

January 1, 2005

Sec. 22a-174-42. Distributed generators.

(a) Definitions. For purposes of this section, the following definitions shall apply:

"Certification" means documentation that a distributed generator will comply with the applicable emissions standards and certification requirements of this section when installed as supplied and operated and maintained according to the manufacturer's instructions.

"Certifying entity" means a person issuing a certification that satisfies the requirements of subsection (e) of this section.

"Combined heat and power system" or "CHP system" means a distributed generator that sequentially produces both electric power and thermal energy from a single source.

"Design system efficiency" means, for a CHP system, the sum of the full load design thermal output and electric output divided by the heat input.

"Distributed generator" means 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.

"Dual-fuel generator" means a distributed generator that has the capacity to be fired by either a gaseous fuel, or a liquid fuel, such as diesel or No. 2 grade oil, but not by both a gaseous fuel and a liquid fuel simultaneously.

"Effective date" means the date on which this section is adopted in accordance with the provisions of chapter 54 of the Connecticut General Statutes.

"Emergency" means "emergency" as defined in section 22a-174-22(a) of the Regulations of Connecticut State Agencies.

"Emergency generator" means "emergency engine" as defined in section 22a-174-22(a) of the Regulations of Connecticut State Agencies.

"Existing" means, for a generator, installed prior to the effective date of this section.

"Flared fuel" means gases that are emitted directly into the ambient air or burned without generating electricity or useful mechanical or thermal energy.

"Gaseous fuel" means natural gas and other fossil fuels that are in a gaseous state when used to fuel a generator.

"Generator" means any equipment that converts primary fuel, including fossil fuel and renewable fuel, into electricity or electricity and thermal energy.

"Installed" means the date on which a generator is first capable of generating electricity.

"ISO" means the International Organization for Standardization.

"Motor vehicle diesel fuel" means on-road diesel fuel that meets sulfur limits in 40 CFR 80.29, 80.500(a) and 80.520(a) and (b).

"New" means, for a generator, installed on or after the effective date of this section.

"Power-to-heat ratio" means, for a CHP system, the design electrical output divided by the design recovered thermal output, where both outputs are measured in consistent units.

"Reciprocating engine" means a stationary internal combustion engine having a crankshaft turned by linearly reciprocating pistons.

"Supplier" means a person who manufactures, assembles or otherwise makes distributed generators available to owners and operators.

"System operator" means a person responsible for managing a geographical region's electric bulk power generation and transmission systems.

(b) Applicability and exemptions.

(1) The owner or operator of a distributed generator may operate such generator without obtaining a new source review general permit for such generator or a permit issued pursuant to section 22a-174-3a of the Regulations of Connecticut State Agencies if:

- (A) The generator is an emission unit with potential emissions of fifteen (15) tons or more per year of an individual air pollutant;
- (B) The generator is not a new major stationary source;
- (C) The generator is not a newly constructed or reconstructed major source of hazardous air pollutants subject to the requirements of section 22a-174-3a(m) of the Regulations of Connecticut State Agencies;
- (D) In any calendar year, the generator is operated no more than the number of hours determined from the following equation; and

Hours of operation of a distributed generator in a given calendar year =	$\frac{(0.90)(15 \text{ tons/year})(2000 \text{ lbs/ton})}{(G_c)(E_p)}$
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Where: G_c = generator capacity (MW)
 E_p = applicable carbon monoxide emission limit of subsection (d) of this section (lbs/MWh)

(E) The owner or operator complies with all applicable provisions of this section.

