noise monitoring (e.g., source measurement and/or CSL surveys) and noise modelling should be considered as alternative methods to quantify the representative sound levels existing at the start of construction for the purpose of establishing a permissible sound level under subsection 2.3(1) of Rule 012. The Ontario MECP NPC-233 refers this as an acoustic Audit. It is a post-impact assessment to confirm noise modelling predictions through measurement at the impacted receptor and the facility noise sources <https://www.ontario.ca/page/information-be-submitted-approval-stationary-sources-sound-npc-233>

4.3. Please comment on any other factors that should be considered in the context of establishing PSLs for new dwellings.

Stantec has not identified any other factors that should be considered in the context of establishing PSLs for new dwellings.

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Respectfully,

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