STATE OF CONNECTICUT
Regulation of Environmental Protection

Section 22a-174-22. Control of nitrogen oxides emissions

(a) Definitions

For purposes of this section, the following definitions shall apply:

(1) "Emergency generator" means a reciprocating engine or a turbine engine which is used as a means of providing mechanical or electrical power only during periods of scheduled maintenance or during an emergency situation. The term does not include an engine for which the owner or operator is party to an agreement to sell electrical power from such engine to a utility, or receives any reduction in the cost of electrical power for agreeing to produce power during periods of reduced voltage or reduced power availability.

(2) "Emergency situation" means any of the following situations, resulting from conditions beyond the control of the owner or operator of the premise at which the emergency generator is located and of the owner or operator of the utility providing primary electrical power:

(A) An interruption in service of power from the utility to the premise;

(B) A reduction in the voltage below the specifications of the manufacturer of the equipment at the facility; or

(C) A situation that requires interruption of electrical power to enable the owner or operator of the premise to perform emergency repairs.

(3) "Gas" or "gaseous fuel" means natural gas, propane, or any other fuel that is in the gaseous state under standard conditions.

(4) "gm/bk hp-hr" means grams per brake horsepower-hour.

(5) "lb" means pound.

(6) "MMBTU" means million BTU of heat input.

(7) "MMBTU/hr" means million BTU of heat input per hour.

(8) "MRC" means maximum rated capacity.

(9) "Major stationary source of NOx" means premise with potential emissions of NOx equal to or greater than fifty (50) tons per year in a serious nonattainment area for ozone, or twenty-five (25) tons per year in a severe nonattainment area for ozone.

(10) "Other boiler" means a boiler that is not a cyclone furnace, fast-response double-furnace naval boiler, or fluidized-bed combustor.

(11) "Other oil" means a fuel that is liquid at standard conditions and is not residual oil.

(12) "ppmvd" means parts per million by volume on a dry basis.

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

(14) "Selective noncatalytic reduction" means emission control technology which involves the injection of a chemical reagent at high flue gas temperatures to selectively reduce NOx emissions to nitrogen and water.

(15) "Turbine engine" means a stationary internal combustion engine that continuously converts an air-fuel mixture into rotational mechanical energy through the use of moving vanes attached to a rotor.

(16) "Waste combustor" means an incinerator as defined in subsection 22a-174-18(c) of the Regulations of Connecticut State Agencies, a resources recovery facility as defined in section 22a-207 of the Connecticut General Statutes, or a sewage sludge incinerator. The term does not include a flare or an industrial fume incinerator.

(b) Applicability

(1) This section shall apply to the owner or operator of any of the following sources:

(A) Any reciprocating engine which has a maximum rated capacity of three (3) million BTU per hour or more and which is located at a premise that is a major stationary source of NOx;

(B) Any fuel-burning equipment, other than a reciprocating engine, which has a maximum rated capacity of five (5) million BTU per hour or more and which is located at a premise that is a major stationary source of NOx;

(C) Any equipment which burns fuel for heating materials and which has a maximum rated capacity of five (5) million BTU per hour or more and which is located at a premise that is a major stationary source of NOx;

(D) Any waste combustor which has a design capacity of two thousand (2000) pounds or more of waste per hour and which is located at a premise that is a major stationary source of NOx; or

(E) Any fuel-burning equipment, a waste combustor, or a process source that has potential emissions of NOx in excess of the following:

(i) One hundred thirty-seven (137) pounds during any day from May 1 through September 30 of any year, for a source located in a severe nonattainment area for ozone; or

(ii) Two hundred seventy-four (274) pounds during any day from May 1 through September 30 of any year, for a source located in a serious nonattainment area for ozone.

