

AIR CONDITIONER NOISE UPDATE

EXECUTIVE SUMMARY

Administration, including Animal & Bylaw Services (ABS) and Development & Building Approvals (DBA), was directed to undertake a review of noise standards and associated placement provisions for residential air conditioners and other household equipment, providing recommendations to enhance enforcement practices as applicable. This review included an examination of service requests, best practice research from other municipalities, along with the engagement of impacted citizens, industry stakeholders and noise measurement experts. The data analysis process confirmed the appropriateness of current City bylaws, however, indicated the need to enhance existing noise measurement practices. Based on these findings, Administration will implement three key adjustments to City noise measurement practices to effectively address noise concerns from residential air conditioners and other household equipment.

ADMINISTRATION RECOMMENDATION(S)

That the Priorities and Finance Committee recommends that Council receive this report for information.

PREVIOUS COUNCIL DIRECTION / POLICY

On 2013 April 22, Council approved NM2013-14, directing Administration to review appropriate placement provisions of residential air conditioners and other household equipment within Land Use By-law 1P2007, including but not limited to prohibiting installation of air conditioner units and other household equipment in the side-yard setback of new and existing homes; review appropriate acceptable noise levels and methods of measuring noise within the Community Standards Bylaw; investigate potential solutions to address the impact of air conditioners and other household equipment that have a demonstrable impact on the health and quality of life of adjacent neighbours; and, report to Council through the Priorities and Finance Committee no later than 2014 February.

BACKGROUND

Excessive noise within a residential environment can be regarded as a form of pollution and adversely impact quality of life. As such, The City of Calgary (The City) regulates the noise levels of household equipment, including air conditioners, to prevent unwarranted noise levels and ensure consistent community standards.

The Community Standards Bylaw 5M2004 regulates noise concerns and sets a continuous noise level maximum of 65 decibels (dBA) during the day-time (7am-10pm) and 50 dBA during the night-time (10pm – 7am) within a residential development. In instances in which noise issues are ongoing, ABS officers visit the location and utilize a noise measurement device to ensure the household equipment is within the allowable noise level. Additionally, DBA, through the Land Use Bylaw 1P2007 regulates the placement of air conditioner units within residential areas. The Land Use Bylaw currently allows for air conditioning units on side setback areas based on dwelling type, clearance, etc.

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INVESTIGATION: ALTERNATIVES AND ANALYSIS

Analysis of Service Requests

In 2013 there were 226 service requests involving air conditioners and other household equipment noise levels. These requests represented less than 1 per cent (0.2 per cent) of total service requests received by Animal & Bylaw Services in 2013.

Of the 226 service requests received, two thirds involved air conditioning units, with the remainder consisting of primarily fans and generators. The vast majority (90 per cent) of the 226 requests constituted a night-time complaint (after 10pm).

Over three quarters of requests were addressed through voluntary compliance, primarily involving an officer phone call to the owner of the equipment in question, ensuring awareness of noise level restrictions. Only the remaining 54 service requests required measurement of the noise in question and/or follow-up enforcement action.

Citizen engagement conducted through the service request process highlighted the need for more consistent noise measurement practices, including measuring the noise over a period of time and also reducing the impact of interference from outside noises.

Best Practice Research

Administration conducted a best practice review, comparing the Community Standards Bylaw with other noise-related bylaws in comparable municipalities. General residential regulations, night-time cut-offs, and allowable noise levels were all in alignment; with night-time allowable noise levels in particular found to be on par or lower than other cities. With over 90 per cent of residential noise complaints received during the night-time, this measure is of particular relevance.

Maximum Allowable Decibel Levels in other Canadian Cities:

City	dBA Day-time Residential	dBA Night-time Residential
Calgary	65	50
Edmonton	65	50
Medicine Hat	65	55
Winnipeg	55	50
Ottawa	50	50
Toronto	50	50

In addition to alignment with other municipalities regarding allowable noise levels, the Community Standards Bylaw also closely corresponds to noise guidelines issued by several provincial governing bodies, including the Energy Resources Conservation Board (ERCB), and the Alberta Utilities Commission; each recommending an allowable night-time noise level of 56 dBA.

