

New Source Performance Standard (NSPS) for Owners/Operators of Stationary Compression Ignition Internal Combustion Engines in Kansas

Rule overview

In July 2006, the Environmental Protection Agency (EPA) finalized a rule in the Code of Federal Regulations (40 CFR Part 60 Subpart IIII) titled Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE). This guidance document is designed to assist Kansas facilities in complying with this regulation.

What is a stationary internal combustion engine?

A stationary internal combustion engine (ICE) is any ICE, except combustion turbines, that converts heat energy into mechanical work and is not mobile. Examples of engines that are NOT stationary are motor vehicles engines, garden tractors, lawn mowers, etc.

What is a compression ignition (CI) engine?

A CI engine is defined as a stationary ICE that is not a spark ignition engine. A spark ignition engine is defined as a gasoline, natural gas, or liquefied petroleum gas fueled engine or any other type of engine with a spark plug or sparking device. Refer to 40 CFR Part 60 Subpart JJJJ for Standards of Performance for stationary spark ignition internal combustion engines.

What is the intent of this rule?

CI ICEs release several types of air pollutants into the environment including particulate matter (PM), nitrogen oxides (NO_x), and carbon monoxide (CO). The pollutants from CI ICEs can greatly increase a facility's potential to emit (PTE). PTE is the maximum amount of air pollution your facility can emit if it operates at 100% capacity 24 hours/day, 365 days/year with no pollution control equipment in place.

Does this rule apply to my facility? [40 CFR Part 60.4200]

You are subject to the rules of 40 CFR Part 60 Subpart IIII if you:

- Own/operate a stationary CI ICE that began construction after July 11, 2005 (date of construction is the date the engine was ordered by the owner or operator) and meets the following requirements:
 - Manufactured after April 1, 2006 and not a fire pump engine
 - Manufactured after July 1, 2006 as a certified National Fire Protection Association (NFPA) fire pump engine

- Own/operate a stationary CI ICE that was modified or reconstructed after July 11, 2005.

You may be EXEMPT from this rule due to national security. A request for exemption must be submitted.

Although not detailed in this guidance document, **manufacturers** of stationary CI ICEs that meet certain requirements are subject to this rule.

Rule requirements

How long does this rule apply? [40 CFR Part 60.4206]

This regulation applies to your facility for the duration of the useful life of the engine.

If you are subject to this rule, there are several requirements you must meet, including compliance, reporting, recordkeeping, testing, fuel type, and installation deadlines.

Deadlines to install CI ICEs [40 CFR Part 60.4208]

Deadlines to install engines that were produced in previous model years depend on the size of the engine. The deadlines began in 2008 and continue to 2016. See the installation deadline table (Table 1) on page 3.

Fuel requirements [40 CFR Part 60.4207]

Owners and operators of stationary CI ICEs that are subject to this rule must meet the fuel requirements outlined in Table 2 on page 3. If you own/operate a pre-2011 model year stationary CI ICE, you may be able to petition for approval to use remaining non-compliant fuel. Petitions should be sent to the EPA at the mailing address listed on page 2. National security exemptions may also be requested.

Emission standards [40 CFR Parts 60.4204 and 60.4205]

The emission standards your CI ICE must meet is greatly dependent on the model year, displacement of engine, and if it is an emergency and/or fire pump engine.

Standards for pre-2007 non-emergency and emergency engines that are not fire pumps are presented in Table 3 on page 3. For fire pumps, see Table 4 on page 4.

Rule requirements

Emission standards (continued)

Subpart IIII requires manufacturers of stationary CI ICEs to certify that engines beginning with model year 2007 meet the emission limits outlined in this rule. Check with your manufacturer to make certain the engine you purchase is in compliance. Your engine manufacturer should be able to provide you with documentation that the engine meets the applicable standards.

If the displacement of your engine is 30 liters per cylinder or greater, several additional emission standard and compliance requirements including performance testing apply to you. Contact David Peter with KDHE at 785-296-1104 for assistance.

Monitoring requirements [40 CFR Part 60.4209]

A stationary CI ICE equipped with a diesel particulate filter that is used to comply with emission standards must be installed with a backpressure monitor that notifies the owner/operator when the high backpressure limit of the engine is approached. *Emergency* CI ICEs must install a non-resettable hour meter prior to startup.

Compliance requirements [40 CFR Part 60.4211]

- Operate and maintain the engine according to manufacturer instructions. Only change those settings that are permitted by the manufacturer.
- You must comply with applicable emission limits in Tables 3 and 4 and be able to prove your engine meets those limits. The simplest method is to keep records of engine manufacturer and control device data that indicates compliance with the standards. The other option to prove compliance (although much more complex and potentially costly and time-consuming) is to conduct a performance test on the engine or have documentation of a performance test done on a similar engine.

