Frequently Asked Questions for Stationary Internal Combustion Engines



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Disclaimer: The BAPC reserves the right to modify this guidance at any time. This document supersedes any previous documents that relate to stationary engines issued by the BAPC.

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1) I have a generator that I need to add to my permit. What information should I provide?
   - *The BAPC permits the engine that is powering the generator. The facility should provide the horsepower, specification sheet, and any other information about the engine. If the facility has the unit already onsite this information would be shown on the engine plate of the generator.*

2) What do I need to provide in my application if I have an engine at my facility?
   - *Manufacturer's specification that includes maximum fuel flow, rated power (in hp/kW), and EPA certified emissions (e.g. for 40 CFR Part 60 Subparts IIII, JJJJ).*

3) What if my engine's manufacturer specifications do not include the maximum fuel flow rate?
   - *Option 1: Provide a photograph of the engine's name plate displaying the horsepower or kilowatt rating.*

     Example calculation to obtain the fuel flow of diesel fuel can be found below:

$$\boldsymbol{Fuel\ Rate_{max}} = \mathbf{7{,}000}\ \frac{\boldsymbol{Btu}}{(\boldsymbol{HP})(\boldsymbol{hr})} * \frac{\boldsymbol{gal_{diesel}}}{\mathbf{140{,}000_{Btu}}} * \boldsymbol{HP} = \boldsymbol{X}\ \frac{\boldsymbol{gal_{diesel}}}{\boldsymbol{hr}}$$

   - *Option 2: install a fuel flow meter (additional monitoring requirements will be written in the permit).*

4) What if my engine's manufacturer specifications do not include EPA certified emissions?
   - *Use the appropriate AP-42, CARB, CFR, or other approved emission factors. Note that requested emission limits cannot exceed any applicable federal emission standards.*

5) What is the maximum amount of hours per year I can operate my emergency engine?
   - *Emergency engines are limited to 100 hours per year of non-emergency use. Operating hours are not limited during emergency situations.*

6) What emission factors should I use for a propane engine?
   - *Use CARB or other approved emission factors attached to this guidance.*

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7) Which SO_2 emission factors should I use?

- *A mass balance calculation is acceptable, and must provide step-by-step calculations showing how the emissions were derived. Please refer to the example below.*

$$EL_{\frac{lb}{hr}} = FR * \rho_{diesel} * S_{diesel} * \frac{2\ lbs\ SO_2}{1\ lb\ S} \qquad EL_{\frac{ton}{yr}} = \frac{FR * \rho_{diesel} * S_{diesel} * \frac{2\ lbs\ SO_2}{1\ lb\ S} * \frac{hrs}{yr}}{2{,}000\frac{lbs}{ton}}$$

Where:

FR = *The requested combustion NG fuel rate in standard cubic feet (scf)per hour.*

ρ_{diesel} = *Density of diesel in pounds per gallon. The BAPC default value is* ***6.943*** *lbs/gal*

S_{diesel} = *Sulfur content of diesel fuel in parts per million by weight (ppmw).*

EL = *Emission Limit*

Note: Modern diesel cannot exceed 15 ppm S pursuant to 40 CFR 80.510(b). The SO_2 emission limit of an engine is dependent on the sulfur content of the fuel. The fuel supplier should provide the sulfur content of the fuel.

- *AP-42 Chapter 3.4 SO_2 emission factors may be utilized for small and large diesel engines.*

8) AP-42 provides emission factors in units of lb/hp-hr and lb/MMBtu. Which one should I use?

- *The BAPC prefers emission factors in lb/MMBtu; however, both are acceptable.*

9) What if I have a NMHC+NO_X emission factor?

- *This emission factor may only be used to calculate NO_X emission limits.*

10) What federal subpart(s) is my engine subject to?

- Use the table below:

Federal Subparts Which May be Applicable			
Engine Type	**Year Engine Manufactured**	**You may be subject to…**	**Reference**
Compression Ignition (CI) (i.e. Diesel)	2005 and Older	40 CFR Part 63, Subpart ZZZZ	40 CFR 63.6580
	2005 to Present	40 CFR Part 60, Subpart IIII and 40 CFR Part 63, Subpart ZZZZ	40 CFR 60.4200 40 CFR 63.6580
Spark Ignition (SI) (i.e. Gasoline, Natural Gas, or Propane)	2006 and Older	40 CFR Part 63, Subpart ZZZZ	40 CFR 63.6580
	2006 to Present	40 CFR Part 60, Subpart JJJJ and 40 CFR Part 63, Subpart ZZZZ	40 CFR 60.4230 40 CFR 63.6580

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11) What if I submitted an application for a generator that I have not purchased yet and/or have a range of sizes that may apply?

- *In the application, please include the largest rated power (worst case) of the applicable standard and calculate the emissions with an environmental evaluation (as applicable).*

  For example, if purchasing a Tier 3, year 2007 or newer diesel engine within 37 kW to 74 kW, the emissions must be calculated utilizing a rated power of 74 kW (see example table below). In your next permitting action (ie. renewal or revision), you may ask for the details to be updated in the permit as applicable.

Table 3 to 40 CFR Part 1039 Appendix I – Tier 3 Emission Standards				
Rated Power (kW)	**Starting Model Year**	**NO_X+NMHC (g/kw-hr)**	**CO (g/kw-hr)**	**PM (g/kw-hr)**
$37 \leq kW < 75$	2008	4.7	5	0.4
$75 \leq kW < 130$	2007	4	5	0.3
$130 \leq kW \leq 560$	2006	4	3.5	0.2

- *The rated power range of the generator may be included in the emission unit description in a Class I Operating Permit to Construct and Class II (Minor Source) Air Quality Operating Permit (AQOP); however, not in the Class I (Title V) AQOP.*
- *If your purchased generator is larger than the worst-case scenario you applied for and has been permitted, you must submit a revision application.*

12) What do I do if I need to replace my generator?

- *If your proposed replacement generator matches the subpart requirements as the permitted generator and the descriptions in 11 above, then you may replace that generator without a permit revision.*

  For example, if the original generator was a Tier 3, year 2007 or newer 50 kW diesel engine (permitted as described in 11 above), and the proposed replacement generator was 74 kW, then the facility may continue with the replacement without a permit revision if the generator was permitted with the larger rated power. The unit description of the proposed generator may be updated in the next permitting action as appropriate (ie. next renewal). However, if the proposed replacement generator was 80 kW, a permit revision application must be submitted to move forward with the replacement.
- *It is the facility's responsibility to confirm the parameters of the generator with the startup notification to the BAPC to avoid potential violations.*

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