



## FACTS - Tier Classification and Emissions Standards

Emissions Standards are used to classify non-road diesel engines into Tiers based on emission rates of several pollutants, including particulate matter (PM) emissions. The EPA implemented the first non-road diesel engine emissions standards (Tier 1 engines) in 1996. This established emission rates for new non-road engines built for use in the United States. The EPA standards were adopted by Canada, under the *Off-Road Compression-Ignition Engine Emission Regulations*<sup>3</sup>, for engines from 2006 and later model year. Port Metro Vancouver recognizes the emission standards defined by the US Environmental Protection Agency (EPA) and European Commission (EC) emission standards<sup>1,2</sup> for non-road diesel engines (Tier 1 to Tier 4).

Engines manufactured for use in Canada, the United States, or European Union before 1996 are referred to as Tier 0 engines. Please note that engines manufactured for sale in other markets are considered Tier 0 engines, unless the emissions can be demonstrated to meet a higher Tier.

Table 1<sup>4</sup> on the following page lists the emission standards for each engine Tier classification by horsepower, and by the year the standard was introduced. Note that the legislation allowed these standards to be phased in over several years; therefore, not all engines purchased in a particular year meet the emissions standards set out for that year. The tier level of an engine is more accurately determined by contacting the manufacturer with the Engine Family Name, which is located on the engine plate. Any engine that is pre-Tier (i.e. Tier 0) does not have an Engine Family Name.

### Web Resources:

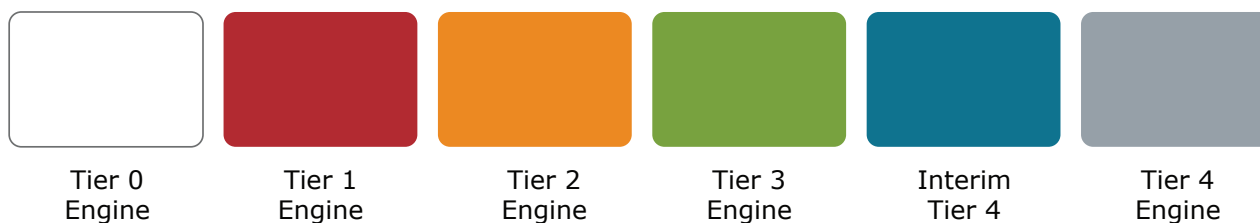
1. "EPA Non-road Compression - Ignition Engines - Exhaust Emission Standards"  
<http://www.epa.gov/otaq/standards/nonroad/nonroadci.htm>
2. European Commission, Directives for Emissions from Mobile Non-road Machinery.  
[https://ec.europa.eu/growth/sectors/automotive/environment-protection/non-road-mobile-machinery\\_en](https://ec.europa.eu/growth/sectors/automotive/environment-protection/non-road-mobile-machinery_en)
3. Canadian Off-Road Compression-Ignition Engine Emission Regulations  
<http://www.ec.gc.ca/lcpe-cepa/eng/regulations/detailReg.cfm?intReg=88>
4. Table is adapted from the US EPA information at  
<https://www.epa.gov/emission-standards-reference-guide>

Content developed with support from Metro Vancouver.

## FACTS - Diesel Particulate Matter Emissions Standards

**PM Emission Standards  
by Horsepower and Year (g/bhp-hr)  
Horsepower Groups**

Year	25≤49	50≤74	75≤99	100≤174	175≤299	300≤599	600≤749	750≤1199	1200+	Locomotive
1900	0.95	1.2	1.2	1.1	1.1	0.95	0.95	0.95		
1969	0.95	1.2	1.2	1.1	1.1	0.95	0.95	0.95		
1970	0.95	1.2	1.2	0.94	0.94	0.81	0.81	0.81		
1972	0.95	1.2	1.2	0.78	0.78	0.68	0.68	0.68		
1973	0.95	1.2	1.2	0.78	0.78	0.68	0.68	0.68		0.19
1988	0.95	1.2	1.2	0.78	0.54	0.49	0.49	0.5		0.19
1989	0.95	1.2	1.2	0.78	0.54	0.49	0.49	0.5		0.19
1996	0.95	1.2	1.2	0.78	0.4	0.4	0.4	0.5		0.19
1997	0.95	1.2	1.2	0.6	0.4	0.4	0.4	0.5		0.19
1998	0.95	1.09	1.09	0.6	0.4	0.4	0.4	0.5		0.19
1999	0.6	1.09	1.09	0.6	0.4	0.4	0.4	0.5		0.19
2000	0.6	1.09	1.09	0.6	0.4	0.4	0.4	0.4	0.4	0.19
2001	0.6	1.09	1.09	0.6	0.4	0.15	0.4	0.4	0.4	0.19
2002	0.6	1.09	1.09	0.6	0.4	0.15	0.15	0.4	0.4	0.19
2003	0.6	1.09	1.09	0.22	0.15	0.15	0.15	0.4	0.4	0.19
2004	0.45	0.30	0.30	0.22	0.15	0.15	0.15	0.4	0.4	0.19
2005	0.45	0.30	0.30	0.22	0.15	0.15	0.15	0.4	0.4	0.1
2006	0.45	0.30	0.30	0.22	0.15	0.15	0.15	0.15	0.15	0.1
2007	0.45	0.30	0.30	0.22	0.15	0.15	0.15	0.15	0.15	0.1
2008	0.22	0.22	0.3	0.22	0.15	0.15	0.15	0.15	0.15	0.1
2009	0.22	0.22	0.3	0.22	0.15	0.15	0.15	0.15	0.15	0.1
2010	0.22	0.22	0.3	0.22	0.15	0.15	0.15	0.15	0.15	0.1
2011	0.22	0.22	0.3	0.22	0.015	0.015	0.015	0.07	0.07	0.07
2012	0.22	0.22	0.015	0.015	0.015	0.015	0.015	0.07	0.07	0.07
2013	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.07	0.07	0.07
2014	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.07	0.07	0.07
2015	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.03	0.02	0.02
2016	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.03	0.02	0.02
2017	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.03	0.02	0.02
2018	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.03	0.02	0.02
2019	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.03	0.02	0.02
2020	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.03	0.02	0.02



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