

Noise Action Plan Update

Date: March 18, 2025

To: Board of Health

From: Acting Medical Officer of Health

Wards: All Wards

SUMMARY

Noise is raised by Toronto residents as an issue of concern. To address this concern, the City of Toronto has many initiatives guided by the [2019 Noise Action Plan](#) and the updated City of Toronto [Noise Bylaw](#). Toronto Public Health's (TPH) mandate is determined by the Ontario Public Health Standards. Noise is not described as an environmental health hazard in the Ontario Public Health Standards. Toronto Public Health consults and provides advice to other City divisions in their work to mitigate the impacts of excessive noise.

The 2019 Noise Action Plan contains recommended actions within the authority of each City division to reduce excessive noise in Toronto. Although the COVID-19 pandemic resulted in pauses to some City operations, TPH and other City divisions have since made substantial progress in the Noise Action Plan. For example, Municipal Licensing and Standards completed the Noise Bylaw Review in 2024 in consultation with TPH, other City divisions, and stakeholders. The review identified new efforts to mitigate noise in Toronto.

This report, as requested by City Council through Item [2024.EC.9.5](#), Implementation Review of the Noise Bylaw, provides an updated review of the health impacts of noise. The latest research continues to describe excessive noise exposure impacts on cardiovascular, cognitive, sleep, and mental health outcomes. These are smaller relative impacts than other environmental and social determinant of health factors on these outcomes. This means that while there is evidence to support links between excessive noise and adverse health impacts on individuals, the population-level impact of noise is limited relative to other factors that cause population morbidity and mortality.

RECOMMENDATIONS

The Acting Medical Officer of Health recommends that:

1. The Board of Health request the Medical Officer of Health collaborate with Municipal Licensing and Standards to assess changes made through the Implementation Review of the Noise Bylaw in Item EC 9.5 that is intended to minimise the health impacts of noise.

FINANCIAL IMPACT

There are no financial impacts associated with the recommendations of this report. The Chief Financial Officer and Treasurer has reviewed this report and agrees with the information as presented in the Financial Impact Section.

DECISION HISTORY

On February 6, 2024, City Council adopted 2024.EC9.5 - Implementation Review of the Noise Bylaw, which made amendments to Toronto Municipal Code Chapter 591, Noise, including updating definitions, amending decibel limits for amplified sound, updating fees and charges, and directed Municipal Licensing and Standards to consider additional steps to mitigate noise in the City.

[https://secure.toronto.ca/council/agenda-item.do?item=2024.EC9.5.](https://secure.toronto.ca/council/agenda-item.do?item=2024.EC9.5)

On November 26 and 27, 2019, City Council adopted 2019.HL.10.5 - The Noise Action Plan, recommending actions for TPH and other City divisions to mitigate excessive noise in Toronto.

<https://secure.toronto.ca/council/agenda-item.do?item=2019.HL10.5>

On April 16 and 17, 2019, City Council adopted, with amendments, EC3.6 – Noise Bylaw Review – Proposed Amendments to Chapter 591. The amendments to Chapter 591, Noise, came into effect on October 1, 2019.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2019.EC3.6>

In June 2017, the Board of Health requested the Medical Officer of Health to develop a noise management action plan, in consultation with appropriate stakeholders, aimed at reducing exposure to ambient environmental noise over time.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2017.HL20.5>

COMMENTS

Toronto Public Health (TPH) commissioned [a noise monitoring and modelling study](#) in 2017. The study found the average 24-hour equivalent noise level across the city was 62.9 decibels (A-weighted) (dBA), mostly due to road traffic noise. These levels were

above the World Health Organization (WHO) 2018 [health-protective guideline](#) of 53 dBA outdoors for daytime and 45 dBA for evening road noise exposures.

In 2019, TPH released the Noise Action Plan, which recommended actions for both TPH and other City divisions to mitigate excessive noise (Attachment 1 provides an update on these actions). The COVID-19 pandemic delayed implementation of many of these recommendations. Since 2023, substantial progress has been made to achieve significant milestones.

