

Chapter NR 428

CONTROL OF NITROGEN COMPOUND EMISSIONS

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Note: Corrections made under s. 13.93 (2m) (b) 7., Stats., Register, December, 1996, No. 492. Corrections in NR 428.04 to 428.08 made under s. 13.93 (2m) (b) 7., Stats., Register, January, 2001, No. 541.

NR 428.01 Applicability; purpose. (1) **APPLICABILITY.** This chapter applies to all air contaminant sources which emit nitrogen compounds and to their owners and operators. All references to the code of federal regulations in this chapter mean those parts or provisions as in effect on February 1, 2001, except that in the case of CFR appendices incorporated by reference in ch. NR 484, if a more recent date is specified in the applicable section of ch. NR 484, that date shall apply.

(2) **PURPOSE.** This chapter is adopted under ss. 285.11, 285.13 and 285.17, Stats., to categorize nitrogen compound air contaminant sources and to establish emission limitations and other requirements for these sources in order to protect air quality.

History: Cr. Register, September, 1986, No. 369, eff. 10-1-86; am. (1), Register, May, 1992, No. 437, eff. 6-1-92; am. Register, January, 2001, No. 541, eff. 2-1-01.

NR 428.02 Definitions. The definitions contained in ch. NR 400 apply to the terms used in this chapter. In addition, the following definitions apply to the terms used in this chapter:

(1) “Biologically derived gaseous fuel” means a gaseous fuel resulting from biological processing of a carbon-based feedstock.

(1m) “Capacity factor” means one of the following:

(a) The ratio of a unit’s actual electric output (expressed in MWe-hr) to the unit’s nameplate capacity times the unit’s potential hours of operation. The potential hours of operation on an annual basis are 8,760 hours, and on an ozone season basis are 3,672 hours.

(b) The ratio of a unit’s heat input (in million Btu or equivalent units of measure) to the unit’s maximum design heat input (in million Btu per hour or equivalent units of measure) times the unit’s potential hours of operation.

(2) “Combined cycle system” means a system comprised of one or more combustion turbines, heat recovery steam generators and steam turbines configured to improve overall efficiency of electricity generation or steam production.

(3) “Combustion controls” has the meaning given in s. NR 409.02 (21m).

(4) “Combustion optimization” means those activities necessary to maximize combustion efficiency while minimizing NO_x emissions, including but not limited to the following: burner adjustments, fuel conditioning, fuel flow improvements, furnace design modifications and the application of combustion controls.

(5) “Combustion turbine” means an enclosed fossil or other fuel-fired device that is comprised of a compressor, a combustor

and a turbine, and in which the flue gas resulting from the combustion of fuel in the combustor passes through the turbine, rotating the turbine.

(6) “Commencement of operation” means the beginning of any mechanical, chemical or electronic process, including, with regard to a unit, startup of a unit’s combustion chamber.

(6m) “Integrated gasification process” means a high temperature process in which gaseous fuel is produced onsite from a carbon-based feedstock.

(7) “Kraft recovery boiler” means “recovery furnace”, as defined in s. NR 440.45 (2) (L).

(7e) “Maximum theoretical emissions” means the quantity of NO_x emissions that theoretically could be emitted by a stationary source without consideration of control devices based on the design capacity or maximum production capacity of the source and 8,760 hours of operation per year. When appropriate, and upon request by the source owner or operator, maximum theoretical emissions may be limited by the imposition of conditions in a federally enforceable permit. The conditions shall be used in place of design capacity or maximum production capacity in calculating the maximum theoretical emissions for the source and may include, among other things, the establishment of production limitations, capacity limitations, or limitations on the hours of operation of any emission source, or a combination of any limitations. Production or capacity limitations shall be established on the basis of no longer than one month and may allow for averaging for up to 12 consecutive months.

(7m) “Process heater” means an enclosed device using controlled flame, that is not a boiler, and that has a primary purpose to transfer heat indirectly to a process material or to a heat transfer material for use in a process unit, instead of generating steam. Process heaters may not include combustion equipment where the material being heated is in direct contact with the products of combustion, such as furnaces or kilns, any unfired waste heat recovery heater or units used for comfort heat or space heat, food preparation for onsite consumption, or autoclaves.

(8) “Unit” means a solid fuel-fired or fossil fuel-fired combustion device.