(2) The owner or operator of a distributed generator may modify such generator without obtaining a new source review general permit for such generator or a permit issued pursuant to section 22a-174-3a of the Regulations of Connecticut State Agencies if:

- (A) The generator is an emission unit with potential emissions of fifteen (15) tons or more per year of an individual air pollutant;
- (B) At the time of modification, the generator is not authorized to operate pursuant to an individual permit issued pursuant to section 22a-174-3a or former section 22a-174-3 of the Regulations of Connecticut State Agencies;
- (C) The modification is not a major modification to an existing major stationary source;
- (D) In any calendar year, the generator is operated no more than the number of hours determined from the following equation; and

Hours of operation of a distributed generator in a given calendar year =	$\frac{(0.90)(15 \text{ tons/year})(2000 \text{ lbs/ton})}{(G_c)(E_p)}$
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Where: G_c = generator capacity (MW)
 E_p = applicable carbon monoxide emission limit of subsection (d) of this section (lbs/MWh)

(E) The owner or operator complies with all applicable provisions of this section.

(3) Notwithstanding subdivisions (1) and (2) of this subsection, the requirements of this section shall not apply to the owner or operator of the following generators:

- (A) Any generator subject to 40 CFR 52.21;
- (B) Any generator with an engine subject to 40 CFR 89, 90, 91 or 92;
- (C) Any generator that is powered by a fuel cell, wind or solar energy; and
- (D) Any emergency generator.

(4) A physical or operational change including installation of control equipment to an existing generator shall not result in such generator being considered a new generator pursuant to this section.

(c) Application for an individual permit.

(1) Nothing in this section shall preclude the commissioner from requiring an owner or operator to obtain an individual permit pursuant to section 22a-174-3a of the Regulations of Connecticut State Agencies.

(2) Nothing in this section shall preclude an owner or operator from applying for an individual permit pursuant to section 22a-174-3a of the Regulations of Connecticut State Agencies, if applicable.

(d) Emissions requirements.

(1) No owner or operator of any existing distributed generator operating in accordance with this section shall:

(A) Cause or allow the emission of any air pollutant in excess of the emissions standards identified in Table 42-1 of this section; and

(B) Cause or allow the release of carbon dioxide into the ambient air from a stack in excess of 1900 lbs/MWh.

(2) Except as provided in subsection (d)(4) of this section, no owner or operator of any new distributed generator operating in accordance with this section shall:

(A) Cause or allow the emission of any air pollutant in excess of the applicable emissions standards identified in Table 42-2 of this section. The applicable emissions standards are those standards in effect on the date that such generator is installed; and

(B) Cause or allow the release of carbon dioxide into the ambient air from a stack in excess of:

(i) 1900 lbs/MWh, if such generator is installed on or before April 30, 2012,
or

(ii) 1650 lbs/MWh, if such generator is installed on or after May 1, 2012.

(3) The particulate matter standards of Tables 42-1 and 42-2 of this section shall apply only to a distributed generator with a reciprocating engine using liquid fuel.

(4) Notwithstanding subsection (d)(2) of this section, the owner or operator of any new generator using flared fuel shall meet the standards of subsection (d)(1) of this section.

- (5) The owner or operator of any distributed generator that is a dual-fuel generator shall:
- (A) When such generator is fueled by a gaseous fuel, operate such generator in compliance with all applicable requirements of this section; and
 - (B) When such generator is fueled by a liquid fuel:
 - (i) Be exempt from compliance with the requirements of subsections (d)(1) and (d)(2) of this section,
 - (ii) Operate no more than a total of thirty (30) days per year, and
 - (iii) Use a fuel that complies with subsection (g)(4) of this section.
- (6) To demonstrate compliance with the oxides of nitrogen, particulate matter, carbon monoxide and carbon dioxide standards of this subsection, an owner or operator shall either:
- (A) Obtain a certification pursuant to subsection (e) of this section; or
 - (B) Conduct an initial performance test as required by subdivision (d)(7) of this section.
- (7) Performance testing. A distributed generator owner or operator who has not obtained a certification for such generator pursuant to subsection (e) of this section shall conduct an initial performance test for oxides of nitrogen, particulate matter, carbon monoxide and carbon dioxide, as follows:
- (A) For an existing generator, an initial performance test for oxides of nitrogen, particulate matter, carbon monoxide and carbon dioxide shall be completed no later than 180 days after the effective date of this section;
 - (B) For a new generator, an initial performance test for oxides of nitrogen, particulate matter, carbon monoxide and carbon dioxide shall be completed no later than 180 days after installation;
 - (C) Each initial performance test shall be conducted at ISO full load operating conditions, unless alternative load conditions are specified by the applicable test method;
 - (D) Each initial performance test shall be conducted in accordance with the following methodologies:
 - (i) Applicable EPA Reference Methods, California Air Resources Board methods or equivalent methods approved by the commissioner, and