Notification, reporting and recordkeeping requirements [40 CFR Part 60.4214]

See Table 5a and 5b on page 4 to determine notification, reporting, and recordkeeping requirements.

In addition to the notification and reporting requirements described in this rule, you might also be required to submit a construction permit application for an engine construction (installation or modification). This form can be found at www.kdheks.gov/air-permit/download.html. A guidance document regarding these construction permits and approvals is located at www.kdheks.gov/air-permit/forms/Informational_Sheet.pdf.

Emergency Generators

Is my CI ICE an emergency engine?

A stationary ICE whose operation is limited to emergency situations (and required testing and maintenance) is considered to be an emergency engine. Engines used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines.

If you have an emergency generator, you should fill out a simplified application for approval. This form is available at www.kdheks.gov/air-permit/forms/Emergency_Gen_App.pdf. When evaluating your need for an air construction approval or permit, you can assume the emergency generator operates 500 hours per year. Maintenance checks and readiness testing should be limited to 100 hours per year. If you want more detailed information please refer to 40 CFR Part 60 Subpart IIII or you can contact the Kansas Small Business Environmental Assistance Program (SBEAP) at 800-578-8898 or visit www.sbeap.org.

Contact Information

KDHE Bureau of Air
1000 SW Jackson, Suite 310
Topeka, KS 66612-1366
Phone: 785-296-1570

**US EPA Region 7 - Air Permitting/
Compliance Branch**
901 N. 5th Street
Kansas City, KS 66101
Phone: 913-551-7003

**K-State Small Business
Environmental Assistance Program**
133 Ward Hall
Manhattan, KS 66506-2508
Phone: 800-578-8898
www.sbeap.org

While every effort was made to accurately reflect the requirements of 40 CFR Part 60, Subpart IIII, if any conflicts appear in this guidance document, the federal and state regulations will take precedence.

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Table 1: Installation Deadlines [40 CFR Part 60.4208]

Engine size and requirements*	Date to stop installing/importing
Any size CI ICE that does not meet 2007 model year engine requirements (excludes fire pump engines)	December 31, 2008
Stationary CI ICE less than 25 HP (19 kW) that does not meet 2008 requirements (excludes fire pump engines)	December 31, 2009
Non-emergency stationary CI ICE between 25 HP (19 kW) and 75 HP (56 kW) that does not meet 2013 requirements for non-emergency engines	December 31, 2014
Non-emergency stationary CI ICE between 75 (56 kW) and 175 HP (130 kW) that does not meet 2012 requirements for non-emergency engines	December 31, 2013
Non-emergency stationary CI ICE that is 175 HP (130 kW) or greater that does not meet 2011 requirements for non-emergency engines	December 31, 2012
Non-emergency stationary CI ICE greater than 750 HP (560 kW) that does not meet 2015 requirements for non-emergency engines	December 31, 2016

*Installation deadline requirements do not apply to owners/operators of CI ICEs that have been modified or reconstructed and do not apply to engines that are removed from one location and reinstalled at a new location.

Table 2: Fuel requirements for owners/operators of stationary CI ICEs

[40 CFR Parts 60.4207, 80.510(a), 80.510(b)]

Engine type and fuel use	Requirements	Date the requirements begin
CI ICEs using diesel fuel	Sulfur content 500 ppm or less, minimum cetane index of 40 or a maximum aromatic content of 35% by volume.	October 1, 2007
CI ICEs using diesel fuel with a displacement less than 30 liters/cylinder	Sulfur content is 15 ppm or less, minimum cetane index of 40 or a maximum aromatic content of 35% by volume.	October 10, 2010

Table 3: Emission standards for stationary CI ICEs

[40 CFR Parts 60.4204, 60.4205, 94.8(a)(1), 40 CFR Part 60 Subpart IIII Tables 1 and 2]

Maximum engine power	All Pre-2007 model year engines with a displacement <10 liters/cylinder and 2007–2010 model year engines >3,000 HP (>2,237 kW) and with a displacement of <10 liters/cylinder Units: grams/HP-hr (grams/KW-hr)				
	NMHC + NO _x	HC	NO _x	CO	PM
HP<11 (kW<8)	7.8 (10.5)	-	-	6.0 (8.0)	0.75 (1.0)
11≤HP<25 (8≤kW<19)	7.1 (9.5)	-	-	4.9 (6.6)	0.60 (0.80)
25≤HP<50 (19≤kW<37)	7.1 (9.5)	-	-	4.1 (5.5)	0.60 (0.80)
50≤HP<175 (37≤kW<130)	-	-	6.9 (9.2)	-	-
HP≥175 (kW≥130)	-	1.0 (1.3)	6.9 (9.2)	8.5 (11.4)	0.40 (0.54)
Maximum test speed	Pre-2007 model year CI ICEs with displacement ≥10 L/cyl and <30 L/cyl Units: grams/HP-hr (grams/kW-hr)				
<130 rpm	-	-	12.7 (17.0)	-	-
≥130 and <2000 rpm	-	-	33.6 x N ^{-0.20} (45.0 x N ^{-0.20})**	-	-
≥2000 rpm	-	-	7.3 (9.8)	-	-