(2) Subsections (d) through (k), inclusive, of this section shall not apply to the owner or operator of a premise if the actual emissions of NOx since January 1, 1990 from such premise have not exceeded twenty-five (25) tons in any calendar year for a premise in a severe nonattainment area for ozone, or fifty (50) tons in any calendar year for a premise in a serious nonattainment area for ozone. Notwithstanding this provision, subsections (d) through (k), inclusive, of this section shall apply if such owner or operator exceeds emissions of NOx as following:

(A) In any calendar year: twenty-five (25) tons for a premise located in a severe nonattainment area for ozone, or fifty (50) tons for a premise located in a serious nonattainment area for ozone; or

(B) On any day from May 1 through September 30 of any year: one hundred thirty-seven (137) pounds for a premise located in a severe nonattainment area for ozone or two hundred seventy-four (274) pounds for a premise located in a serious nonattainment area for ozone.

(3) Subsections (d) through (k) of this section shall not apply to an emergency generator. In addition, the actual emissions from emergency generators operating during an emergency situation shall not be included in the determination of the applicability of subparagraph (b)(2)(B) of this section.

(c) Exemption.

This section shall not apply to mobile sources.

(d) General requirements.

(1) Prior to May 31, 1995, the owner or operator of any source subject to this section shall not cause or allow emissions of NOx from such source in excess of the emission limitation specified in Table 22-1 of this section. The owner or operator of any source which is not subject to an emission limitation in Table 22-1 of this section shall not cause or allow emissions of NOx from such source in excess of seven hundred (700) ppmvd.

TABLE 22-1

NOx EMISSION LIMITATION Prior TO MAY 31, 1995 (IN POUNDS PER MMBTU OF HEAT INPUT)			
	GAS-FIRED	OIL-FIRED	COAL-FIRED
Turbine engine	0.9	0.9	NA
Cyclone furnace	0.9	0.9	0.9
Fast-response double-furnace Naval boiler	0.5	0.5	0.9
Other Boiler, with MRC of 250 MMBTU/hr or more	0.9	0.3	0.9
Other Boiler, with MRC less than 250 MMBTU/hr	0.2	0.3	0.9

(2) On and after May 31, 1995, the owner or operator of any source subject to this section shall:

(A) comply with all applicable emission limitations for such source in subsection (e) of this section;

(B) comply with the provisions for multi-fuel sources in subsection (f) of this section;

(C) reduce the NOx emission rate from such source by forty percent (40%), pursuant to subsection (g) of this section, in accordance with a permit issued by the Commissioner;

(D) reconstruct the source, pursuant to subsection (h) of this section, in accordance with a permit issued by the commissioner; or

(E) modify the schedule of operations at such source, pursuant to subsection (i) of this section, in accordance with a permit issued by the Commissioner.

(3) The owner or operator of a source subject to this section may apply in writing to the Commissioner for an extension to comply with subdivision (d)(2). The Commissioner may grant such extension for a period not to exceed one (1) year, through a permit. Such permit shall meet the Administrator's requirements for "Phase-in of Controls Beyond May 1995 (FR. Vol. 57, No. 266, Page 55623). The Commissioner shall submit such permit or order section to the Administrator for approval in accordance with the provision of 42 U.S.C. 7401-7671q.

(4) The owner or operator, in accordance with an order or permit issued by the Commissioner, may use emission reduction trading, pursuant to subsection (j) of this section, to achieve all or a portion of the reductions required by this section. The Commissioner shall submit such permit or order section to the Administrator for approval in accordance with the provision of 42 U.S.C. 7401-7671q.

(5) Nothing herein shall preclude the Commissioner from issuing an order to an owner or operator to comply with the requirements of this subsection.

(e) Emission limitations.

(1) The owner or operator of a stationary source subject to this section may, in accordance with subparagraph (d)(2)(A) of this section, comply with the

requirements of this section by meeting applicable emission limitations specified in Table 22-2 of this section. Emission limitations in Table 22-2 for turbine engines that are quantified in units of ppmvd shall be corrected to fifteen percent (15%) oxygen. For any source for which there is no applicable emission limitation in Table 22-2, the owner or operator of such source shall not cause or allow emissions of NOx therefrom in excess of the following:

(A) For fuel-burning equipment fired by a fuel other than those fuels cited in Table 22-2: 0.3 pounds per million BTU of heat input;

(B) For any waste combustor subject to the requirements of subdivision (e)(2): 0.38 pounds per million BTU of heat input.

