Noise Mapping Scoping Report

Why should Calgary map noise?

A visual representation of the sound levels experienced around Calgary (noise map) would allow residents, researchers, and policy makers to better understand noise exposure, raising awareness of the relative and absolute excess noise sound levels that Calgarians are exposed to at home and around the city.

Both short-duration noise spikes and long-duration periods of elevated sound levels (environmental noise) can cause health issues in individuals. A better understanding of the sound levels experienced by residents will shed light on the scope and scale of the population-level public health impacts caused by excess environmental noise in Calgary.

How would the data be collected and compiled?

Measuring actual sound levels across all the whole of Calgary is not a realistic approach to understanding noise exposure. Thousands of noise monitoring devices would be required and would not provide a level of granularity useful for city-wide analysis. Instead, the preferred approach to calculating sound levels at the city scale is to use software-based noise modeling. By making use of data inputs such as roadway alignment and traffic, land use zoning, building data, land topography, railway alignment and airport information, the average noise exposure of a given location in Calgary can be calculated. Modeling noise can provide a cost-effective and easy-to-understand map of sound exposure across the city that, when combined with population data, will allow a better understanding of what portion of Calgary's population is at risk for negative health impacts due to excess noise.

Though not practical for city-wide use, sound level monitoring is useful in targeted situations. By acquiring several dozen monitoring devices, The City could verify some of the assumptions made in noise modeling, learn more about noise issues in high-complaint areas, and actively monitor sound levels at live events. Monitoring would also allow for improved scheduling and resource assignment for noise enforcement activities. Sound level monitoring devices do not make recordings of conversations or sounds. They record sound pressure level - the energy of sound waves in the environment, often thought of the volume of a noise.

Who would undertake the work?

City-wide noise modeling could be undertaken by interested researchers. Many of the datasets required are already in The City's data repositories. Requiring less collection of new data will

allow for a higher quality noise map (more detail, using more data sources) for the same effort. If The City decided to lead the work and hire an external vendor, the costs would be approximately $150K.

The acquisition and management of an initial stock of noise monitoring devices, many of which can also collect other types of data, has already been budgeted for by Information Technology, and can be delivered using existing resources. These devices are expected help improve the deployment of officers tasked with noise enforcement as described in 2024 June 26 briefing "Progress Update on Addressing Noisy Vehicles and Community Traffic Safety" CD2024-0549. A preliminary collaboration with a research team at the University of Calgary's Schulich School of Engineering will also be pursued, allowing The City early access to new methods of analysis and data collection.