



AIR PERMITTING FACT SHEET

Permitting Options for Reciprocating Internal Combustion Engines

This fact sheet pertains only to air permitting requirements and is intended for informational purposes only based on information available as of the date of its publication. This fact sheet does not represent a formal jurisdictional determination by which DEEP or any other permitting authority referenced will be bound. It is your responsibility to obtain all required permits and comply with all state and federal laws which may apply irrespective of permit applicability, some of which are discussed later in this document. If you have any questions, please contact Air Engineering at DEEP.BAM.AirPermits@ct.gov or (860) 424-4152 to discuss your permitting responsibilities.

Overview

The purpose of this fact sheet is to answer general questions that emergency engine and distributed generator owners and operators might have regarding air permitting so that such owners and operators may address any air permitting obligations or fuel changes necessary to operate in compliance with regulatory requirements.

I am installing an engine; what do I do first?

The first step is to calculate the engine's Potential to Emit (PTE) for each criteria pollutant.

[Section 22a-174-1\(91\)](#) of the Regulations of Connecticut State Agencies (RCSA) defines "potential emissions" or "potential to emit" as the maximum capacity of a stationary source, including all physical and operational limitations, to emit any air pollutant, including fugitive emissions to the extent quantifiable, provided that:

- (A) Any physical limitation on such capacity, not including air pollution control equipment, shall be treated as part of the stationary source as determined by the commissioner or Administrator; and
- (B) Any operational limitation on such capacity, including air pollution control equipment, or a restriction on the hours of operation or on the type or amount of material processed, stored or combusted, shall be treated as part of the stationary source if the limitation or restriction is practicably enforceable.

This differs from the federal definition. PTE shall be calculated at a unit's maximum rated capacity for 8,760 hours of operation per year unless otherwise allowed by the Department of Energy and Environmental Protection (DEEP).

The [CT DEEP Engine Emissions Calculator](#) can be used to calculate PTE. Potential emissions are calculated using the following general equation:

$$\text{PTE} \frac{\text{tons}}{\text{year}} = A \frac{\text{mmBTU}}{\text{hour}} \times \text{EF} \frac{\text{pounds (lb)}}{\text{mmBTU}} \times 4.38 \frac{\text{tons/year}}{\text{lbs/hour}}$$

where:

- PTE = potential emissions of a single pollutant;
- A = maximum heat input of engine;
- EF = emission factor (based on [AP 42, Fifth Edition Compilation of Air Pollutant Emissions Factors, Volume 1: Stationary Point and Area Sources](#), manufacturer's data, or stack testing results witnessed and approved by a state or federal agency); and
- 4.38 = conversion constant (8,760 hours per year divided by 2,000 lbs per ton).

If PTE is less than 15 tons per year for each criteria pollutant...

You are typically not required to obtain a permit to operate for the engine, pursuant to [RCSA §22a-174-3a](#). No notification to DEEP is required to operate but notifications may be required under any applicable federal rules as mentioned later in this document. DEEP recommends that records of PTE calculations be kept at the facility.

If the engine is located at a premises that already has sources emitting air pollutants or is considered a major source, you would need to determine whether the addition of such engine would cause the premises to become a major source or would constitute a major modification to a major source, in which case a permit may be required. If you have specific questions regarding your facility, it is recommended that you contact Air Engineering at DEEP.BAM.AirPermits@ct.gov to discuss your permitting responsibilities.

My engine's PTE is greater than 15 TPY for any individual criteria pollutant; what are my permitting options?

The intended use of the engine determines your permitting options:

1. Emergency Use Only;
2. Distributed Generation; or
3. Other Non-Emergency Use.

1. Emergency Use Only

[RCSA §22a-174-22e\(a\)\(13\)](#) defines an "emergency engine" as a stationary reciprocating engine or a combustion turbine that is used as a means of providing mechanical or electrical power only during the following:

- (A) Emergencies as defined in [RCSA §22a-174-22e\(a\)\(12\)](#) and differs from the federal definition. "Emergencies" are an unforeseeable condition that is beyond the control of the owner or operator of an emergency engine that:
 - (1) Results in an interruption of electrical power from the electricity supplier to the premises;
 - (2) Results in a deviation of voltage from the electricity supplier to the premises of three percent (3%) above or five percent (5%) below standard voltage in accordance with section 16-11-115 of the RCSA;
 - (3) Requires an interruption of electrical power from the electricity supplier to the premises enabling the owner or operator to perform emergency repairs; or
 - (4) Requires operation of the emergency engine to minimize damage from fire, flood, or any other catastrophic event, natural or man-made;
- (B) Testing;
- (C) Scheduled maintenance;
- (D) When the facility owner or operator interrupts power to the facility to perform construction, maintenance or repair of the power distribution system for the facility or portion of the facility; or
- (E) When the electricity supplier makes a scheduled interruption of power to the facility so that the electricity supplier may perform construction, maintenance or repair of the primary power distribution system for the facility.

"Emergency engine" does not include a reciprocating engine or combustion turbine for which the owner or operator is a party to any other agreement to sell electrical power from such to an electricity supplier, or otherwise receives any reduction in the cost of electrical power for agreeing to produce power during periods of reduced voltage or reduced power availability.