(C) For any waste combustor not subject to the requirements of subparagraph (e)(1)(B) which has a waterwall furnace: 0.38 pounds per million BTU of heat input.

(D) For any other waste combustor: 0.33 pounds per million BTU of heat input.

(E) For a glass melting furnace: 5.5 pounds of NOx per ton of glass produced;

(F) For a source, other than a glass melting furnace, which burns fuel for heating materials: 180 ppmvd, corrected to twelve percent (12%) carbon dioxide; or

(G) For any source not having an emission limitation in subparagraphs (e)(1)(A) through (e)(1)(F) of this section: seven hundred (700) ppmvd.

(2) In addition to complying with the emission limitation in subparagraph (e)(1)(B), by May 31, 1995 the owner or operator of any waste combustor that combusts refuse derived fuel shall install and operate selective noncatalytic reduction or other NOx emissions control technology capable of reducing the NOx emission rate by at least thirty percent (30%) from the average emission rate in calendar year 1990 on one boiler unit at such facility. If the Commissioner determines that operations during 1990 were not representative of normal operations of the facility, the Commissioner may use another calendar period that is more representative. In addition, actual annual average NOx emissions from other boiler units at such facility shall each not exceed 420 tons per year. The Commissioner may consider, in the same manner as for other sources, any emission reduction below 0.38 pounds per million BTU of heat input to be

eligible as surplus emissions reductions for purposes of emission reduction credits pursuant to subsection (j) of this section until May 31, 1999.

TABLE 22-2
NOx EMISSION LIMITATION ON AND AFTER M AY 31, 1995

	Gas-fired	Residual-oil-fired	Other-oil-fired	Coal-fired
Turbine engine with 100 MMBTU/hr or greater MRC	55 ppmvd	not applicable	75 ppmvd	not applicable
Turbine engine with MRC less than 100 MMBTU/hr	0.90 lb/MMBTU	not applicable	0.90 lb/MMBTU	not applicable
Cyclone furnace	0.43 lb/MMBTU	0.43 lb/MMBTU	0.43 lb/MMBTU	0.43 lb/MMBTU
Fast-response double-furnace Naval boiler	0.20 lb/MMBTU	0.30 lb/MMBTU	0.30 lb/MMBTU	0.30 lb/MMBTU
Fluidized bed combustor	not applicable	not applicable	not applicable	0.29 lb/MMBTU
Other boiler	0.20 lb/MMBTU	0.25 lb/MMBTU	0.20 lb/MMBTU	0.38 lb/MMBTU
Reciprocating engine	2.5 gm/bk hp-hr	not applicable	8 gm/bk hp-hr	not applicable

(3) For a source subject to this section that is also a NOx budget program source: 0.15 pounds per MMBTU during the period from October 1 to April 30, inclusive.

(f) Multi-fuel sources.

(1) When the owner or operator of a source switches the use of fuel, converts to a new fuel, or is capable of burning two or more different fuels, such owner or operator shall comply with the requirements of this subsection.

(2) The owner or operator of a source that is capable of firing two or more fuels shall not cause or allow emissions of NOx from such source, in excess of the following:

(A) For fuel-burning equipment that simultaneously fires two or more different fuels: an emission limitation calculated by 1) multiplying the heat input of each fuel combusted by the emission limitation established

in this section for such fuel, 2) summing those products, and 3) dividing the sum by the total heat input; or

(B) For fuel-burning equipment that is capable of interchangeably firing two or more fuels: the emission limitation in Table 22-2 for the particular equipment and fuel used. Notwithstanding this requirement, the owner or operator of a source that operates exclusively on other oil or gas from May 1 through September 30 of any year and on another fuel during the remainder of the year shall not cause or allow emissions of NOx from such source in excess of 0.2 pounds per million BTU of heat input from May 1 through September 30 and 0.29 pounds per million BTU of heat input for the remainder of the year.

(3) The owner or operator of a source which, on or after January 1, 1990, converts the fuel used at such source, shall not cause or allow emissions of NOx from such source in excess of the following:

(A) 0.29 pounds per million BTU of heat input, when the source burned coal to provide more than fifty percent (50%) of its total heat input during the last full calendar year immediately prior to such conversion; or

(B) 0.225 pounds per million BTU of heat input, if the source burned residual oil to provide more than fifty percent (50%) of its total heat input during the last full calendar year immediately prior to such conversion.

