

# Vehicle Noise

## Recommendation

That the February 21, 2018, City Operations report CR\_4772, be received for information.

## Previous Council/Committee Action

At the April 25, 2017, City Council meeting, the following motion was passed:

That Administration provide a report on the following:

1. a list of known problem locations for excessive vehicle noise in Edmonton,
2. an assessment of existing data on the magnitude and impacts of excessive vehicle noise on residents and businesses, especially along stretches, including but not limited to Whyte Avenue and Jasper Avenue,
3. a summary of what actions are being currently undertaken to address excessive traffic noise,
4. potential actions or countermeasures available beyond what is currently being done to address excessive traffic noise, within the existing budget, and return to Committee.

## Executive Summary

This report addresses concerns about excessive vehicle noise in the city and provides options for how it can be identified, monitored, and enforced. It also explores the use of new noise-monitoring equipment that may help to reduce the incidents of excessive vehicle noise.

Four high-complaint sites were examined as part of a vehicle noise pilot project, and a trial of new noise-monitoring equipment was undertaken at the two locations with the highest noise levels. The results of the trial indicate methods for excessive vehicle noise management could be explored in a tiered approach that combines education, technology and enforcement. The cost for any additional trials will be one-time funding that can be drawn from the existing operating budget.

## Report

### Background

The effects of excessive urban noise on the health and wellbeing of residents is a growing concern for many municipalities. As the population of urban centres grows, the need for municipalities to find ways to address avoidable noise has become more pressing.

Noise from pass-by vehicles and motorcycles is deemed excessive if it is likely to unreasonably disturb people in the area. In Edmonton, there are some locations that garner more noise complaints than others. According to information provided by the Edmonton Police Service, the majority of vehicle noise complaints pertain to two areas: a river valley loop that consists of River Valley Road, Connors Road, Scona Road and Groat Road, and a downtown area which includes Jasper Avenue and 109 Street approaching the High Level Bridge. The following chart contains the total number of vehicle noise complaints received by EPS in the last five years.

Citizen Complaints Regarding Noise From Motor Vehicles	
2013	70
2014	94
2015	123
2016	137
2017	123

The noise level from automobile traffic on a typical city street averages 60-65 decibels. Currently, the area/site specific sound levels, as established by the City in accordance with specified technical procedures (based on parameters such as traffic volume, percentage of trucks, posted speed limit, and road gradient, etc) determines excessive vehicle noise as noise that exceeds 85 decibels.

Administration compared environmental noise practices and enforcement across five Canadian cities (Vancouver, Edmonton, Calgary, Ottawa, and Halifax) and two international cities (Melbourne, Victoria - Australia, and Denver, Colorado). The review looked at each city's vehicle noise mitigation tactics and approaches ranging from legislation, enforcement, education, technology and engineering application. Observed through a high level analysis, factors such as public complaints, city density, vehicular traffic patterns, environmental best practices and construction impacts all affect the scope and scale these seven cities use to address noise issues (Attachment 1).

A synopsis of the environmental noise enforcement practices in these cities revealed that traffic speed and noise are inextricably connected. Moreover, there is a substantial increase in noise for those who live and work near highways. The two most effective

ways to reduce excessive vehicle noise are traffic management (road surfaces, speed limits) and noise abatement methods (sound walls, insulation measures in buildings).

Sound walls are capable of reducing noise levels by 10 decibels. Reducing traffic speed limits and increasing enforcement of speed limits is often the most effective and cost efficient means of reducing noise. Edmonton has addressed the problem of noise from heavy trucks through the establishment of fixed truck routes and the installation of noise attenuation measures (berms) along freeways and heavy traffic corridors.

On non-arterial roads, traffic calming measures such as speed bumps, curb extensions, raised crosswalks, road narrowing, and roundabouts helps to reduce traffic noise as does creating one way roads and posting speed limits in the 30km range.

### Current Status

Advances in monitoring technologies offer the option to manage noise in a similar way as speed is managed on roadway networks. In 2016, Administration reviewed new technology that displays noise levels for oncoming vehicles. Further research and evaluation will be required to determine the suitability of using this technology in Edmonton.

Administration also tested new noise monitoring equipment that triggers a video and audio recording based on a vehicle exceeding a predetermined sound level. The noise monitoring system activates when a vehicle exceeds preset noise levels. Testing occurred to ensure the equipment captures noise levels and accurately records images of vehicle license plate. The City is using the technology to monitor vehicle noise and to establish baseline results.