**N is the maximum test engine speed in revolutions per minute (rpm)

Table 4: Emission Standards for Fire Pumps less than 30 L/cylinder; Units: grams/HP-hr (grams/kW-hr)
 [40 CFR Part 60.4205 and Part 60 Subpart IIII Table 4]

Maximum Engine power	Model year(s)	NMHC + NOx	CO	PM
HP<11 (kW<8)	Before 2010	7.8 (10.5)	6.0 (8.0)	0.75 (1.0)
	2011 or later	5.6 (7.5)		0.30 (0.40)
11≤HP<25 (8≤kW<19)	Before 2011	7.1 (9.5)	4.9 (6.6)	0.60 (0.80)
	2011 or later	5.6 (7.5)		0.30 (0.40)
25≤HP<50 (19≤kW<37)	Before 2011	7.1 (9.5)	4.1 (5.5)	0.60 (0.80)
	2011 or later	5.6 (7.5)		0.22 (0.30)
50≤HP<100 (37≤kW<75)	Before 2011	7.8 (10.5)	3.7 (5.0)	0.60 (0.80)
	2011 or later ¹	3.5 (4.7)		0.30 (0.40)
100≤HP<175 (75≤kW<130)	Before 2010	7.8 (10.5)	3.7 (5.0)	0.60 (0.80)
	2010 or later ²	3.0 (4.0)		0.22 (0.30)
175≤HP<600 (130≤kW<450)	Before 2009	7.8 (10.5)	2.6 (3.5)	0.40 (0.54)
	2009 and later ³	3.0 (4.0)		0.15 (0.20)
600≤HP≤750 (450≤kW<560)	Before 2009	7.8 (10.5)	2.6 (3.5)	0.40 (0.54)
	2009 and later	3.0 (4.0)		0.15 (0.20)
HP>750 (kW>560)	Before 2008	7.8 (10.5)	2.6 (3.5)	0.40 (0.54)
	2008 and later	4.8 (6.4)		0.15 (0.20)

¹ For model years 2011–2013, manufacturers, owners and operators of fire pump stationary CI ICEs in this engine power category with a rated speed greater than 2,650 revolutions per minute (rpm) may comply with the emission limitations for 2010 model year engines.

² For model years 2010–2012, manufacturers, owners and operators of fire pump stationary CI ICEs in this engine power category with a rated speed greater than 2,650 rpm may comply with the emission limitations for 2009 model year engines.

³ In model years 2009–2011, manufacturers of fire pump stationary CI ICEs in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2008 model year engines.

Table 5a: Notification and recordkeeping requirements [40 CFR Part 60.4214, 40 CFR Part 60.7(a)(1)]

Type of engine	Initial notification requirements	Recordkeeping requirements
Any stationary CI ICE equipped with a diesel particulate filter	-	Keep records of any corrective action taken after backpressure monitor has notified owner/operator that high backpressure limit of engine is approached
Non-emergency CI ICE greater than 3,000 HP (2,237 kW) or displacement greater than 10 L/cyl	Initial notification must be submitted to KDHE and EPA within 30 days of start-up and include: <ul style="list-style-type: none"> Name and address of owner/operator and address of engine Engine information (make, model, engine family, serial number, model year, max engine power, engine displacement) Emission control equipment Fuel used 	<ul style="list-style-type: none"> All notifications and supporting documentation Maintenance conducted on engine If certified, documentation from engine manufacturer that engine is certified to emission standards If uncertified, documentation that the engine meets emission standards
Non-emergency CI ICE, pre-2007 model year engine greater than 175 HP (130 kW) that isn't certified.		
Emergency CI ICE	-	Starting with certain engines in 2011 (see Table 5b below), if the engine doesn't meet applicable standards, records of operation must be recorded using the non-resettable hour meter. Record time of operation and reason engine was in operation at that time (emergency, maintenance, or testing).

Table 5b: Recordkeeping requirement deadline for new stationary emergency CI ICEs

[40 CFR Part 60 Subpart IIII Table 5]

Engine power (hp)	Starting model year
25≤HP<75 (19≤kW<56)	2013
75≤HP<175 (56≤kW<130)	2012
HP≥175 (kW≥130)	2011