Engagement of Industry Stakeholders & Technical Experts

Administration engaged industry stakeholders and technical experts to explore the connection between noise levels and the placement of air conditioning units, as outlined in the Land Use Bylaw (LUB).

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The vast majority of air conditioning units are located on either side of a residence (85 per cent), therefore also constituting the majority of complaints. Consultation with both industry stakeholders and the acoustical engineering firm of R. Patching & Associates determined that the placement of an air conditioning unit on the side of a residence does not contribute to increased noise levels. In fact the closer proximity to other residences offered by the side setback location allows for “a chimney effect”, allowing the sound to reflect off the building surface (stucco, siding, brick, etc) and reflect upwards without penetrating the structure. Further, placement of air conditioning units at the front or rear of residences may in fact increase noise levels, as the air conditioning unit is subsequently further removed from the air distribution system, resulting in longer running times and a greater burden placed on the unit’s motor.

Based on these findings, amendments to the LUB would not have a favourable effect on air conditioning noise levels, and in fact could be contrary to the objective of improved enforcement of residential noise levels. Any potential amendments may also be interpreted by citizens to be restrictive by limiting their choice of location for air conditioning units.

Recommendations

In accordance with the findings of the review process, Administration, with support from the acoustical engineering firm of R. Patching & Associates, further examined existing City noise measurement protocols. Subsequently, Administration will implement three adjustments to existing noise measurement practices to further address noise concerns from air conditioner units and other household equipment. These changes will allow for more efficient and effective resolution of citizen noise related service requests along with supporting our ongoing commitment to enhancing community standards and supporting community well-being. The adjustments are as follows:

a) Extending the duration of noise measurement

The current duration of time used to gather a noise reading is 15 minutes. An extension of this time period to 1 hour would allow for more comprehensive noise measurement and also minimize the impact of temporary ambient noises on the reading (e.g. furnace noise, etc); enhancing the overall reliability and validity of the measurement process.

b) Implementing of a pre and post measurement calibration of the noise measurement device

Existing noise measurement practice involves non-standardized calibration of the noise measurement device. The establishment of a pre and post calibration routine for each measurement will reduce instrumentation error and ensure reliable readings on an ongoing basis.

c) Adjusting for Extraneous Noises

A review of historical noise measurements indicated that extraneous noise sources (e.g. airplane, train, traffic, etc) can impact measurement results and lead to an inconclusive reading. By monitoring and logging such noise sources they can be factored out of the measurement process, reducing noise contamination and leading to a more accurate reading.

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Stakeholder Engagement, Research and Communication

Administration engaged impacted citizens; industry stakeholders, including the Energy Resources Conservation Board (ERCB), the Alberta Utilities Commission and air conditioning manufacturers; along with technical experts such as the acoustical engineering firm of R. Patching & Associates in the development of this report.

Strategic Alignment

This report aligns with Council's Fiscal Plan for Calgary 2012-2014, "Investing in great communities and a vibrant urban fabric."

Social, Environmental, Economic (External)

Excessive noise can reduce quality of life for citizens, communities and neighbourhoods. This report address these concerns and fosters appropriate community standards, along with supporting community well-being and vibrancy.

Financial Capacity

Current and Future Operating Budget:

Resourcing for the implementation of the noise measurement practices will be accommodated through the current ABS operating budget.

Current and Future Capital Budget:

Not applicable.

Risk Assessment

Following the completion of a risk management analysis, no significant risks were identified.

REASON(S) FOR RECOMMENDATION(S):

The noise measurement review process confirmed the appropriateness of current City bylaws, while also highlighting the need to enhance existing noise measurement practices. Based on these findings, Administration recommends that Council receive this report for information.

ATTACHMENT(S)

None.