History: Cr. (intro.), renum. from NR 154.01 (122), Register, September, 1986, No. 369, eff. 10-1-86; am. (intro.), r. (1), Register, June, 1993, No. 450, eff. 7-1-93; am. (intro.), cr. (1) to (8), Register, January, 2001, No. 541, eff. 2-1-01; CR 02-076: cr. (6m) Register November 2002 No. 563, eff. 12-1-02; CR 03-049: renum. (1) to be (1m), cr. (1) Register December 2003 No. 576, eff. 1-1-04; CR 07-016: cr. (7m) Register July 2007 No. 619, eff. 8-1-07; CR 08-103: cr. (7e) Register August 2009 No. 644, eff. 9-1-09.

NR 428.03 General limitations. No person may cause, allow or permit nitrogen oxides or nitrogen compounds to be emit-

ted to the ambient air which substantially contribute to the exceeding of an air standard or cause air pollution.

History: Renum. from NR 154.15 (1), Register, September, 1986, No. 369, eff. 10-1-86; am. Register, May, 1992, No. 437, eff. 6-1-92.

Subchapter I — NO_x Emissions Performance Program General Provisions

NR 428.04 Requirements and performance standards for new or modified sources. (1) APPLICABILITY.

The requirements of this section apply to emissions units described in this section that are located in the county of Kenosha, Milwaukee, Ozaukee, Racine, Washington or Waukesha and that are constructed or that undergo a major modification, as that term is described in ch. NR 405 or 408, after February 1, 2001. When determining whether an emissions unit undergoes a major modification for purposes of this section, any increase in CO emissions resulting from the operation of the emissions unit, or operation of NO_x emissions control equipment for purposes of meeting state or federal NO_x emission requirements, will not be considered in the emissions calculations.

(2) PERFORMANCE STANDARDS. (a) *Boilers.* 1. Solid fuel-fired units. No person may cause, allow or permit nitrogen oxides to be emitted from a solid fuel-fired boiler in amounts greater than those specified in this subdivision.

a. 0.15 pound per million Btu of heat input on a 30-day rolling average basis for boilers with a maximum design heat input of 250 million Btu per hour or greater.

b. 0.20 pound per million Btu of heat input on a 30-day rolling average basis for boilers with a maximum design heat input of less than 250 million Btu per hour.

2. Gaseous fuel-fired units. No person may cause, allow or permit nitrogen oxides to be emitted from a gaseous fuel-fired boiler with a maximum design heat input of 25 million Btu per hour or greater in an amount greater than 0.05 pound per million Btu of heat input on a 30-day rolling average basis.

3. Distillate fuel oil-fired boilers. No person may cause, allow or permit nitrogen oxides to be emitted from a distillate fuel oil-fired boiler with a maximum design heat input of 25 million Btu per hour or greater in an amount greater than 0.09 pound per million Btu of heat input on a 30-day rolling average basis.

4. Residual fuel oil-fired boilers. No person may cause, allow or permit nitrogen oxides to be emitted from a residual fuel oil-fired boiler with a maximum design heat input of 25 million Btu per hour or greater in an amount greater than 0.15 pound per million Btu of heat input on a 30-day rolling average basis.

5. Kraft recovery boilers. No person may cause, allow or permit nitrogen oxides to be emitted from a kraft recovery boiler with a maximum design heat input of 50 million Btu per hour or greater in an amount greater than 0.10 pound per million Btu of heat input on a 30-day rolling average basis.

(b) *Cement kilns, lime kilns and calciners.* No person may cause, allow or permit nitrogen oxides to be emitted from a cement kiln, lime kiln or calciner with a maximum design heat input of 50 million Btu per hour or greater in amounts greater than those specified in this paragraph.

1. 0.10 pound per million Btu on a 30-day rolling average basis when burning gaseous fuel.

2. 0.12 pound per million Btu on a 30-day rolling average basis when burning distillate fuel oil.

3. 0.20 pound per million Btu on a 30-day rolling average basis when burning residual fuel oil.

4. 0.60 pound per million Btu on a 30-day rolling average basis when burning solid fuel.

(c) *Reheat, annealing and galvanizing furnaces.* No person may cause, allow or permit nitrogen oxides to be emitted from a reheat furnace, annealing furnace or galvanizing furnace with a maximum design heat input of 50 million Btu per hour or greater

in an amount greater than 0.10 pound per million Btu on a 30-day rolling average basis.

(d) *Glass furnaces.* No person may cause, allow or permit nitrogen oxides to be emitted from a glass furnace with a maximum design heat input of 50 million Btu per hour or greater in an amount greater than 4.0 pounds per ton of pulled glass on a 30-day rolling average basis.