(g) Forty percent (40%) reduction.

(1) When the owner or operator of any source reduces the NOx emission rate from such source by forty percent (40%), as provided in subparagraph (d)(2)(C) of this section, such owner or operator shall comply with the emission limitations of this section established in a permit issued by the Commissioner. Such permit shall specify such source's NOx emission limitation to be the more restrictive of:

(A) sixty percent (60%) of such source's emission rate at maximum capacity during calendar year 1990; or

(B) sixty percent (60%) of such source's emission limitation in Table 22-1 of subdivision (d)(1).

Such permit shall express the NOx emission limitation in the same units of measurement as the NOx emission limitation that would otherwise apply to such source in subsection (e).

(2) To determine the actual emission rate specified in subparagraph (g)(1)(A) of this subsection, such owner or operator shall conduct an emission test at such source under operating conditions representative of those conditions in existence at the source in calendar year 1990, at the maximum capacity at which the source was operated during such calendar year.

(3) If the Commissioner determines that operations during calendar year 1990 were not representative of normal operations from such source, the Commissioner may use another calendar year which is more representative.

(h) Reconstruction or replacement.

(1) If the owner or operator of a source proves, to the satisfaction of the Commissioner, that compliance with subsections (e) or (g) of this section is not technologically or economically feasible at such source, the Commissioner may allow the owner or operator, through a permit, to comply with this section by reconstructing the existing source, or replacing the existing source with a new source. Such reconstruction or replacement shall be completed no later than May 31, 1999.

(2) Such permit shall require that, prior to the completion of reconstruction or replacement of such source, the NOx emission rate from the existing source not exceed the more restrictive of:

(A) the emission limitation in subdivision (d)(1); or

(B) the emission limitation of any current permit or order issued by the Commissioner for such source.

(3) Such permit shall require the owner or operator, by May 31, 1995, to deposit into an escrow account an amount equal to $1,000 multiplied by the number of pounds per day of NOx emission reductions that would be needed by the existing source to achieve compliance with the emission limitations in subsection (e) of this section. The terms of such escrow account and escrow agent required by such permit shall be subject to the approval of the Commissioner. The Commissioner may require that such escrow account be established and properly insured against default at an institution authorized to operate in Connecticut by the State's

Commissioner of Banking. In determining the acceptability of an escrow agent, the Commissioner shall consider the reliability and trustworthiness of the person acting as the escrow agent. The Commissioner shall also consider the escrow agent's ability to insure that any money deposited into such escrow account will be withdrawn upon written notification in accordance with such permit.

(4) After completion of such reconstruction or replacement, the owner or operator may, upon written notification by the Commissioner, withdraw funds from the escrow account in accordance with such permit described in subdivision (h)(3). If the owner or operator fails to complete reconstruction or replacement by the date set forth in the permit, such owner or operator shall use such funds to acquire emission reduction credits upon written notice from the Commissioner.

(i) Schedule modification.

(1) If the owner or operator of a source proves to the satisfaction of the Commissioner that it is not technologically or economically feasible for such source to comply with the emission limitations in subsections (e) through (g) of this section, the Commissioner may by permit require NOx emission reductions through modifications of the schedule of NOx-emitting activities and implementation of other measures to reduce NOx emissions at such source. Such permit may include restrictions on operations on any day for which the Commissioner has forecast that ozone levels will be "moderate to unhealthful," "unhealthful," or "very unhealthful."

(2) This subsection shall only apply to the following:

(A) Oil-fired turbine engines or Fast-response double-furnace Naval boilers that generate power to create simulated high-altitude atmospheres for the testing of aircraft engines; or

(B) Testing of fuel-burning equipment undergoing research and development.

(j) Emissions reduction trading.

