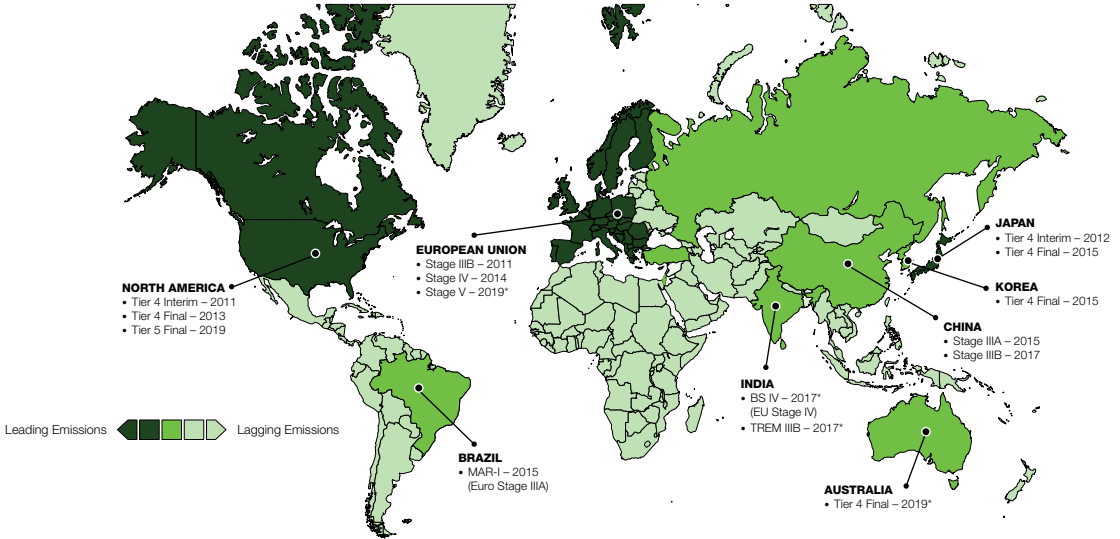


Global Emissions Regulations.



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Off-Highway Emissions Regulations



U.S. EPA Emissions.

kW	(HP)	Tier 2 Tier 3 Tier 4 Interim Tier 4 Final									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	
0-7	(0-10)	(7.5) / 8.0 / 0.40									
8-18	(11-24)	(7.5) / 6.6 / 0.40									
19-36	(25-48)	(7.5) / 5.5 / 0.30			(4.7) / 5.5 / 0.03						
37-55	(49-74)	Optional Tier 4 Interim 0.30 PM ¹			(4.7) / 5.5 / 0.03						
56-129	(75-173)	Tier 3		3.4 / 0.19 / 5.0 / 0.02			0.40 / 0.19 / 5.0 / 0.02				
130-560	(174-751)	Tier 3		2.0 / 0.19 / 3.5 / 0.02			0.40 / 0.19 / 3.5 / 0.02				
>560	(>751)	Tier 2		3.5 / 0.40 / 3.5 / 0.10			0.67 / 0.19 / 3.5 / 0.04				
					0.67 / 0.40 / 3.5 / 0.10 (a)			0.67 / 0.19 / 3.5 / 0.03 (b)			

NOx/HC2/CO/PM (g/kW-hr)
 (NOx+NMHC)/CO/PM (g/kW-hr)
 [Conversion: (g/kW-hr) x 0.7457 = g/bhp-hr]

a. Applies to portable power generation > 900 kW (> 1207 hp).
 b. Applies to portable power generation > 560 kW (> 751 hp).

Europe Emissions.

kW	(HP)	Stage IIIA Stage IIIB Stage IV									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	
0-18	(0-24)									(7.5) / 6.6 / 0.40	
19-36	(25-48)	(7.5) / 5.5 / 0.60								(4.7) / 5.5 / 0.03	
37-55	(49-74)	(4.7) / 5.0 / 0.40			(4.7) / 5.0 / 0.025						
56-129	(75-173)	(4.0) / 5.0 / 0.30		3.3 / 0.19 / 5.0 / 0.025			0.40 / 0.19 / 5.0 / 0.025				
130-560	(174-751)	(4.0) / 3.5 / 0.20		2.0 / 0.19 / 3.5 / 0.025			0.40 / 0.19 / 3.5 / 0.025				
>560	(>751)									3.5 / 0.19 / 3.5 / 0.04	

NOx/HC2/CO/PM (g/kW-hr)
 (NOx+NMHC)/CO/PM (g/kW-hr)
 [Conversion: (g/kW-hr) x 0.7457 = g/bhp-hr]

Japan Emissions.

kW	(HP)	Tier 3 Equivalent Tier 4 Interim Equivalent Tier 4 Final Equivalent									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	
0-7	(0-10)	(7.5) / 8.0 / 0.40									
8-18	(11-24)	(7.5) / 6.0 / 0.40									
19-36	(25-48)	6.0 / 1.0 / 5.0 / 0.40			4.0 / 0.7 / 5.0 / 0.03 (23m) ²				4.0 / 0.7 / 5.0 / 0.03 (11m)		
37-55	(49-74)	4.0 / 0.7 / 5.0 / 0.30			4.0 / 0.7 / 5.0 / 0.025 (13m) ²				4.0 / 0.7 / 5.0 / 0.025 (11m)		
56-74	(75-99)	4.0 / 0.7 / 5.0 / 0.25			3.3 / 0.19 / 5.0 / 0.02 (18m) ²			0.4 / 0.19 / 5.0 / 0.02 (23m)			
75-129	(100-173)	3.6 / 0.4 / 5.0 / 0.20			3.3 / 0.19 / 5.0 / 0.02 (13m) ²			0.4 / 0.19 / 5.0 / 0.02 (23m)			
130-560	(174-751)	Tier 3		2.0 / 0.19 / 3.5 / 0.02 (18m) ²			0.4 / 0.19 / 3.5 / 0.02 (23m)				

 Patterned cells: Start indicates date for "new types"; end indicates date for "existing types."

 Red border indicates effective date different from January 1.

Notes:

- For U.S. Tier 4, optional 0.30 g/kW-hr PM standard for engines 37-55 kW in 2008. Selecting this option allows a one-year delay of Tier 4 Final implementation, from 2012 to 2013.
- Tier 4 Interim and Tier 4 Final italics represent the number of months in "flex grace period" in which previous products can continue to be produced.

The chart above is displayed for reference purposes only, and does not depict the various options available to engine and equipment manufacturers. See the appropriate regulations for details and options related to that region's emissions standards and implementation dates.

Off-Highway Emissions Evolution.

