

Noise related to the operation of the Réseau express métropolitain

The Réseau express métropolitain (REM) is the largest public transit project launched in Québec in the last 50 years. This automated light rail system will run 67 km along a dedicated corridor. The project was optimized to the maximum during its design phase and 85% of the REM will run on existing rail or road corridors.

Noise during the operating phase

The technology chosen for the REM is an automated light rail system. This type of technology is quieter than heavy trains, those that run on commuter rail lines. The main differences are wheel friction with the rails, squealing in curves and engine noise; all sources of noise that will be reduced with REM.

In 2016, CDPQ Infra commissioned a preliminary study on the anticipated noise level during REM operations. Preliminary results indicated that, in general:

- For the West Island and South Shore branches, the noise level will remain dominated by highway noise.
- For the Deux-Montagnes branch, trains will be quieter than commuter trains, but more frequent.
- Very few residential areas will be affected for the airport branch.

A complete noise assessment

The NouvLR limited partnership (NouvLR), the consortium selected for the construction of the railway tracks, has the obligation to perform a new detailed modelling of the noise expected during the operation of the REM. This modelling is currently being carried out using complete and up-to-date data from NouvLR and the Groupe des Partenaires pour la Mobilité des Montréalais (GPMM), the consortium that will supply the rolling stock.

This modelling is primarily based on ambient noise, frequency of passage of REM cars, the type of rolling stock as well as specific rail configuration. This modelling will be carried out in accordance with the directives of Québec regulatory authorities, namely the requirements of the Ministère des Transports, de la Mobilité durable et de l'Électrification des transports and its Politique sur le bruit routier (road noise policy).

If the detailed modelling indicates that some sectors are experiencing significant noise impacts according to the analysis grid of the Politique sur le bruit routier, NouvLR will implement mitigation measures.

A noise impact is considered “significant” when the difference between the actual noise level and the projected noise level has a strong or medium impact according to the analysis grid, as detailed below:

Actual noise level (average over a 24-hour period)	Increase in noise level before generating a significant noise impact and requiring the implementation of mitigation measures
Between 45 and 51 dBA	5 to 11 dBA
Between 52 and 61 dBA	4 dBA
62 dBA	3 dBA
Between 63 and 69 dBA	2 dBA
From 70 dBA	1 dBA

Criteria for stationary sources

In the case of stationary sources, i.e. tunnel ventilation vents or fans in stations, electrical rooms or transformer rooms, the thresholds set by the Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques in its Instruction Note 98-01 apply.

Instruction Note 98-01 is a tool that establishes noise limits to be respected, depending on the type of land use area (residential, park, agricultural, industrial, etc.) and on whether it's day or night. These principles are as follows:

Zone	Noise criteria (dBA)	
	Day (7 a.m. to 7 p.m.)	Night (7 p.m. to 7 a.m.)
I: Territory intended for detached or semi-detached single-family dwellings, schools, hospitals or other educational, health or convalescent service establishments. Land of an existing dwelling in an agricultural zone	45	40
II: Territory for multi-dwelling units, mobile home parks, institutions or campgrounds	50	45
III: Territory for commercial uses or recreational parks ¹	55	50
IV: Territory zoned for industrial or agricultural purposes ²	70	70

Follow-up during the operating phase

During the operating phase, a monitoring program will be implemented to ensure that noise levels are consistent with the detailed modelling. If actions indicate increases above expected levels, corrective measures will be implemented.

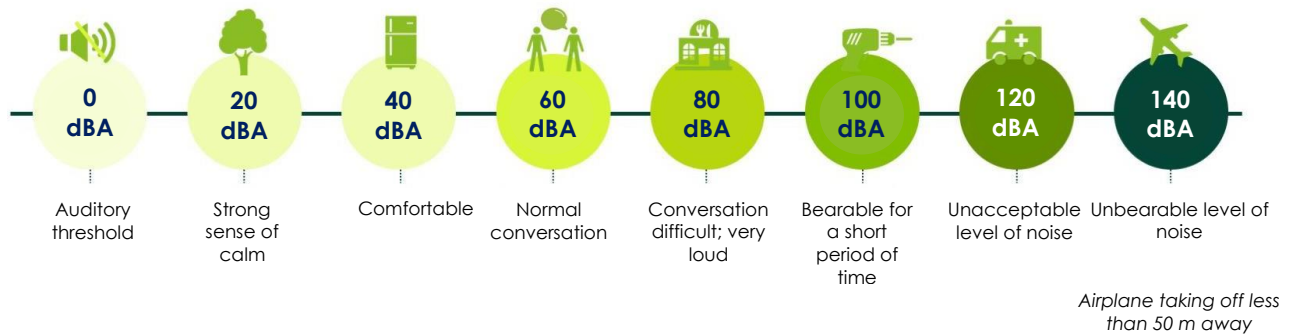
Under condition 6 of the environmental decree obtained for the implementation of the REM: CDPQ Infra Inc. must develop and carry out an ambient noise monitoring program for the operating phase. This program must validate the forecasts obtained with the modelling already carried out and, where applicable, evaluate the implementation of mitigation measures when significant impacts are measured for sensitive receptors according to the approach used for the MTMDET's noise impact assessment. It must carry out noise surveys during the summer one, five and ten years after commissioning. The location and number of sampling points must be representative of sensitive areas.

¹ The night-time noise level applies only within the property limits of establishments used for residential purposes. In other cases, the maximum noise level during the day shall also apply at night.

² On the land of an existing dwelling in an industrial zone and established in accordance with the municipal by-laws in force at the time of its construction, the criteria are 50 dBA at night and 55 dBA during the day.

Some basics about noise

Sound intensity is measured in decibels (dB). This is a logarithmic scale. For example, an increase of 3 dB is only slightly perceptible to the human ear, while an increase of 10 dB is perceived as twice the initial noise level. Environmental noise is generally expressed in "A-weighted" decibels (or dBA), which incorporate the range of frequencies picked up by the human ear. The scale below shows some examples of noise levels.



To contact us and stay up-to-date on the work

- For complete information on upcoming work, visit rem.info/en
- **1 833 rem-info (736-4636)**
- **Info@rem.info**

For more information on operating noise

Politique sur le bruit routier, Ministère des Transports, de la Mobilité durable et de l'Électrification des transports

https://www.transports.gouv.qc.ca/fr/ministere/role_ministere/Documents/politique_bruit.pdf (in French)