Updated Evidence of the Health Impacts of Noise

TPH reviewed recent studies of the health impacts of noise for this report. As noise research has evolved, many of the health impacts identified in the scientific literature remain consistent with the findings from the 2017 Noise Monitoring Study. In environmental health, and across other areas of health, many factors interact to produce adverse health outcomes; some factors contribute more to a health outcome than other factors. Interaction between risk factors can make it difficult to isolate and quantify each factor's impact on population health. For example, poor air quality is associated with many of the same adverse health outcomes as noise, but the relative amount that air quality and noise contribute to health outcomes has not been consistently described. Although data is inconsistent, when comparisons have been made in sources that subject matter experts agree are well cited and of high quality, it is estimated that noise contributes less to these outcomes than air quality and other environmental and social factors^{1,2}.

Since noise, air quality, other environmental factors, and the wider social determinants of health all impact health, TPH uses information about the relative health impacts of these exposures to prioritize actions for improved population health within available resources and legislated mandates. In many circumstances, prioritizing measures that reduce other environmental exposures that have greater health impacts also have a co-benefit of reducing noise levels.

The evidence for this report can be categorized into consistent, conflicting, and limited evidence:

- Consistent evidence: many studies conducted by different researchers in different geographic locations, and with different, rigorous methodologies all find similar results.
- Conflicting evidence: studies from different sources present opposing data, arguments, or conclusions that cannot be reconciled.
- Limited evidence: individual studies report a trend or result, but these are infrequent relative to the body of literature in the field. It may also mean that the studies

¹Clark, et al. (2024) Global Burden of Disease from Environmental Factors. Annual Review of Public Health Vol. 26.

²GBD 2015 Risk Factors Collaborators. (2016). Global, regional, and national comparative risk assessment of 79 behavioural, environmental, and occupational, and metabolic risks or clusters of risks, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. The Lancet. Vol. 388.

reporting this result may be of poorer quality and did not employ rigorous methodology.

Health Impacts with Consistent Evidence:

TPH conducted a literature review of noise and health impact research, with a focus on changes that have occurred in the literature since 2017. There was consistent evidence in the updated literature to support the impacts of excessive noise on cardiovascular health, cognitive health, sleep, and mental health.

- **Cardiovascular health:** In 2017, TPH found that noise has been associated with conditions such as myocardial infarction, hypertensive heart disease, ischemic heart disease, high blood pressure, cerebrovascular disease (stroke), and coronary heart disease. Since then, more evidence supporting this trend has been published, and more studies have shown the biological pathways behind these associations.
- **Cognitive health:** Consistent evidence also continues to become available to support the impacts of noise on impairments to attention, memory in adults, and errors upon cognitive testing in children.
- **Sleep health:** Noise can cause increased arousals during sleep and changes to sleep structure. Lack of sleep and reduced sleep quality are known to cause other health issues.
- **Mental health:** Exposure to excessive noise is well established to result in annoyance, and at prolonged exposures to contribute to depression and reports of decreased quality of life.

The consistency of health impacts described in the literature review supports continued implementation of actions underway (Attachment 1). With more time, the influence of these actions on noise mitigation can become clearer.

Health Impacts with Conflicting and Limited Evidence:

In TPH's 2017 environmental noise study, [How Loud is Too Loud](#), TPH examined studies on the impacts of noise on pulmonary health, diabetes, and children's behaviour. Since the 2017 study, evidence for these impacts has become conflicting. Studies have shown that increasing exposure to road noise is linked to an increased risk of type 2 diabetes. Associations have also been found between noise exposure and fetal malformations and small sizes for gestational age. However, the biological mechanisms explaining how noise causes these health impacts are not clear. Studies showing these correlations also lack controls for confounding factors; this means that these health outcomes could be caused by other associations or combinations of associations.