Table 1: Emergency Use Only Permitting Options

	Regulatory Description	Notification Requirements	Timeline
Option No. 1	Obtain New Source Review (NSR) permit under RCSA §22a-174-3a(a)(1) prior to beginning actual construction	Pre-Application Meeting Information Air Permitting Forms	6-12 months
Option No. 2	<p>Operation under RCSA §22a-174-3b(e) (Permit by Rule)</p> <ul style="list-style-type: none"> • Applicable to the engine in question • Engine operating hours limited to 300 hours/year • For nongaseous fuel, sulfur content is limited to 0.0015% by weight under RCSA §22a-3b(e)(2)(D) • Maintain records for up to five years to demonstrate compliance with applicable requirements of the rule <p>Note: If the emergency engine will be a new major stationary source or a newly constructed or reconstructed major source of hazardous air pollutants, operation under RCSA §22a-174-3b(e) is not an option.</p>	Notification to DEEP is not required	Instant
Option No. 3	<p>Operation under RCSA §22a-174-3c (Permit by Rule)</p> <ul style="list-style-type: none"> • Applicable to entire premises • Fuel purchased for the premises in any calendar year limited to: <i>Gaseous fuel:</i> 3,360,000 cubic feet <i>Distillate fuel:</i> 21,000 gallons <i>Propane:</i> 100,000 gallons • Limits potential emissions from units using the same fuel to 15 tons per year for each criteria pollutant • Maintain records for up to five years to demonstrate compliance with applicable requirements of rule <p>Note: If the emergency engine will be a new major stationary source or a newly constructed or reconstructed major source of hazardous air pollutants, operation under RCSA §22a-174-3c is not an option.</p>	Notification to DEEP is not required	Instant

2. Distributed Generation

[RCSA §22a-174-42\(a\)](#) defines a "distributed generator" as any new or existing generator with a nameplate capacity less than 15 MW that generates electricity for *other than emergency use*. Electricity generated may be used either on-site or for sale under an agreement with a utility, other market participant or system operator. Such a generator may also generate electricity for use during an emergency but is not defined as an emergency generator. Such a generator may burn two fuels simultaneously but is not defined as a dual-fuel generator.

Table 2: Distributed Generation Permitting Options

	Regulatory Description	Notification Requirements	Timeline
Option No. 1	Obtain NSR permit under RCSA §22a-174-3a prior to beginning actual construction	Pre-Application Meeting Information Air Permitting Forms	6-12 months
Option No. 2	<p>Operation under RCSA §22a-174-42 (Permit by Rule) as applicable pursuant to RCSA §22a-174-42(b)(A) through (E)</p> <ul style="list-style-type: none"> Sulfur content in fuel limited to 0.0015% by weight (for liquid fuels) or 10 gr/100 dcsf (for gaseous fuels other than natural gas) Engine operating hours limited by equation given in RCSA §22a-174-42(b)(1)(D) Meet emissions, certification and testing requirements in RCSA §22a-174-42(d) and (e) Maintain records required by RCSA §22a-174-42(h) for up to five years to demonstrate compliance with applicable requirements of rule <p>This list of requirements is not all-inclusive and an operator should carefully review all requirements of RCSA §22a-174-42 prior to operation under such rule.</p> <p>Note: If the distributed generator engine will be a new major stationary source or a newly constructed or reconstructed major source of hazardous air pollutants, operation under RCSA §22a-174-42 is not an option.</p>	Notification to DEEP required by RCSA §22a-174-42(j)	Instant

3. Any Other Non-Emergency Use

If you are planning on operating the engine for any other use, you must obtain a NSR permit under [RCSA §22a-174-3a](#) prior to beginning actual construction by submitting an application to DEEP ([Pre-Application Meeting Information](#), [Air Permitting Forms](#)). The NSR permit can be tailored to the engine's specific requirements. The typical timing for the issuance of a NSR permit is 6 to 12 months.

Other Applicable Requirements

Irrespective of permit applicability, the engine may be subject to other state and federal requirements, not limited to, those listed below. One should review and determine the applicability and notification requirements of each.

- State regulations
 - [RCSA §22a-174-22e](#) or [RCSA §22a-174-22f](#) - NOx requirements
 - [RCSA §22a-174-29](#) - HAP requirements

- Federal regulations:
 - 40 CFR Part 60 [Subpart IIII](#) - New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines
 - 40 CFR Part 60 [Subpart JJJJ](#) - New Source Performance Standards for Stationary Spark Ignition Internal Combustion Engines
 - 40 CFR Part 63 [Subpart ZZZZ](#) - National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines

Authorizing Statutes and Regulations include Sections 22a-170 and 22a-174 of the [Connecticut General Statutes](#) (CGS) and RCSA sections 22a-174-[2a](#), [-3a](#), [-3b](#), [-3c](#), [-18](#), [-19b](#), and [-42](#). Also see the [Federal Clean Air Act](#); 42 U.S.C., Sec. 7401 *et. seq.*

Additional Resources

[Air Management Regulations of Connecticut State Agencies \(RCSA\)](#)

[CT DEEP Engine Emissions Calculator](#)

[EPA Regulation Navigator Tool – Subpart ZZZZ](#)

[EPA Regulation Navigator Tool – Subparts IIII & JJJJ](#)