(1) When the owner or operator of a source uses emission reduction trading to comply with this section, such owner or operator shall achieve reductions in NOx emissions which, at a minimum, are equivalent to those emission reductions that would be achieved by complying with all applicable emission limitations in subsection (e) of this section. The Commissioner may allow the use of emission reduction trading through the issuance of a permit. Such permit shall require the

owner or operator, by May 31, 1995, to perform emission trading or to deposit into an escrow account an amount equal to $2,000 multiplied by the number of pounds per day of NOx emission reductions needed to achieve compliance with the emission limitations in subsection (e) of this section. Such order or permit also shall required the owner or operator to withdraw and use such funds to acquire ERCs upon written notice from the Commissioner. The terms of such escrow account and escrow agent required by such permit shall be subject to the approval of the Commissioner. The Commissioner shall require that such escrow account be established and properly insured against default at an institution authorized to operate in Connecticut by the State's Commissioner of Banking. In determining the acceptability of an escrow agent, the Commissioner shall consider the reliability and trustworthiness of the person acting as the escrow agent. The Commissioner shall also consider the escrow agent's ability to insure that any money deposited into such escrow account will be withdrawn upon written notification in accordance with such permit.

(2) In order to comply with subdivision (j)(1) of this subsection, such owner or operator shall conduct an emission test or submit another method acceptable to the Commissioner to estimate the NOx emission limitation shortfall. Such emission test shall be conducted under operating conditions which demonstrate the maximum emission rate of such source. Such emission test shall be certified pursuant to subsection (k) of this section.

(3) Any creation or use of ERCs for the purpose of this subsection shall be consistent with the provisions of the U.S. Environmental Protection Agency's "Economic Incentive Program Rules; Proposed Rules," published February 23, 1993 (Federal Register, Volume 58, Number 34), and the U.S. Environmental Protection Agency's "Emission Trading Policy Statement," published December 4, 1986 (Federal Register, Volume 51, Number 233).

(k) Emissions testing and monitoring.

(1) The owner or operator of any source subject to an emission limitation under this section shall conduct an emission test to demonstrate compliance with this section no later than May 31, 1995. Any such owner or operator which does not install or operate a continuous emissions monitor at such source shall also conduct emission tests at least once every five years. Compliance with the emission limitations of this section shall be determined based on the average of three (3) one-hour tests, each performed over a consecutive 60-minute period and performed in accordance with Section 22a-174-5. Any analysis of nitrogen content conducted as part of such emission testing shall be in accordance with Method D-3228 of the American Society for the Testing of Materials.

(2) The owner or operator shall demonstrate compliance with emission limitations of this section using sampling and analytical procedures approved under 40 CFR Part 60, Appendix A, or under procedures in subsection 22a-174-5(d). Sampling shall be conducted when the source is at normal operating temperature and is operating at or above ninety percent (90%) of maximum rated capacity for a fuel-burning source or at or above ninety percent (90%) of design capacity for a waste combustor. Notwithstanding such requirement, any source which has operated in excess of one hundred percent (100%) of its maximum rated capacity at any time since January 1, 1990 shall be tested when the source is operating at or above ninety percent (90%) of its highest operating rate since January 1, 1990.

(3) On and after May 31, 1995, the owner or operator of any source that emitted more than one hundred (100) tons of NOx from a single stack during any calendar year beginning January 1, 1990, shall install, calibrate, maintain, operate, and certify a continuous emissions monitor for NOx for each such stack. The owner or operator shall notify the Commissioner in writing at least thirty (30) days prior to conducting any performance or quality assurance testing of any such monitor. Any such testing shall be conducted in accordance with a testing protocol approved by the Commissioner. Any continuous emission monitor for NOx shall be installed, calibrated and operated in accordance with the performance and quality assurance specifications contained in 40 CFR 60, Subpart A, Appendix B and Appendix F.

(4) Unless otherwise specified by the Commissioner in a permit or order, the averaging times for the emission limitations in this section for a source that has, or is required to have, a continuous emissions monitor for NOx shall be twenty-four (24) hours, measured from midnight at the beginning of any day to midnight of the end of that day and shall include all periods of operation, including startup, shutdown, and malfunction,

(5) The owner or operator of a source subject to this subsection may apply in writing to the Commissioner for an extension to comply with this subsection. The Commissioner may grant such extension for a period not to exceed one (1) year through a permit or order.