(e) *Asphalt plants.* No person may cause, allow or permit nitrogen oxides to be emitted from an asphalt plant with a maximum design heat input of 50 million Btu per hour or greater in amounts greater than those specified in this paragraph.

1. 0.15 pound per million Btu of heat input on a 30-day rolling average basis when burning gaseous fuel.

2. 0.20 pound per million Btu of heat input on a 30-day rolling average basis when burning distillate fuel oil.

3. 0.27 pound per million Btu of heat input on a 30-day rolling average basis when burning residual fuel oil or waste oil.

(f) *Process heating units.* No person may cause, allow or permit nitrogen oxides to be emitted from a process heater, dryer, oven or other external combustion unit with a maximum design heat input of 50 million Btu per hour or greater in amounts greater than those specified in this paragraph.

1. 0.10 pound per million Btu of heat input on a 30-day rolling average basis when burning gaseous fuel.

2. 0.12 pound per million Btu of heat input on a 30-day rolling average basis when burning distillate fuel oil.

(g) *Combustion turbines.* 1. Gaseous fuel-fired units. Except as provided in subs. 3. and 4., no person may cause, allow or permit nitrogen oxides to be emitted from a gaseous fuel-fired combustion turbine in amounts greater than those specified in this subdivision.

a. 12 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis for a simple cycle combustion turbine with a maximum design power output of 85 MWe or greater.

b. 9 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis for a simple cycle combustion turbine with a maximum design power output of 40 MWe or greater but less than 85 MWe.

c. 25 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis for a simple cycle combustion turbine with a maximum design power output of less than 40 MWe.

d. 3 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis for a combined cycle combustion turbine with a maximum design power output of 25 MWe or greater.

e. 14 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis for a combined cycle combustion turbine with a maximum design power output of less than 25 MWe.

2. Distillate fuel oil-fired units. No person may cause, allow or permit nitrogen oxides to be emitted from a distillate fuel oil-fired combustion turbine in amounts greater than those specified in this subdivision.

a. 25 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis for a simple cycle combustion turbine with a maximum design power output of 85 MWe or greater.

b. 25 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis for a simple cycle combustion turbine with a maximum design power output of 40 MWe or greater but less than 85 MWe.

c. 65 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis for a simple cycle com-

bustion turbine with a maximum design power output of less than 40 MWe.

d. 8 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis for a combined cycle combustion turbine with a maximum design power output of 25 MWe or greater.

e. 25 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis for a combined cycle combustion turbine with a maximum design power output of less than 25 MWe.

3. Units fired by an integrated gasification process. No person may cause, allow or permit nitrogen oxides to be emitted from a combined cycle combustion turbine that is fired by fuel derived from an integrated gasification process in amounts greater than 15 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis.

4. Units fired by a biologically derived gaseous fuel. No person may cause, allow or permit nitrogen oxides to be emitted from a biologically derived gaseous fuel fired combustion turbine in amounts greater than those specified in this subdivision.

a. 35 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis for a simple cycle combustion turbine.

b. 35 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis for a combined cycle combustion turbine.

(h) *Reciprocating engines.* No person may cause, allow or permit nitrogen oxides to be emitted from a reciprocating engine in amounts greater than those specified in this paragraph.

1. 6.9 grams per brake horsepower-hour for a compression ignition unit with a maximum design power output of 1000 hp or greater.

2. 4.0 grams per brake horsepower-hour for a spark ignition unit with a maximum design power output of 1000 hp or greater.

(3) **MONITORING REQUIREMENTS.** (a) *General requirements.*

1. The owner or operator of each NO_x emissions unit subject to the requirements of sub. (2) shall comply with the monitoring requirements of subch. III.

2. The emissions measurements recorded and reported in accordance with subch. III shall be used to determine compliance by the unit with the applicable NO_x emissions performance standard under sub. (2).

(b) *Specific requirements.* The owner or operator of each NO_x emissions unit subject to the requirements of sub. (2) shall determine the unit's average NO_x emission rate using methods and procedures specified in 40 CFR part 60, Appendix B, incorporated by reference in s. NR 484.04 (21), or other emissions monitoring methods approved by the department.

(4) **RECORDKEEPING AND REPORTING REQUIREMENTS.** (a) Except as provided in subd. 1., the owner or operator of each NO_x emissions unit subject to the requirements of this section shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created.

1. All emissions monitoring information, in accordance with subch. III; except that, to the extent that subch. III provides for a 3-year period for record retention, the 3-year period shall apply.

2. Copies of all reports, compliance certifications and other submissions and all records made or required under the NO_x emissions performance program.

