

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0
6-6-2003 Rev. 1
12-3-2004 Rev. 2
6-2-2006 Rev. 3

Equipment or Process: I.C. Engine, Stationary, Emergency¹⁾

		Criteria Pollutants					
Subcategory/	Rating/Size	NMHC or VOC	NOx	NOx + NMHC ²⁾	SOx	CO	PM10 ⁵⁾
Compression-Ignition ^{3) 4)}	$50 \leq \text{HP} < 100$			<u>Tier 2:</u> 7.5 grams/kW-hr (5.6 grams/bhp-hr) <u>Tier 3 (After 6/30/2008):</u> 4.7 grams/kW-hr (3.5 grams/bhp-hr) (6-2-2006)	Diesel fuel sulfur content $\leq 0.05\%$ by weight (4-10-98) On or after June 1, 2004 the user may only purchase diesel fuel with a sulfur content no greater than 0.0015% by weight (Rule 431.2). (6-6-2003)	<u>Tier 2 or Tier 3:</u> 5.0 grams/kW-hr (3.7 grams/bhp-hr) (6-2-2006)	Compliance with Rule 1470 (12-3-2004) <u>Tier 2 or Tier 3:</u> 0.40 grams/kW-hr (0.30 grams/bhp-hr) (6-2-2006)
	$100 \leq \text{HP} < 175$			<u>Tier 2:</u> 6.6 grams/kW-hr (4.9 grams/bhp-hr) <u>Tier 3 (After 6/30/2007):</u> 4.0 grams/kW-hr (3.0 grams/bhp-hr) (6-2-2006)		<u>Tier 2 or Tier 3:</u> 5.0 grams/kW-hr (3.7 grams/bhp-hr) (6-2-2006)	Compliance with Rule 1470 (12-3-2004) <u>Tier 2 or Tier 3:</u> 0.30 grams/kW-hr (0.22 grams/bhp-hr) (6-2-2006)
	$175 \leq \text{HP} < 300$			<u>Tier 2:</u> 6.6 grams/kW-hr (4.9 grams/bhp-hr) <u>Tier 3 (After 6/30/2006):</u> 4.0 grams/kW-hr (3.0 grams/bhp-hr): (6-2-2006)		<u>Tier 2 or Tier 3:</u> 3.5 grams/kW-hr (2.6 grams/bhp-hr) (6-2-2006)	Compliance with Rule 1470 (12-3-2004) <u>Tier 2 or Tier 3:</u> 0.20 grams/kW-hr (0.15 grams/bhp-hr) (6-2-2006)
	$300 \leq \text{HP} < 750$			<u>Tier 2:</u> 6.4 grams/kW-hr (4.8 grams/bhp-hr) <u>Tier 3⁵⁾:</u>		<u>Tier 2 or Tier 3:</u> 3.5 grams/kW-hr (2.6 grams/bhp-hr) (6-2-2006)	Compliance with Rule 1470 (12-3-2004) <u>Tier 2 or Tier 3:</u>

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				4.0 grams/kW-hr (3.0 grams/bhp-hr) (6-2-2006)		0.20 grams/kW-hr (0.15 grams/bhp-hr) (6-2-2006)	
	≥750 HP	<u>Tier 1</u> (NMHC): 1.0 g/bhp-hr (4-10-98)	<u>Tier 1</u> : 6.9 g/bhp-hr (4-10-98)	<u>Tier 2 (After 6/30/2006)</u> : 6.4 grams/kW-hr (4.8 grams/bhp-hr) (6-2-2006)		<u>Tier 1</u> : 8.5 g/bhp-hr (4-10-98) <u>Tier 2 (After 6/30/2006)</u> : 3.5 grams/kW-hr (2.6 grams/bhp-hr) (6-2-2006)	Compliance with Rule 1470 (12-3-2004) <u>Tier 1</u> : 0.38 g/bhp-hr (4-10-98) <u>Tier 2 (After 6/30/2006)</u> : 0.20 grams/kW-hr (0.15 grams/bhp-hr) (6-2-2006)
Spark Ignition ⁶⁾	All	VOC: 1.5 grams/bhp-hr (10-20-2000)	1.5 grams/bhp-hr (10-20-2000)		See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)	2.0 grams/bhp-hr (10-20-2000)	See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)

