Methods to Determine Sound Levels Due to Road and Rail Traffic

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Table of Contents

[1. Scope 3](#_Toc14770357)

[2. Purpose 3](#_Toc14770358)

[3. Implementation and Transition 3](#_Toc14770359)

[4. References 4](#_Toc14770360)

[5. Technical Definitions 4](#_Toc14770361)

[6. Road Traffic Noise 4](#_Toc14770362)

[7. Rail Traffic Noise 5](#_Toc14770363)

[7.1 Light Rail Traffic 5](#_Toc14770364)

[7.2 Heavy Rail Traffic 5](#_Toc14770365)

# Scope

This Noise Pollution Control (NPC) Publication describes methods to determine sound levels produced by road and rail traffic. It replaces Publication NPC-206 “Sound Levels due to Road Traffic”, October 1995.

# Purpose

This publication describes the prediction methods to calculate the Equivalent Sound Level (Leq) caused by road and rail traffic.

The road and rail sound levels are used for the purposes of the following:

* assessment of road and rail projects planned under the Environmental Assessment Act;
* approval of stationary sources of noise subject to the Environmental Protection Act; and
* reported noise-related incidents which are investigated to determine the potential for an adverse effect under the Environmental Protection Act.

Road and rail sound levels are also assessed and used to support decision-making by land use planning authorities under the Planning Act.

The prediction methods apply at a point of reception at any location where the background sound level is dominated by transportation sources of sound, primarily road traffic, and referred to as “urban hum”.

# Implementation and Transition

Commencing on XX 2021 (the “release date”), this publication can be applied in conducting assessments of road and/or rail traffic noise required to be submitted to MECP.

Within a period of one year from the release date, assessments of road and/or rail traffic noise submitted to MECP can also be conducted in accordance with ORNAMENT “Ontario Road Noise Analysis Method for Environment and Transportation” for road traffic, STEAM “Sound from Trains Environmental Analysis Method” algorithm for heavy rail traffic, and RT-Custom algorithm for light rail traffic

All assessments submitted to MECP prior to the release date of this publication will be reviewed using ORNAMENT / STEAM / RT-Custom. Alternatively, a noise assessment that was completed in accordance with ORNAMENT / STEAM / RT-Custom and submitted to MECP prior to the release date of NPC-306, can be revised using NPC-306 and resubmitted to MECP.

After a period of one year from the release date, all assessments of road and/or rail traffic noise submitted to MECP should be conducted in accordance with this publication. After that time, MECP may still accept assessments conducted in accordance with ORNAMENT/ STEAM / RT-Custom on a case-by-case basis.

# References

The current version of each referenced publication is listed below. All the referenced publications may be replaced with updated or amended versions from time to time. Please consult Ontario.ca for the latest versions of the referenced documents and other applicable guidelines issued by the MECP.

1. Publication NPC-101 - Technical Definitions
2. Publication NPC-102 - Instrumentation
3. Publication NPC-103 - Procedures

References 1 to 3 can be found in the Model Municipal Noise By-Law, Ontario Ministry of the Environment, Final Report, August 1978.

1. Publication NPC- 300 – Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning, August 2013

# Technical Definitions

Technical terms used in this publication are defined in References 1 and 4.

# Method for Road Traffic Noise

The method to be used for predicting road traffic noise is the “Traffic Noise Model” (TNM) algorithm published in 2004 by the United States Federal Highway Administration (FHWA), together with the most current TNM software available. Alternatively, the TNM algorithm can be used together with any other software which is authorized by the FHWA, or representative sample calculations can be provided to show identical results using the TNM software and any other software.

The FHWA provides guidance for the routine application of the TNM algorithm. Additional guidance is provided by the Transportation Research Board’s National Cooperative Highway Research Program (NCHRP) Report 791: Supplemental Guidance on the Application of FHWA’s Traffic Noise Model (TNM).

As an alternative to the TNM method, road traffic noise may be determined by measurement. See NPC-102, NPC-103 and NPC-300.

# Methods for Rail Traffic Noise

## 7.1 Light Rail Traffic

The method to be used for predicting light rail traffic noise for transit, subways and streetcars is the “Transit Noise and Vibration Impact Assessment Manual” algorithm by the United States Department of Transportation – Federal Transit Administration (FTA), dated September 2018, together with the most current FTA software available. Alternatively, the FTA algorithm can be used together with any other software that fully implements this algorithm. Representative sample calculations should be provided to show identical results using the FTA software and any other software.

MECP will not consider the use of field-measured data to be an acceptable method to determine light-rail traffic noise for the purposes of:

* the approval of stationary sources of noise subject to the Environmental Protection Act; or
* reported noise-related incidents which are investigated to determine the potential for an adverse effect under the Environmental Protection Act.

## 7.2 Heavy Rail Traffic

The method to be used for predicting heavy rail traffic noise for freight and passenger trains is the “High Speed Ground Transportation, Noise and Vibration Impact Assessment” algorithm by the United States Department of Transportation – Federal Railroad Administration (FRA), dated September 2012, together with the most current FRA software available. Alternatively, the FRA algorithm can be used together with any other software that fully implements this algorithm. Representative sample calculations should be provided to show identical results using the FRA software and any other software.

MECP will not consider the use of field-measured data to be an acceptable method to determine heavy-rail traffic noise for the purposes of:

* the approval of stationary sources of sound subject to the Environmental Protection Act; or
* reported noise-related incidents which are investigated to determine the potential for an adverse effect under the Environmental Protection Act.