(b) The owner or operator of the NO_x emissions source shall submit the compliance reports and certifications required under the NO_x emissions performance program in conjunction with those required under the construction permit requirements of ch. NR 406 and the operation permit requirements of s. NR 407.09.

History: Cr. Register, January, 2001, No. 541, eff. 2-1-01; CR 02-076: cr. (2) (g) 3. Register November 2002 No. 563, eff. 12-1-02; CR 03-049: am. (2) (g) 1., cr. (2) (g) 4. Register December 2003 No. 576, eff. 1-1-04; CR 07-016: am. (2) (h) 1. and

2. Register July 2007 No. 619, eff. 8-1-07; CR 08-103: am. (1) and (3) (b) Register August 2009 No. 644, eff. 9-1-09.

NR 428.05 Requirements and performance standards for existing sources. (1) **APPLICABILITY.** The requirements of this section apply to emissions units described in this section that are located in the county of Kenosha, Manitowoc, Milwaukee, Ozaukee, Racine, Sheboygan, Washington or Waukesha and that were initially constructed on or before February 1, 2001.

(2) **NO_x EMISSIONS OPTIMIZATION.** (a) The requirements of this subsection do not apply to emissions units which are subject to the emission limits of sub. (3).

(b) Except as provided in par. (a) or (c), the following categories of NO_x emissions units listed in this subsection shall complete a combustion optimization to minimize NO_x emissions in accordance with s. NR 439.096 by December 31, 2002.

1. Solid fuel-fired boilers with a maximum design heat input of 75 million Btu per hour or greater and operated during the 2000 ozone season or a later ozone season with a capacity factor of at least 20%.

2. Natural gas-fired boilers with a maximum design heat input of 75 million Btu per hour or greater and operated during the 2000 ozone season or a later ozone season with a capacity factor of at least 20%.

3. Distillate or residual fuel oil-fired boilers with a maximum design heat input of 75 million Btu per hour or greater and operated during the 2000 ozone season or a later ozone season with a capacity factor of at least 20%.

4. Cement kilns, lime kilns and calciners with a maximum design heat input of 75 million Btu per hour or greater and operated during the 2000 ozone season or a later ozone season with a capacity factor of at least 20%.

5. Reheat furnaces, annealing furnaces and galvanizing furnaces with a maximum design heat input of 75 million Btu per hour or greater and operated during the 2000 ozone season or a later ozone season with a capacity factor of at least 20%.

6. Glass manufacturing furnaces with a maximum design heat input of 75 million Btu per hour or greater and operated during the 2000 ozone season or a later ozone season with a capacity factor of at least 20%.

(c) An emissions unit described in par. (b) which first operates with a capacity factor exceeding 20% in an ozone season after the 2000 ozone season shall complete a combustion optimization by December 31 of the calendar year following that ozone season.

(d) The owner or operator of an NO_x emissions unit subject to a combustion optimization requirement under par. (b) shall operate the emissions unit in a manner consistent with the results of the combustion optimization.

(e) The owner or operator of a source subject to the NO_x emissions optimization requirements of this subsection shall perform monitoring sufficient to determine compliance with the requirements of this subsection. The monitoring required under this paragraph shall be either continuous monitoring of NO_x emissions or periodic monitoring of parameters adequate to ascertain the quality of the combustion and shall conform to the source's approved combustion optimization plan pursuant to s. NR 439.096.

(3) **PERFORMANCE STANDARDS.** (a) *Utility boilers.* No person may cause, allow or permit nitrogen oxides to be emitted from a boiler owned or operated by a utility as defined in s. NR 409.02 (84) with a maximum design heat input of 500 million Btu per hour or greater in excess of the most stringent of the following limits, as applicable, during the ozone season:

1. 0.33 pound per million Btu of heat input on a 30-day rolling average basis, on or after December 31, 2002.

2. 0.31 pound per million Btu of heat input on a 30-day rolling average basis, on or after December 31, 2003.

3. 0.30 pound per million Btu of heat input on a 30-day rolling average basis, on or after December 31, 2004.

4. 0.29 pound per million Btu of heat input on a 30-day rolling average basis, on or after December 31, 2005.

5. 0.29 pound per million Btu of heat input on a 30-day rolling average basis, on or after December 31, 2006.

6. 0.28 pound per million Btu of heat input on a 30-day rolling average basis, on or after December 31, 2007.

(b) *Other boilers.* The requirements of this paragraph apply to boilers which are not subject to the emission limits of par. (a).

