

**Railway / Municipality Proximity Issue Details**  
**FAQs, Applicable Legislation, and References to Further Information**

**CATEGORY 2. Environment**  
**Subject Area 2.2. Emissions**

**Issue 2.2.a. Locomotive Emissions**

**Frequently Asked Questions**

- Why are locomotives left idling, doesn't this contribute to increased green house gas emissions?

Ans. Locomotives idle approximately 50% of the time they are running. There are a number of reasons a stopped locomotive continues to idle. Although locomotives are always scheduled to return to a main yard after an assignment, they may stop and idle while building up and maintaining sufficient air pressure to complete brake tests, they may need to maintain air pressure to ensure brakes are applied on an incline or they may be waiting to pick up connecting rail cars from another train or waiting for a customer to release product from an industrial track. They may be waiting for signals permitting operation over the track ahead, or for an oncoming train to operate past and clear the track ahead. Much is being done to minimize any adverse effects on the environment of idling locomotives on the environment. As part of extensive new idle reduction programs on the part of Canadian railways, most new locomotives are now equipped with an automatic shut-off mechanism that activates when left idling for a period of time with no movement. This device will only work when the outside temperature is in the range of five degrees Celsius or above, depending on the type of engine. When below five degrees Celsius, locomotives remain idling because antifreeze of the type used in regular motor vehicles cannot be used.

As well, older mainline and switching locomotives are being refitted with similar automatic devices. These "Smart Start" devices conserve fuel and reduce emissions by automatically shutting down locomotives when they are not in use, and powering them up again only when required to maintain critical systems. Railways are also implementing manual idling reduction programs where locomotives must be manually shut down according to various criteria, similar to that listed above. These initiatives are helping to conserve fuel and drastically cut back on environmental emissions from idling locomotives.

- Are locomotive emissions being monitored? How can we know if they are improving or getting worse over time?

Ans. The rail industry is committed to having a minimal impact on the environment and seeks to reduce air pollution from the combustion of fossil fuels. With a number of major ongoing programs and investments, rail is well on its way to being Kyoto-compliant. Rail transportation is environmentally friendly. It carries some 65 per cent of surface tonne-km of all the freight carried in Canada but only produces 3 per cent of transportation-related green house gases. Rail not only generates fewer emissions than any other mode of transport, but also conserves fuel. Fuel efficiency has increased 65 per cent in the last 20 years and emissions have been reduced through initiatives such as locomotive fleet renewal and upgrade programs to meet new efficiency and reliability standards and emission reductions of nitrogen oxide, NOx. New generation, higher horsepower locomotives consume 17 per cent less fuel than older units and have higher hauling capacity. Some of the latest locomotive purchases by Canadian railways even meet the U.S. Environmental Protection Agency (EPA) Tier 2 standards, emitting approximately 40 per cent less nitrogen oxides. Locomotives purchased after 2006 will meet the EPA Tier 3 standards with even lower emissions.

Other initiatives include both automatic and manual locomotive idling reduction programs and operational efficiency agreements to share track in certain areas have been very successful at consolidating traffic leading to lower fuel consumption and reduced emissions. Improved track lubrication technologies reduce fuel consumption and efficiencies in both car fleet and locomotive handling and maintenance have also yielded tangible environmental benefits. The introduction of new technology in computer systems and lighter aluminum freight cars have also helped conserve fuel and reduce emissions. Importantly, under the terms of an Memorandum of Understanding (MOU) between Transport Canada, Environment Canada and the Railway Association of Canada (RAC) regarding locomotive emissions in Canada, the RAC has agreed to measures, targets and actions which will further reduce emissions from rail operations and to provide an annual report called a Locomotive Emissions Monitoring (LEM) Report. For the Report, railroads voluntarily submit annual traffic-volume, fuel-consumption and air-emissions records.

### **Applicable Legislation (What regulates emissions from locomotives?)**

In 1995, Environment Canada entered into a Memorandum of Understanding (MOU) with the Railway Association of Canada (RAC) regarding locomotive emissions in Canada. Under the MOU, the RAC agreed to voluntarily cap oxides of nitrogen (NOx) emissions from locomotives at 115,000 tonnes per annum and to provide an annual report called a Locomotive Emissions Monitoring (LEM) Report. For the Report, railroads voluntarily submit annual traffic-volume, fuel-consumption and air-emissions records. Locomotive emissions statistics from these reports show that the Canadian railroad industry has been very successful in its voluntary greenhouse gas reduction efforts. Under the terms of the MOU, the RAC collects all data necessary to calculate the total amount of NOx emissions produced during all rail operations in Canada and, if necessary, take whatever action is necessary to avoid exceeding the agreed maximum of 115 kilotonnes per year. The RAC also monitors developments in railway operations technology and encourages member railways to implement new cost effective technologies that will reduce NOx emissions from their new equipment.

### **Reference to further information (How do I find out more about...?)**

Memorandum Of Understanding (MOU) Between Environment Canada and the Railway Association of Canada Regarding Railway Locomotive Emissions

<http://www.tc.gc.ca/mediaroom/releases/nat/2007/07-gc018e.htm#bq>

Locomotive Emissions Monitoring (LEM) Program. Annual Report 2005. April 2005

[http://www.railcan.ca/documents/publications/1436/2007\\_03\\_20\\_LEM2005\\_en.pdf](http://www.railcan.ca/documents/publications/1436/2007_03_20_LEM2005_en.pdf)

Railway Association of Canada

<http://www.railcan.ca>

Environment Canada

<http://www.ec.gc.ca>