No new studies about noise's impacts on pulmonary health, or behaviour in children were found during this new review. There are too few studies of high scientific rigour to verify this relationship. Similarly, although some studies describe correlations between noise and dementia, these also acknowledge that air pollution (e.g., particulate matter <2.5 um, nitrogen dioxide, nitrous oxides, and carbon monoxide) was also present and may contribute to these outcomes. TPH continues to monitor research on noise, will identify emerging health impacts as evidence evolves, and make recommendations to other City divisions if evidence supports policy changes or further actions.

Addressing and Mitigating the Impacts of Noise in Toronto

Given that noise is not directly within the scope of TPH's mandate for surveillance in the Ontario Public Health Standards, most recommendations in the 2019 Action Plan were directed at other City Divisions for implementation in alignment with their mandates. As mentioned above, implementation was delayed due to the COVID-19 pandemic, but has since progressed (for more detail, please see Attachment 1):

- TPH forwarded the Noise Action Plan to the TTC, Metrolinx, and the provincial Ministry of Transportation for their consideration on behalf of the Board of Health. Metrolinx, for example, has put forward specific [mitigation](#) measures for Ontario Line subway construction.
- To strengthen the City's response to excessive noise and complete actions recommended in the 2019 Noise Action Plan, refinements were proposed to the Noise Bylaw and approved by City Council in early 2024. The changes came into effect on June 1 and September 1, 2024. MLS consulted with TPH during the review of the bylaw to identify opportunities to mitigate noise and its health impacts. The refinements included:
 - Implementing Council direction to add a motor vehicle noise decibel limit (in addition to limits currently in place for motorcycles), to be enforced alongside the Toronto Police Service (TPS).
 - Lowering noise limits for amplified sound.
 - Operationalizing sound level adjustments for special qualities of sound like tonal qualities (e.g., a whine, screech, or buzz).
 - Incorporating sound-induced vibration into the prohibition on “unreasonable and persistent” noise to enable a more sufficient response to public concerns about the health impacts of prolonged exposure to sound-induced vibration.
 - Adopting measures aimed at enhancing communication to community members where events with amplified noise are held.
- Through an additional staff report from MLS in Fall 2024, changes were made to waive noise exemption permit application fees for grassroots cultural organizations.
- Economic Development and Culture (EDC) teams advise music, content and cultural producers on the adoption and use of quieter power generation technologies. EDC also more proactively engages with community members near large event sites so that the noise they make contributes to the vibrancy of the city and does not contribute to the negative health impacts described above.
- Environment, Climate & Forestry (ECF) is working to achieve the 2030 TransformTO Net Zero Strategy goal to increase the ownership of Electric Vehicles (EVs) to 30 per cent (IE16.5), with the aim of reducing greenhouse gas emissions. This goal will have the additional benefit of reducing traffic-related noise because EVs are quieter than gas-powered vehicles. The City has also committed to transitioning towards zero emission outdoor power equipment through the development of a potential ban on the use of gas-powered two-stroke engine equipment, such as leaf blowers, as a precaution against the cumulative adverse impacts to human health and climate ([2023.IE5.1](#)) from noise and air quality.
- Transportation Services is conducting pilots to reduce noise of truck operations in freight movement, piloting new noise suppression technologies at construction hubs, and reducing red tape for community traffic calming requests as part of Vision Zero 2.0.

- Transportation Planning is evaluating noise and vibration for new transit corridors as part of their project assessment process, and will be using new, quieter vehicles for the new Ontario Line.
- Fleet Services continues to work towards the goal of half of City-owned vehicles and equipment transitioned to zero-emissions by 2030. Noise reduction will be a major advantage of the transition to zero emission vehicles, as electric vehicles generate significantly less noise than gas or diesel fueled vehicles. City staff who operate these vehicles, as well as the communities where City vehicles deliver services, will benefit from this noise reduction.
- The TTC is working closely with acoustic experts to ensure that where required and feasible, noise mitigation measures are being implemented, and is complying with the Noise Bylaw on construction projects. They are also examining ways to reduce noise from subway rails.

Role of Toronto Public Health in mitigating the health impacts of noise

In addition to supporting the above actions, TPH also works to address health hazards, such as air quality and physical inactivity, that contribute to the same adverse health outcomes as noise, like cardiovascular health.