1. Solid fuel-fired units. On or after December 31, 2002, no person may cause, allow or permit nitrogen oxides to be emitted from a solid fuel-fired boiler, with a maximum design heat input of 100 million Btu per hour or greater and operated during the 2000 ozone season or a later ozone season with a capacity factor of at least 25%, in excess of the following limits during the ozone season:

a. 0.45 pound per million Btu of heat input on a 30-day rolling average basis for cyclone-fired boilers.

b. 0.20 pound per million Btu of heat input on a 30-day rolling average basis for fluidized bed combustion boilers.

d. 0.30 pound per million Btu of heat input on a 30-day rolling average basis for pulverized coal-fired boilers.

2. Gaseous fuel-fired units. On or after December 31, 2002, no person may cause, allow or permit nitrogen oxides to be emitted from a gaseous fuel-fired boiler, with a maximum design heat input of 100 million Btu per hour or greater and operated during the 2000 ozone season or a later ozone season with a capacity factor of at least 25%, in excess of 0.10 pound per million Btu of heat input on a 30-day rolling average basis during the ozone season.

3. Distillate fuel oil-fired units. On or after December 31, 2002, no person may cause, allow or permit nitrogen oxides to be emitted from a distillate fuel oil-fired boiler, with a maximum design heat input of 100 million Btu per hour or greater and operated during the 2000 ozone season or a later ozone season with a capacity factor of at least 25%, in excess of 0.12 pound per million Btu of heat input on a 30-day rolling average basis during the ozone season.

4. Residual fuel oil-fired units. On or after December 31, 2002, no person may cause, allow or permit nitrogen oxides to be emitted from a residual fuel oil-fired boiler, with a maximum design heat input of 100 million Btu per hour or greater and operated during the 2000 ozone season or a later ozone season with a capacity factor of at least 25%, in excess of 0.20 pound per million Btu of heat input on a 30-day rolling average basis during the ozone season.

(c) *Reheat, annealing and galvanizing furnaces.* On or after December 31, 2002, no person may cause, allow or permit nitrogen oxides to be emitted from a reheat furnace, annealing furnace or galvanizing furnace with a maximum design heat input of 100 million Btu per hour or greater and operated during the 2000 ozone season or a later ozone season with a capacity factor of at least 25%, in excess of 0.10 pound per million Btu heat input on a 30-day rolling average basis during the ozone season.

(d) *Combustion turbines.* On or after December 31, 2002, no person may cause, allow or permit nitrogen oxides to be emitted from a combustion turbine with a maximum design power output of 50 MWe or greater in an amount greater than the following during the ozone season:

1. Gaseous fuel-fired units. 75 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average for units burning gaseous fuel.

2. Distillate fuel oil-fired units. 110 parts per million dry volume (ppmdv), corrected to 15% oxygen, on a 30-day rolling average basis for units burning distillate fuel oil.

(e) *Reciprocating engines.* On or after December 31, 2002, no person may cause, allow or permit nitrogen oxides to be emitted during the ozone season from reciprocating engines with a maximum design power output of 2000 hp or greater in excess of the following limits:

1. 9.5 grams per brake horsepower-hour for rich-burn units.

2. 10.0 grams per brake horsepower-hour for lean-burn units.

3. 8.5 grams per brake horsepower-hour for distillate fuel oil-fired units.

4. 6.0 grams per brake horsepower-hour for dual-fuel units.

(4) **MONITORING REQUIREMENTS.** (a) *General requirements.*

1. The owner or operator of each NO_x emissions unit subject to the requirements of sub. (3) shall comply with the monitoring requirements of subch. III.

2. The emissions measurements recorded and reported in accordance with subch. III shall be used to determine compliance by the unit with the NO_x emissions performance standard under sub. (3).

(b) *Specific requirements.* 1. The owner or operator of an emissions unit subject to the requirements of sub. (3) (a) shall determine the average NO_x emission rate, in pound per million Btu, using the methods and procedures specified in 40 CFR part 75, Appendices A through I, incorporated by reference in s. NR 484.04 (27).

2. The owner or operator of an emissions unit subject to any of the requirements of sub. (3) (b) to (e) shall determine the unit's average NO_x emission rate using methods and procedures specified in 40 CFR part 60, Appendix B, incorporated by reference in s. NR 484.04 (21), or other emissions monitoring methods approved by the department.

(5) **RECORDKEEPING AND REPORTING REQUIREMENTS.** (a) Unless otherwise provided, the owner or operator of each NO_x emissions unit subject to the requirements of this section shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created:

1. All emissions monitoring information, in accordance with subch. III; except that, to the extent that subch. III provides for a 3-year period for record retention, the 3-year period shall apply.