(l) Reporting and record keeping.

(1) The owner or operator of any source subject to this section, shall keep the following records:

(A) Daily records of operating hours of such source;

(B) Daily records of fuel use and NOx emissions from such source (in pounds per day);

(C) Monthly and annual records of NOx emissions from such source (in tons);

(D) Records of all tune-ups, repairs, replacement of parts and other maintenance of such source;

(E) Copies of all documents submitted to the Commissioner pursuant to this section;

(F) For any source required to install, calibrate, and operate a continuous emissions monitor for NOx under subdivision (k)(3), all charts, electronically stored data, and printed records produced by such continuous emissions monitor;

(G) Procedures for calculating NOx emission rates in (B) and (C) above;

(H) Records of the dates, times, and places of all emission testing required by this section, the persons performing the measurements, the testing methods used, the operating conditions at the time of testing, and the results of such testing;

(I) For any source required to install, calibrate, and operate a continuous emissions monitor for NOx under subdivision (k)(3), records of all performance evaluations, calibration checks and adjustments on such monitor; a record of maintenance procedures; and all data necessary to complete the quarterly reports required under subdivision (l)(4) of this section; and

(J) Any other records or reports required by an order or permit issued by the Commissioner pursuant to this section.

(2) Within thirty (30) days of the completion of emission tests conducted under the requirements of subdivision (k)(1) of this section, the owner or operator of such source shall submit a written report of the results of such testing to the Commissioner.

(3) Within sixty (60) days of the completion of certification tests conducted under the requirements of subdivision (k)(3) of this section, the owner or operator of such

source shall submit a written report of the results of such testing to the Commissioner.

(4) The owner or operator of any source required to be equipped with a continuous emissions monitor for NOx under subdivision (k)(3) of this section shall submit to the Commissioner written quarterly reports of excess emissions and CEM malfunctions. Such reports shall be submitted to the Commissioner on or before January 30, April 30, July 30, and October 30 and shall include data for the three calendar month period ending the month before the due date of the report. For each period of excess emissions, such report shall include the date and time of commencement and completion of such period, the magnitude and suspected cause of the excess emissions and all actions taken to correct the excess emissions. For each malfunction of the CEM system, such report shall include the date and time of when the malfunction commenced and ended, and all actions taken to correct the malfunction.

(5) The owner or operator of any source subject to this section shall retain all records and reports produced pursuant to the requirements of this section for five (5) years. Such records and reports shall be available for inspection at reasonable hours by the Commissioner or the Administrator. Such records and reports shall be retained at the source, unless the Commissioner approves in writing the use of another location in the State.

(6) On or before April 15 of each year, the owner or operator of any source subject to this section shall submit a report on NOx emissions from such source, on a form provided by the Commissioner.

(7) The Commissioner may use data recorded by continuous emissions monitors for NOx and any other records and reports to determine compliance with applicable requirements of this section.

(m) Compliance plans.

(1) The owner or operator of any source that is subject to this section shall submit a compliance plan to the Commissioner by September 1, 1994, on forms provided by the Commissioner. Such compliance plan shall document how such source will comply with all applicable requirements of this section. The owner or operator of any source which becomes subject to this section after May 1, 1994, shall submit a compliance plan within four (4) months of the date on which the source becomes subject to this section.

(2) Any compliance plan submitted pursuant to this subsection shall include a certification signed by a responsible corporate officer or a duly authorized representative of such officer, as those terms are defined in subdivision 22a-430-3(b)(2) of the Regulations of Connecticut State Agencies, and by the individual delegated by such officer with the responsibility of actually preparing the compliance plan. Such certification shall read as follows:

"I have personally examined and am familiar with the information submitted in this compliance plan and all attachments. Based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, I certify that the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in this compliance plan or its attachments may be punishable as a criminal offense."

(3) If a compliance plan does not contain all measures necessary to comply with all requirements of this section, the Commissioner may notify the owner or operator of such source of the deficiency. Such owner or operator shall resubmit a revised compliance plan within thirty (30) days of receipt of such notice.