- TPH is strengthening partnerships and collective work to create healthy environments that promote physical activity. This includes collaborations with other City Divisions and community partners on healthy aging and the built environments. For example, efforts include enhancing walkable neighbourhoods that reduce the need for noisy vehicles and fostering active transportation such as cycling and transit use that reduces personal vehicle use.
- TPH provides comments and recommendations on noise mitigation on large scale development and transportation projects where noise impacts may be of concern to local communities, particularly when these projects are exempt from the Noise Bylaw.
- TPH promotes programs and policies aimed at improving Toronto's air quality. This includes work conducted in other City Divisions focused on reducing traffic-related air pollution, adopting electric vehicles, and increasing greenspace. Greenspace reduces noise due to the sound absorption properties of trees and plants³.
- TPH is strengthening relationships with the Vision Zero program and Transportation Services to identify opportunities to support active transportation initiatives.

This work directly contributes to the improvement of health outcomes. For example, active transportation improves cardiovascular health through physical activity and reduction of vehicular pollutant emissions. In addition, active transportation reduces the amount of noise by decreasing the number of cars on the road. Therefore, active transportation produces an indirect co-benefit of noise reduction.

³Zhao, N., et al., (2021) Tree characteristics and environmental noise in complex urban settings - A case study from Montreal, Canada. *Environmental Research*. Volume 202.

Next Steps

To continue to shape evidence-based policy at the City, TPH will collaborate with City Divisions on future policy developments to facilitate consideration and incorporation of health evidence. Through its work on identification and mitigation of environmental health hazards, TPH will also advise other City Divisions in their planning and operations. As part of this consultative role, TPH will recommend strategies to relevant partners that reduce noise and other types of environmental health exposures to improve population health.

Toronto Public Health Strategic Impact

This work is aligned with the following priorities from TPH's Strategic Plan:

- 2, D: Promote health and well-being across the lifespan:
 - Advocate for healthy social, natural, and built environments and collaborate with partners on initiatives that advance these goals.
- 4, B and C: Advocate to advance health equity:
 - Collaborate with partners across multiple sectors to address local health needs.
 - Share evidence, advocate and collaborate to influence actions that impact population health.

CONTACT

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SIGNATURE

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Acting Medical Officer of Health

ATTACHMENTS

Attachment 1: 2019 Noise Action Plan - Recommendations and Status Update

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City Division or Organization	2019 Recommendation – Noise Action Plan	Status Update
Toronto Public Health	<p>1. Forward the report to the TTC for consideration in noise mitigation activities for their operations.</p> <p>2. Forward the report to the Ontario Ministry of Transportation and Metrolinx for consideration.</p>	<p>Complete</p> <ul style="list-style-type: none"> • See below sections for how TTC teams have incorporated noise mitigation into their planning and operations as a result of consultation with TPH.
Municipal Licensing & Standards	<p>1. Consider the Noise Action Plan to identify additional opportunities to mitigate noise.</p>	<p>Complete</p> <ul style="list-style-type: none"> • The City reviewed the successes and challenges of the implementation of the comprehensive changes to the Noise Bylaw that were made in 2019. Refinements to the bylaw were implemented on June 1 and September 1, 2024 (more details available through Items 2024.EC9.5 and 2024.EC10.3). • Several refinements were introduced including modernizing the noise exemption permit process, lowering nighttime indoor sound level limits for amplified sound, implementing Council direction to add a noise decibel limit for stationary motor vehicles, incorporating sound-induced vibrations into the prohibition on “unreasonable and persistent” noise, and updating definitions such as “point of reception” in the Bylaw. • MLS set up a new 311 process in June 2024 to monitor noise issues from private waste collection operations. operations (Item 2024.EC16.4).
Economic Development & Culture	<p>1. Consider the Noise Action Plan for their programs and policies.</p>	<p>Film and Entertainment Industries</p>