2. Copies of all reports, compliance certifications and other submissions and all records made or required under the NO_x emissions performance program.

(b) The owner or operator of the NO_x emissions source shall submit the compliance reports and certifications required under the NO_x emissions performance program in conjunction with those required under the operation permit requirements of s. NR 407.09.

History: Cr. Register, January, 2001, No. 541, eff. 2-1-01; CR 07-016; am. (3) (e) 1. to 4. Register July 2007 No. 619, eff. 8-1-07; CR 08-103; am. (1) and (4) (b) 2. Register August 2009 No. 644, eff. 9-1-09.

Subchapter II — NO_x Emissions Performance Program Compliance Provisions

NR 428.06 Determination of compliance. (1) **EMISSIONS UNIT COMPLIANCE.** Except as provided in sub. (2), each emissions unit subject to the requirements of s. NR 428.04 (2) or 428.05 (3) shall demonstrate compliance with the applicable performance standards under those provisions on a per unit basis.

(2) **UNIT OZONE SEASON NO_x EMISSIONS AVERAGING PROGRAM.** (a) Except as provided in par. (b), units subject to s. NR 428.05 (3) (a) may participate in an ozone season NO_x emission averaging program for purposes of demonstrating compliance with ozone season NO_x emission limitations in s. NR 428.05 (3) during the ozone seasons of calendar years 2003 and later.

(b) Excess NO_x emission reductions from emissions units subject to s. NR 428.05 that are used in an ozone season NO_x emis-

sions averaging program under this subchapter may not be used for demonstrating compliance by an emissions unit with an NO_x emission limitation established under ch. NR 405 or 408 or s. NR 409.065 or 428.04.

(c) Excess NO_x emission reductions, for purposes of meeting the requirements of this subchapter, shall be emissions reductions beyond those required to meet all state and federal requirements. In addition, excess emission reductions shall be quantifiable through the monitoring requirements under ss. NR 428.05 and 428.07, and enforceable.

(3) **AGGREGATE LIMIT ON OZONE SEASON EMISSIONS.** All units participating in an ozone season NO_x emissions averaging program after December 31, 2007 shall be subject to an aggregate limit on the total tons of NO_x which may be emitted during the ozone season as determined under sub. (4) (e).

(4) **PROSPECTIVE EMISSIONS AVERAGING PLAN.** An owner or operator of an emissions unit who wishes to participate in an ozone season NO_x emissions averaging program shall submit a prospective emissions averaging plan to notify the department of all the owner's or operator's emissions units participating in an ozone season NO_x emissions averaging program. This plan shall establish compliance requirements for each unit and for all units in the aggregate with respect to emissions rate limitations and mass emissions limitations. The plan shall estimate each participating unit's anticipated operation to meet these requirements.

(a) *Plan submission.* The emissions averaging plan shall be submitted to the department no later than 90 days prior to the beginning of the ozone season covered by the plan. A revised plan may be submitted to the department no later than 30 days prior to the beginning of the ozone season covered by the plan.

(b) *Plan elements.* The emissions averaging plan shall include the following information for each emissions unit participating in the averaging program. All information shall be provided by applicable fuel category.

1. The responsible owners or operators.
2. The applicable ch. NR 428 emission limitation.
3. The projected ozone season heat input in million Btu or equivalent units.
4. The projected average NO_x emission rate, in pounds per million Btu or equivalent, and total mass emissions for the ozone season.
5. Information sufficient to determine the emission rate and mass emission limit and the alternative compliance limit required under par. (f) for each unit.

(c) *Units with multiple owners.* If an emissions unit has multiple owners, the unit's mass emissions and heat input may be allocated among the owners provided all mass emissions and the entire heat input of the unit are allocated. Alternatively, the operator of a unit with multiple owners shall be allocated all mass emissions and the entire heat input. Each owner may use his or her share of mass emissions and heat input in any ozone season NO_x emissions averaging plan. Each owner shall be the responsible party for compliance and liability for the owner's share of mass emissions and heat input for the requirements of this subchapter.

(d) *Plan emission rate limit.* 1. The emissions averaging plan shall establish an aggregate ozone season NO_x emission rate limit for all of the emissions units participating in the averaging program.