- (ii) For a generator with a reciprocating engine using liquid fuel, particulate matter emissions shall be tested using ISO Method 8178; and
 - (E) If an owner or operator of a generator for which an initial performance test is conducted modifies such generator in a manner that increases emissions of oxides of nitrogen, particulate matter, carbon monoxide or carbon dioxide, the owner or operator shall, within 180 days of completing such modification, perform a test of the generator's emissions according to the requirements for an initial performance test in subparagraphs (C) and (D) of this subdivision.
- (8) Each owner or operator of an existing generator operating in accordance with this section shall achieve compliance with the applicable requirements of this section no later than 180 days after the effective date of this section. Any owner or operator of an existing generator who is unable to comply with the requirements of this section 180 days after the effective date of this section shall immediately cease operation.
- (9) Each owner or operator of a new generator operating in accordance with this section shall achieve compliance with the applicable requirements of this section no later than 180 days after installation.
- (10) The commissioner may order emissions testing of a generator operating in accordance with this section to verify compliance with the applicable oxides of nitrogen, particulate matter, carbon monoxide and carbon dioxide standards of this section. Such testing shall be performed using the applicable testing methods identified in this section or other methods identified by the commissioner.

Table 42-1. Emissions standards for an existing distributed generator.

Oxides of nitrogen (lbs/MWh)	Particulate matter (lbs/MWh)	Carbon monoxide (lbs/MWh)
4.0	0.7	10

Table 42-2. Emissions standards for a new distributed generator.

Date of installation	Oxides of nitrogen (lbs/MWh)	Particulate matter (lbs/MWh)	Carbon monoxide (lbs/MWh)
On or after January 1, 2005	0.6	0.7	10
On or after May 1, 2008	0.3	0.07	2
On or after May 1, 2012	0.15	0.03	1

(e) Distributed generator certification.

(1) An owner or operator of any new or existing distributed generator operating in accordance with this section may satisfy compliance with the applicable oxides of nitrogen, particulate matter, carbon monoxide and carbon dioxide standards of this section by obtaining one of the following certifications:

- (A) Certification by the California Air Resources Board pursuant to Title 17, sections 94200 through 94214 of the California Code of Regulations; or
- (B) Certification by the generator supplier that satisfies the requirements of this subsection.

(2) A certification under subdivision (1)(B) of this subsection shall apply to a specific make and model of generator and shall include the certifying entity's statement that such make and model of generator has the ability to operate in compliance with the applicable oxides of nitrogen, particulate matter, carbon monoxide and carbon dioxide standards of this section for the lesser of the first 15,000 hours of operation or three (3) years, when such generator is installed, operated and maintained according to the manufacturer's instructions.

(3) A generator's compliance with the applicable oxides of nitrogen, particulate matter, carbon monoxide and carbon dioxide standards of this section when installed and operated for the lesser of the first 15,000 hours or three (3) years of operation shall be verifiable by emission tests performed as follows:

- (A) Unless otherwise specified in this subsection, using EPA Reference Methods, California Air Resources Board methods or equivalent test methods approved by the commissioner;
- (B) At ISO full load operating conditions unless alternative load conditions are specified by the applicable test methods;
- (C) For a generator with a reciprocating engine using liquid-fuel, particulate matter emissions shall be tested using ISO Method 8178; and
- (D) If the owner or operator of a certified generator modifies such generator from the original design in a manner that will increase emissions of oxides of nitrogen, particulate matter, carbon monoxide or carbon dioxide, within 180 days of completing such modification, the owner or operator shall either:
 - (i) Perform a test of the generator's emissions to demonstrate compliance with the applicable oxides of nitrogen, particulate matter, carbon monoxide and carbon dioxide standards of this section according to the requirements for an initial performance test in subsections (d)(7)(C) and (d)(7)(D) of this section, or