		<ul style="list-style-type: none"> • Now has a Power Drop Kiosk, which allows productions to tie into it to receive clean energy to power their vehicles and sets, eliminating the need for noisy generators. <p>The Music Office</p> <ul style="list-style-type: none"> • Created a Resource Guide for music event organizers with information about mitigating environmental noise during events. <p>Museums and Heritage Services</p> <ul style="list-style-type: none"> • Engages more proactively with communities surrounding the Fort York National Historic Site, the primary location where there are consistent public concerns and complaints relating to noise, to keep the community updated on large scale events. Community is also actively engaged in activities at Casa Loma and Spadina Museum. • Assesses noise impacts at the application stage of project feasibility evaluation. • Organizes onsite bylaw officers for large-scale outdoor events with amplified sound, monitoring sound levels to ensure noise bylaw adherence. <p>Arts and Culture Services</p> <ul style="list-style-type: none"> • Works with a technical production vendor to monitor sound during third party events at Nathan Phillips Square, at cost to the event organizer, per the City Sound Bylaw. • Installed temporary PA systems that prioritize a consistent sound level to all attendees such that the volume at the stage is the same as the volume at the back of the venue to enhance comfort to the audience. • Focuses noise energy and controls levels of noise that extends beyond the intended activity geography. • Assesses neighbouring buildings and environments prior to locating events and infrastructure within residential communities (avoided where possible). • Informs and continues direct communication with resident associations to respond to concerns at the planning stage. • Assesses noise impacts at the application stage of project feasibility evaluation. • Requires all delivery vehicles to shut off during loading and unloading activities and minimize after-hours delivery of equipment.
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Environment, Climate & Forestry	1. Incorporate noise mitigation as a goal in the forthcoming TransformTO Electric Vehicle strategy.	<p>TransformTO Net Zero Strategy</p> <ul style="list-style-type: none"> Council approved the implementation approach to reach the 2030 TransformTO Net Zero Strategy of 30 per cent ownership of EVs (IE16.5). The approach is a model of cross-corporate coordination to advance EV infrastructure asset planning until the year 2030 and clarifies the City’s role with respect to EV infrastructure provision based on initial technical analysis. Promotes active transportation and public transportation, and private individuals’ transitions to EVs by encouraging charging station installation infrastructure in residential and commercial buildings, in collaboration with BetterHomesTO. Reporting back to Council in 2025 on the feasibility of a ban on two-stroke engine equipment based on stakeholder consultations, research and analysis with recommendations for next steps.
Transportation Services	1. Include environmental noise mitigation as a priority in: <ul style="list-style-type: none"> a. Planning and operations b. Reviews of road repair projects c. The Freight and Goods Movement Strategy d. The Congestion Management Plan e. The VisionZero 2.0 Road Safety Plan 	<p>The Freight and Goods Movement Strategy</p> <ul style="list-style-type: none"> Adopted a number of pilots and programs to reduce the noise of freight movement and the dependence on truck operations. <ul style="list-style-type: none"> A partnership with companies like Purolator on delivery mini-hubs (i.e., a redistribution center for the pick-up and drop-off of packages), using Electric cargo bikes, and electric delivery vehicles for Last-mile delivery. Currently in the process of developing a Strategic Truck Network that will identify corridors and alternatives routes for the strategic delivery of freight and goods and will consider the impact on surrounding lands, equity seeking groups, and Neighbourhood Improvement Areas. Enhanced micromobility assets to encourage residents and local delivery to choose quieter options over internal combustion engine vehicles. <p>The Congestion Management Plan</p>