### Excessive Noise Locations

Administration and the Edmonton Police Service identified eighteen areas where the vehicle noise complaints are higher than normal (see Attachment 2). Upon further field review of these sites, four downtown locations were chosen to place noise monitoring systems. The screening locations were:

- 124 Street from Jasper Avenue to 118 Avenue
- Jasper Avenue from 109 Street to 124 Street
- Groat Road from Victoria Park Road to 107 Avenue
- 109 Street from Jasper Avenue to High Level Bridge

The goal of the trial was to determine the suitability of noise monitoring systems to detect, measure and identify vehicles making excessive noise. Further efforts were made to determine the best noise parameter to use for establishing the sound levels criteria.

### Impacts of excessive vehicle noise on residents and businesses, including but not limited to Whyte Avenue and Jasper Avenue

In reviewing the top noise locations, Whyte Avenue was not identified as having many vehicle related noise complaints, which is likely due to the number of signal lights and the amount of traffic that keeps speeds slow. However, arterial roads connecting to Whyte Avenue like 99 Street, Gateway Boulevard and 104 Street, generally south of Whyte Avenue, were included in the top eighteen. Other information was received that identified River Valley Road, Connors Road, Scona Road, Bellamy Hill, and the High Level Bridge as contributors to excessive vehicular noise due to being routes into or out of the river valley via hills (which encourage acceleration), or their physical location/construction. The geographical attributes can also be a contributing factor, as noise is amplified as it rises out of the river valley.

Short term field monitoring of the above four locations determined that two areas-- Jasper Avenue and 123rd Street, and Groat Road--were the noisiest locations and had fewer traffic signals to interrupt the flow of vehicular traffic. Long term noise sampling occurred at these locations over two weeks in October, 2016. Preliminary data suggests that the sampling period should not exceed 30 seconds and that the not-to-exceed noise criteria should not be lower than 85 decibels, as it correlates to the reasonable amount of time where the sound levels will be perceived as excessive by the general public. The 85 decibel level exceeding 30 seconds in length could potentially be an enforcement level threshold. Further research may have to be conducted to confirm that this is the appropriate duration of excessive noise or whether a lower duration should be considered.

From October 4 - 17, 2016, at the 123 Street and Jasper Avenue test location, the following instances of vehicle noise exceeding permissible levels were captured:

- For 30 second periods:
  - 41 instances between 85 and 90 decibels
  - 31 instances over 90 decibels
- For five second periods:
  - 325 instances between 85 and 90 decibels
  - Nine instances over 90 decibels

During the same time period at the Groat Road test location, the following instances of vehicle noise exceeding permissible levels were captured:

- For 30 second periods:
  - 28 instances between 85 and 90 decibels
  - Nine instances over 90 decibels
- For five second periods:
  - 182 instances between 85 and 90 decibels
  - Nine over 90 decibels

While this data provides a snapshot of the potential excessive noise in these locations in October 2016, it was not collected during the spring and summer when modes of transportation, weather, lifestyle and traffic patterns would likely be different. Further

data collection will be required to determine yearly trends, which would provide better information on the formation of any noise mitigation strategies.

### Summary of Current Actions and Potential Countermeasures

Administration looked at citizen complaints, sought input from Community Leagues and Edmonton Police Service, and used noise monitoring technologies at four sites to establish baseline noise levels.

Administration believes a noise management continuum (Attachment 3) should be formally developed, one that identifies a staged approach in dealing with vehicle noise and would include:

- Community signs
- Education campaigns
- Digital noise displays
- Automated enforcement technology
- Bylaw enforcement
- Manned enforcement

If a noise management continuum is developed, Administration will include the financial implications at that time.

### Conclusion

Education, use of detection and display technology, efficient and effective enforcement, and attention to design and planning can help minimize noise from transportation.

Should Committee request Administration pursue further work on excessive vehicle noise, the Traffic Safety section could extend its vehicle noise pilot project to include four units for detection and monitoring, and four units for educational feedback (like a Driver Feedback Sign for noise) in priority areas. The costs for the pilot project is estimated between \$50,000 and \$100,000 and will depend on the lease or purchase of equipment, based on a four-month deployment. This will be one-time funding that can be drawn from the existing operating budget.

### **Corporate Outcomes and Performance Management**

<b>Corporate Outcome: Edmontonians are connected to the city in which they live, work and play</b>			
<b>Outcome(s)</b>	<b>Measure(s)</b>	<b>Result(s)</b>	<b>Target(s)</b>
To reduce noise violations and increased compliance below directed levels	To be determined based on committee direction and additional research	TBD	TBD

### **Attachments**

1. Executive Summary City Noise Scan
2. List of Eighteen Areas of High Noise Complaints (from EPS)
3. Noise Management Continuum

### **Others Reviewing this Report**

- T. Burge, Chief Financial Officer and Deputy City Manager, Financial and Corporate Services
- R. Smyth, Deputy City Manager, Citizen Services
- C. Campbell, Deputy City Manager, Communications and Engagement