- (ii) For a generator certified by the supplier, obtain from the supplier an amendment of the existing certification or a new certification of compliance of the modified generator.
- (4) Documentation sufficient to demonstrate certification shall include:
 - (A) A valid supplier's certificate stating that the subject make and model of generator is capable of compliance as provided in subdivision (2) of this subsection; or
 - (B) A valid and effective Executive Order issued by the executive officer of the California Air Resources Board certifying compliance as required by subdivision (1)(A) of this subsection.
- (5) Any owner or operator of a generator that is operating in compliance with the applicable standards of this section pursuant to a certification shall maintain such generator as prescribed by the manufacturer.
- (6) The owner or operator of any generator that is certified to operate in compliance with the applicable standards of this section shall display the following statement on the nameplate of the generator or on a label in a conspicuous location attached to such generator with the following text:

"This generator is certified as meeting the applicable standards of R.C.S.A. section 22a-174-42 when maintained and operated in accordance with the manufacturer's instructions."
- (7) An owner or operator of a generator that is operating in compliance with the standards of this section pursuant to a certification shall comply with all other applicable requirements of this section including, but not limited to, fuel requirements, recordkeeping and reporting.
- (f) Credit for concurrent emissions reductions.** The owner or operator of a distributed generator using flared fuel or combined heat and power, or that uses an end-use efficiency measure or operates a non-emitting resource at the same facility as a generator operating in accordance with this section may receive credit on a per pollutant basis towards compliance with the applicable oxides of nitrogen, particulate matter, carbon monoxide and carbon dioxide standards of this section according to the requirements of this subsection.
- (1) Flared fuels. If a generator uses fuel that would otherwise be flared, the owner or operator may deduct the emissions that were or would have been produced through the fuel flaring from the actual emissions of the generator on a per pollutant basis, for the purposes of calculating compliance with the applicable oxides of nitrogen, particulate matter, carbon monoxide and carbon dioxide standards of this section, according to the following:

- (A) Except as provided in subparagraph (B) of this subdivision, the owner or operator shall calculate emissions compliance credit for a pollutant using the default value of Table 42-3 of this section; and
- (B) If the actual emissions from flaring fuel can be documented, such actual emissions may be used as the basis for calculating the emissions compliance credit, subject to the approval of the commissioner.

Table 42-3. Default emissions values (lbs/MMBtu) for use of flared fuels.

Pollutant	Default flared gas emissions (lbs/MMBtu)
Oxides of nitrogen	0.1
Carbon monoxide	0.7
Carbon dioxide	117

(2) Combined heat and power. The owner or operator of a CHP system may receive a compliance credit against its actual emissions on a per pollutant basis, according to the requirements of this subdivision:

- (A) To be eligible for emissions credit related to thermal output, the owner or operator of a CHP system shall meet the following requirements:
 - (i) At least twenty percent (20%) of the fuel’s total recovered energy shall be thermal and at least thirteen percent (13%) shall be electric, with a resulting power-to-heat ratio between 4.0 and 0.15, and
 - (ii) The design system efficiency shall be at least fifty-five percent (55%);
- (B) The owner or operator of a CHP system that satisfies the requirements of subparagraph (A) of this subdivision shall calculate CHP system emissions credit on a per pollutant basis according to the following formula and the requirements of subparagraphs (C) through (E) of this subdivision:

$$\text{CHP system emissions credit (lbs of pollutant/MWh of emissions)} = [(T)/(F)] * [3.412/(R)]$$

Where:

- T = Per pollutant emission rate of the displaced thermal system (lbs/MMBtu)
- F = Displaced thermal system efficiency
- R = CHP system power-to-heat ratio

- (C) For a pollutant, the emission rate of the displaced thermal system (T) shall be determined as follows:
 - (i) For a new CHP system, the emissions standards applicable to new natural gas-fired boilers in 40 CFR 60, Subparts Da, Db and Dc, as applicable, in lbs/MMBtu, and

- (ii) For a CHP system that replaces an existing thermal system for which historic emission rates are documented, the lesser of the historic emission rate in lbs of pollutant/MMBtu, or the rate in Table 42-4 of this section;

Table 42-4. Maximum displaced system emissions rates for a CHP system replacing an existing thermal system.