	<p>2. Determine the feasibility, approach, and costs associated with monitoring road traffic noise.</p>	<ul style="list-style-type: none"> • Managing traffic, including supporting "Don't Block the Box" initiatives by deploying Traffic Agents at key intersections Utilizing new Road Disruption Activity Report System (RoDARS) platform and services to better manage construction. • Leveraging technology such as Smart Signals and Intelligent Intersection devices to optimize signal operations and better manage congestion. • Approving longer working hour allowances in exchange for the use of noise suppression technology on construction vehicles. This has the added benefit of hastening completion of work, alleviating the amount of time heavy vehicles are on the road. • Collaborating with TTC to enhance public transportation operations to improve bus and streetcar flow. <p>The Vision Zero 2.0 Road Safety Plan</p> <ul style="list-style-type: none"> • Adopted new traffic calming criteria in October 2023, including a proactive approach for traffic calming and reduced the community red tape when requesting traffic calming. Speed humps and speed cushions encourage vehicles to travel at a consistent and slower speed, as opposed to higher speeds or variable speeds, which tend to generate more noise. Due to the updated Traffic Calming policy, demand for traffic calming is expected to double by 2026. • Expanded the Community Safety Zone Framework to allow for Automated Speed Enforcement in areas where there are vulnerable road users and speed is an issue. • In 2025, Transportation Services will add 75 new ASE cameras to the existing 75 using a data driven approach to locations that have the most problematic vehicle speeds and will also be adding 20 new or extended community safety zones, which will allow for the establishment of ASE to combat speeding concerns for vulnerable road users. • To date, 15 wards have had their local road speed limits reduced to 30km/h, with an additional 2 wards per year for the next 4 years to be implemented.
<p>Transportation Planning</p>	<p>1. Include environmental noise mitigation as a priority in:</p>	<p>Planning and Operations</p> <ul style="list-style-type: none"> • In transit implementation, noise and vibration for new transit service corridors and construction are evaluated through the Transit and Rail Project Assessment

	<p>a. Planning and operations b. Reviews of road repair projects c. The Freight and Goods Movement Strategy d. The Congestion Management Plan e. The VisionZero 2.0 Road Safety Plan</p> <p>2. Determine the feasibility, approach, and costs associated with monitoring road traffic noise.</p>	<p>Process (TRPAP). In some cases, the Transit Expansion Division had specialized consultants on retainer to peer review these environmental reports.</p> <ul style="list-style-type: none"> The new Ontario Line will use a metro type vehicle that is medium weight and is expected to be quieter than subway trains, however data verifying this comparison is not available for Toronto. The Ontario Line will also have platform edge doors, which may reduce the noise of trains as they enter and leave stations from the perspective of passengers waiting on the platform. <p>Union Station Rail Corridor (USRC) East Enhancements Transit Project:</p> <ul style="list-style-type: none"> The types of mitigations recommended through these reviews include noise walls, monitoring and in some cases window and door replacements for affected buildings. During the implementation phase, there are requirements for noise and vibration reports related to construction impacts. As part of transit reviews, they will ask Metrolinx to confirm that this meets their environmental commitments set out in the TRPAP Environmental Project reports.
Fleet Services	<p>1. Include noise mitigation as a goal of the prioritization of electric vehicles.</p>	<ul style="list-style-type: none"> Continues to aim to transition half of City-owned vehicles and equipment to zero emission ones by 2030. Overall, as the fleet transitions to zero emission vehicles, noise reduction will accompany this shift, as zero emission vehicles generate less noise than gas- or diesel fueled vehicles. <ul style="list-style-type: none"> The current percentage of zero emission vehicles is 9%. TransformTO transition targets: <ul style="list-style-type: none"> 20% zero emission vehicles by 2025 50% by 2030 100% by 2040 Launched a bike program to support divisions using Fleet Vehicles to utilize bikes, where possible, instead of internal combustion engine vehicles. As of 2025, there are 123 bikes within the City's operational Fleet. Engaging with various City Divisions to identify noise-sensitive areas and gather feedback on existing fleet operations. This will help prioritize noise mitigation efforts effectively.

Toronto Transit Commission	1. Consider noise mitigation activities in operations (upon receiving the report from the Board of Health).	<ul style="list-style-type: none"> • Working closely with acoustic experts to ensure that where required and feasible, noise mitigation measures are implemented, including the procurement and use of quieter equipment. • Aim to work on construction projects during daytime hours to limit nighttime noise disturbances to residents, in compliance with the Noise Bylaw.
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