- 1) An emergency engine is an engine which operates as a temporary replacement for primary mechanical or electrical power sources during periods of fuel or energy shortage or while a primary power source is under repair. This includes fire pumps, emergency electrical generation and other emergency uses. Exceptions to the requirements in the table may be made for emergency fire pumps if it is demonstrated that there are no UL-listed fire pumps that meet the required emission limits.
- 2) NMHC + NO_x means the sum of non-methane hydrocarbons and oxides of nitrogen emissions.
- 3) AQMD restricts operation of emergency compression-ignition engines to 50 hours per year, or less if required by Rule 1470, for maintenance and testing and a maximum of 200 hours per year total operation. For engines used to drive standby generators, operation beyond 50 hours per year for maintenance and testing is allowed only in the event of a loss of grid power or up to 30 minutes prior to a rotating outage provided that the electrical grid operator or electric utility has ordered rotating outages in the control area where the engine is located or has indicated that it expects to issue such an order at a certain time, and the engine is located in a control area that is subject to the rotating outage. A new stationary compression-ignition engine will also be subject to a proposed federal New Source Performance Standard--Title 40, Part 60, Subpart III of the Code of Federal Regulations.

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- 4) Limits with an associated “after” date are required for an engine for which the application is deemed complete after that date. Limits without an associated “after” date are required now. The engine must be certified by U.S. EPA or CARB to meet the Tier 1, 2 or 3 emission requirements of 40 CFR Part 89 – Control of Emissions from New and In-use Nonroad Compression-Ignition Engines shown in the table– or otherwise demonstrate that it meets the Tier 1,2 or 3 emission limits shown in the table. If, because of the averaging, banking, and trading program, there is no new engine from any manufacturer that meets the above standards, then the engine must meet the family emission limits established by the manufacturer and approved by U.S. EPA.
- 5) A USEPA settlement with certain engine manufacturers caused Tier 3 engines to become available one year earlier than the date specified in Part 89 for engines in the 300 hp to <750 hp size range.
- 6) AQMD restricts operation of emergency spark-ignition engines to 50 hours per year for maintenance and testing and a maximum of 200 hours per year total operation. For emergency spark-ignition engines used to drive standby generators, operation beyond 50 hours per year for maintenance and testing is allowed only during emergencies resulting in an interruption of service of the primary power supply or during Stage II or III electrical emergencies declared by the electrical grid operator. Operators are allowed to use emergency spark-ignition engines as part of an interruptible electric service program. An interruptible electric service program is a program in which the facility receives payment or reduced rates in return for a requirement to reduce its electric load on the grid when requested to do so by the utility, the grid operator, or other organization.

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Subcategory/ Rating/Size	Criteria Pollutants					Inorganic
	VOC	NO _x	SO _x	CO	PM ₁₀	
< 2064 bhp	0.15 grams/bhp-hr (4-10-98)	0.15 grams/bhp-hr (4-10-98)	See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)	0.60 grams/bhp-hr (4-10-98)	See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000) Compliance with Rule 1470. (12-3-2004)	
≥ 2064 bhp	25 ppm @ 15% O ₂ (7-9-2004)	9 ppmvd @ 15% O ₂ (7-9-2004)	Same as Above (10-20-2000)	33 ppmvd @ 15% O ₂ (5-8-98)	Same as Above (7-9-2004)	Ammonia: 10 ppmvd @ 15% O ₂ (7-9-2004)
Landfill or Digester Gas Fired	0.8 grams/bhp-hr (4-10-98)	0.60 grams/bhp-hr (4-10-98)	Compliance with Rule 431.1 (10-20-2000)	2.5 grams/bhp-hr (4-10-98)		

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