Pollutant	Maximum emission rate (lbs/MMBtu)
Nitrogen oxides	0.3
Carbon monoxide	0.08
Carbon dioxide	117

- (D) The efficiency of the displaced thermal system (F) shall be determined as follows:
- (i) For a new system that is a boiler, 80%,
 - (ii) For a new system that is another process heat system, the design efficiency, unless the design efficiency of the other process heat system cannot be documented, in which case 80% shall be used, and
 - (iii) For a retrofit system, the historic efficiency of the displaced thermal system if:
 - (a) The historic efficiency can be documented, and
 - (b) The displaced thermal system is either enforceably shut down and replaced by the CHP system, or if its operation is measurably and enforceably reduced by the operation of the CHP system; and
- (E) The emissions credit calculated for a pollutant shall be subtracted from the actual emission rate of the CHP system to produce the pollutant emission rate used for determining compliance with subsection (d) of this section.
- (3) End-use efficiency and non-emitting resources. If an end-use energy efficiency and conservation measure or electricity generation that does not produce any of the emissions regulated by this section is installed and operated at a facility contemporaneous with operation of a distributed generator, then the owner or operator may submit a written request to the commissioner for approval to add the electricity savings credited to the efficiency and conservation measure or supplied by the non-emitting electricity source to the electricity supplied by the generator for the purposes of calculating compliance with the requirements of this section. In support of such a request, such owner or operator shall submit the requestor's contact information, a description of the measure that includes the installation date and the estimated lifetime, the calculation of the electricity saved or supplied, an explanation of the electricity monitoring and verification method, the amount of electricity

generated by the distributed generator in the previous twelve (12) months of operation and any other information requested by the commissioner.

(g) Fuel requirements. The owner or operator of any distributed generator operating in accordance with this section shall use the following fuels:

- (1) Any generator powered by a diesel internal combustion engine shall combust only liquid fuel that does not exceed the sulfur content of motor vehicle diesel fuel;
- (2) Any gaseous fossil fuel other than natural gas combusted shall contain no more than ten grains total sulfur per 100 dry standard cubic feet;
- (3) If the generator is supplied with fuel from more than one tank or if the generator and at least one other source are supplied fuel by a single fuel tank, the owner or operator shall install and operate a non-resettable fuel metering device to monitor continuously the fuel consumed by the generator's engine;
- (4) The owner or operator of any distributed generator that is a dual-fuel generator shall combust only liquid fuel that does not exceed the sulfur content of motor vehicle diesel fuel; and
- (5) The owner or operator of any generator with a total capacity of 200 kW or less shall be exempt from the requirement of subdivision (3) of this subsection.

(h) Records.

- (1) The owner or operator of any distributed generator shall maintain records of the information necessary to determine compliance with the requirements of this section including, but not limited to, the information specified in this subsection, labeling each record with the calendar date on which the record is generated. Each record shall be maintained for a period of at least five (5) years from the date the record is created at a location in Connecticut identified in the notification required pursuant to subsection (j)(1) of this section.
- (2) Any emissions concentrations and parameters, measured using CEM or by stack testing, shall be recorded. Such records shall specify the pollutant or parameter measured and the units of measurement.
- (3) All documents and data related to any applicable distributed generator certification pursuant to subsection (e)(4) of this section shall be recorded including documentation of certification.
- (4) For the owner or operator of a distributed generator receiving credit towards compliance pursuant to subsection (f) of this section, data used to determine the credit and calculations of the credit received shall be recorded.
- (5) Fuel type and use shall be recorded, as follows:

- (A) Records of every fuel type and quantity used, in gallons or million cubic feet, for each month;
 - (B) If liquid fuel is used, records of the sulfur content for each fuel shipment received;
 - (C) Records of the hours of operation for each month;
 - (D) For a dual-fuel generator using liquid fuel, days of operation using liquid fuel; and
 - (E) For a generator with a fuel metering device, data generated by such device.
- (6) Any one of the records identified in this subdivision shall be maintained to demonstrate the sulfur content of fuel used as required by subdivision (5)(B) of this subsection:
- (A) A fuel certification for a delivery of liquid fuel from a bulk petroleum provider;
 - (B) A sales receipt for the sale of motor vehicle diesel fuel from a retail location; or
 - (C) A copy of a current contract with the fuel supplier supplying the fuel used by the generator that includes the applicable sulfur content of liquid fuel as a condition of each shipment.
- (7) Each date on which maintenance is performed on the distributed generator and the type of maintenance shall be recorded.
- (8) The manufacturer's recommended maintenance procedures shall be recorded.
- (9) Calendar days, times and duration of process and control equipment malfunctions, a description of each malfunction, the corrective action taken and the date and time such action was taken shall be recorded.
- (10) The test reports and supporting calculations documenting the results of any performance test to determine compliance with a standard in this section shall be recorded.

(i) Reports and requests.

- (1) The owner or operator of any distributed generator required to make and maintain records pursuant to this section shall provide any such records, or a copy thereof, to the commissioner upon request and shall make such records available to the commissioner to inspect at the location where maintained.
- (2) Any document, notification, data or record required to be submitted to the commissioner pursuant to this section shall include a certification signed by a responsible corporate officer or a duly authorized representative of such officer, as those terms are defined in section 22a-430-3(b)(2) of the Regulations of Connecticut State Agencies, and by the individual or individuals responsible for actually preparing such document or record, each of whom shall examine and be

familiar with the information submitted and all attachments thereto, and shall make inquiry of those individuals responsible for obtaining the information to determine that the information is true, accurate and complete, and each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense under section 22a-175 of the Connecticut General Statutes, under section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."

(3) At least ninety (90) days before any owner or operator plans to use a method or procedure pursuant to subsections (d)(7)(D)(i), (f)(1)(B) or (f)(3) of this section, such owner or operator shall submit a request for such use to the commissioner for review and written determination to grant or deny. Such request shall include information sufficient to support the request. The commissioner may require the owner or operator to submit additional information to support such a request, which the owner or operator shall supply within fourteen (14) business days. The commissioner shall issue a written response to a submitted request granting or denying the request within thirty (30) days of receipt of complete information.

(j) Notification of operation.

(1) Any person intending to operate a distributed generator pursuant to this section shall submit a notification to the commissioner including, but not limited to, the following information:

- (A) Legal name(s), address(es) and telephone number(s) of the generator owner and operator. If the owner or operator is a corporation or a limited partnership transacting business in Connecticut, provide the exact name as registered with the Secretary of State;
- (B) Location address of the premises where the generator is located;
- (C) Make and model of the generator;
- (D) Maximum design gross power output of the generator;
- (E) Actual dates of construction and installation of an existing generator and actual or intended dates of construction and intended date of installation of a new generator;
- (F) Each fuel type used or intended to be used, including the maximum sulfur content of such fuel;

- (G) Actual emissions data, if available, or the manufacturer's estimates of emissions, if available; and
 - (H) The location address in Connecticut where records required to demonstrate compliance with this section are maintained.
- (2) For an existing generator, a notification pursuant to this subsection shall be submitted no later than thirty (30) days prior to operating under this section. For a new generator, a notification under this section shall be submitted no later than thirty (30) days prior to installation.
- (3) A separate notification shall be submitted for each generator operating pursuant to this section.
- (4) The notification shall be sent to the Bureau of Air Management at the following address:
- Director
 - Division of Compliance and Field Operations
 - Bureau of Air Management
 - Connecticut Department of Environmental Protection
 - 79 Elm Street
 - Hartford, CT 06106-5127