2. The aggregate ozone season NO_x emission rate limit is calculated as the heat input weighted aggregate of the individual unit's ozone season emission rate requirements less an environmental benefit factor of 0.01 pounds per million Btu or equivalent for each unit. This calculation is expressed as:

$$\text{Plan Emission Rate} = \left\{ \frac{\text{Sum} [\text{Projected Unit Heat Input} \times (\text{Unit Emission Rate Limit} - 0.01)]}{\text{Sum of Projected Unit Heat Inputs}} \right\}$$

(e) *Plan mass emission limitation.* 1. The emissions averaging plan shall establish an ozone season aggregate mass NO_x emission limitation for all of the units participating in an averaging program during any ozone season after December 31, 2007.

2. The aggregate mass emissions for all units that are eligible to participate in an emissions averaging plan may not exceed the combined allocation of all participating units' mass emissions limitation as determined under subd. 3.

3. Each unit participating in any ozone season NO_x emissions averaging plan shall have a mass emissions limitation equal to 15,912 tons multiplied by that unit's share of the average aggregate heat input of all eligible units of all owners determined by actual heat inputs for these units from the 1995, 1996 and 1997 ozone seasons as determined by the department.

4. If a unit eligible to participate in an ozone season NO_x emissions averaging plan is retired and replaced by another emissions unit at the same site, the mass emissions from the retired unit may still be used in a plan provided the replacement unit's mass emissions for that ozone season are subtracted from the retired unit's mass NO_x emissions limitation determined under subd. 3.

(f) *Unit alternative compliance limits.* 1. The emissions averaging plan shall establish an alternative compliance limit for each unit participating in the averaging program.

2. The unit alternative compliance limit in mass per million Btu shall be determined by dividing the unit's projected ozone season NO_x emissions by its projected ozone season heat input.

3. The plan shall provide calculations that demonstrate that the projected emissions units operations will not exceed the plan's emission rate and mass limit.

(g) *Plan review.* The emissions averaging plan shall be subject to department review and determination of completeness. The department shall make its determination of completeness and inform the owner or operator of any additional information needed in the plan within 30 days of receipt.

(h) *Public notice.* 1. The owner or operator of any emissions unit participating in an emissions averaging plan shall provide public notice of that plan by publication in a local newspaper at least 60 days prior to the start of the ozone season to which the plan relates and shall provide copies of the plan upon request.

2. The notice shall indicate the purpose of the plan, the participating units and how to obtain a copy of the plan.

(i) *Compliance demonstration.* 1. The owners or operators of any emissions units participating in an emissions averaging plan shall submit a compliance report to the department not later than 60 days after the last day of the ozone season with information sufficient to demonstrate compliance with the plan's emission rate and mass emissions limit.

2. The compliance report shall provide, for each emissions unit, the heat input, NO_x emission rate and total NO_x mass emissions for the ozone season. The compliance report shall provide, in aggregate for all units participating in the emissions averaging plan, the ozone season NO_x mass emissions, heat input in million Btu or equivalent units, and the average emission rate. The aggregate ozone season NO_x emission rate shall be calculated as sum of the actual heat input of each unit times the individual unit's actual emission rate divided by the sum of the actual heat inputs of all units. This calculation is expressed as:

$$\text{Aggregate average ozone season emission rate} = \left[\frac{\text{Sum} (\text{actual heat input by unit} \times \text{actual emission rate by unit})}{\text{Sum of actual heat inputs}} \right]$$

3. Individual units may not be withdrawn from an ozone season NO_x emissions averaging plan unless it is demonstrated in the compliance report that the withdrawn units individually met their applicable s. NR 428.05 (3) emissions limitation requirements and the remaining units in the plan demonstrate compliance with

an ozone season NO_x emissions averaging plan after excluding the withdrawn units.

4. If there is a successful demonstration of compliance with the plan's aggregate emissions rate limitation and with the plan's aggregate mass NO_x emissions limitation for the ozone season, all units in the averaging plan shall be deemed to be in compliance for that ozone season with each participating unit's alternative emissions rate limitation and heat input.

(j) *Violations and penalties.* 1. All emissions units participating in an ozone season NO_x emissions averaging program may be considered out of compliance if either the aggregate ozone season NO_x emission rate exceeds the emissions averaging plan's emission rate limitation or the aggregate mass NO_x emissions for the ozone season exceeds the plan's aggregate mass NO_x emissions limitation for the ozone season.

2. Each emissions unit is considered in violation for each day of non-compliance until corrective action is taken to reduce emissions and achieve compliance.

3. The department may require additional emission reductions if there are mass emissions exceeding the plan's limit on tons of mass emissions. The department may waive the additional emission reductions if, in consultation with the public service commission, the department determines that the excess emissions were the result of an extraordinary event and that the excess emissions were an unavoidable outcome of a necessary action taken by the source to maintain electric system reliability. Additional emission reductions shall be achieved within the subsequent 3 ozone seasons' allowable mass emission limit for all units participating in the emissions averaging plan. If there is no subsequent averaging plan for the source, the department may require a reduction in the source's emission rate that achieves an equivalent aggregate mass emission reduction.

4. All owners or operators of emissions units considered to be out of compliance with a plan emission rate limit or mass tons limit are liable for each violation and subject to enforcement and penalty provisions under ss. 285.83 and 285.87, Stats.

(k) *Monitoring requirements.* The total mass emissions and heat input shall be quantified by continuous emissions monitoring equipment and procedures required by ss. NR 428.05 (4) and 428.07.

(L) *Recordkeeping and reporting requirements.* Owners and operators shall comply with the recordkeeping and reporting requirements of s. NR 428.05 (5).

History: Cr. Register, January, 2001, No. 541, eff. 2-1-01; CR 02-076: r. and recr. Register November 2002 No. 563, eff. 12-1-02; CR 03-049: am. (2) (a) Register December 2003 No. 576, eff. 1-1-04.

Subchapter III — NO_x Emissions Performance Program Monitoring And Reporting Provisions

NR 428.07 General requirements. Except as provided in s. NR 428.12, the owner or operator of an NO_x emissions unit subject to the requirements of subch. I shall comply with the monitoring and reporting requirements of this subchapter.

(1) **REQUIREMENTS FOR MONITORING, INSTALLATION, CERTIFICATION AND DATA ACCOUNTING.** (a) The owner or operator of an NO_x emissions unit shall submit to the department a monitoring plan that describes in detail the systems to be used on the unit to satisfy the monitoring requirements of this subchapter by the following deadlines:

1. For an emissions unit subject to emission limitations in s. NR 428.05 (3), by December 21, 2002.

2. For an emissions unit subject to emission limitations in s. NR 428.04 (2), at least 180 days prior to initial operation.

(b) The owner or operator of each NO_x emissions unit shall do all of the following:

1. Install all monitoring systems required under s. NR 428.08 for monitoring NO_x emissions. This includes all systems required

to monitor NO_x emission rate, NO_x concentration, heat input and flow, in accordance with ss. NR 428.08 and 439.09.

2. Install all monitoring systems for monitoring heat input, if required under this chapter, for developing NO_x emission rate determinations expressed in pounds per million Btu.

3. Successfully complete all certification tests and meet all operating specifications of this subchapter and 40 CFR parts 60 and 75 as applicable to the monitoring systems required for an emissions unit under subsd. 1. and 2.

4. Record and report data from the monitoring systems under subsd. 1. and 2.

(2) **COMPLIANCE DATES.** The owner or operator shall meet the requirements of sub. (1) (b) 1. to 3. on or before the following dates and shall record and report data on and after the applicable listed date as follows:

(a) NO_x emissions units subject to the requirements of this subchapter that commence operation before February 1, 2001 shall comply with the requirements of this subchapter by December 31, 2002.

(b) NO_x emissions units subject to the requirements of this subchapter that commence operation on or after February 1, 2001 shall comply with the requirements of this subchapter by the later of the following dates:

1. December 31, 2002.

2. 180 days after the date on which the unit commences operation.

(c) However, if the applicable deadline under par. (b) does not occur during an ozone season, the deadline for compliance with the requirements of this subchapter becomes the May 1 immediately following the date determined in accordance with par. (b).

(d) 1. An NO_x emissions unit with a new stack or flue for which construction is completed after the applicable deadline under par. (a), (b) or (c) shall comply with the requirements of this subchapter 90 days after the date on which emissions first exit through the new stack or flue.

2. However, if the unit reports on an ozone season basis and the applicable deadline under subd. 1. does not occur during the ozone season, the deadline for compliance with the requirements of this subchapter becomes the May 1 immediately following the date determined in accordance with subd. 1.

(3) **REPORTING DATA PRIOR TO INITIAL CERTIFICATION.** The owner or operator of an NO_x emissions unit under sub. (2) (b) or (c) shall determine, record and report NO_x emissions, heat input, if required for purposes of compliance, and any other values required to determine NO_x emissions, for example NO_x emission rate and heat input or NO_x concentration and stack flow, using the provisions of 40 CFR 75.70(g), from the date and hour that the unit starts operating until all required certification tests are successfully completed.

(4) **PROHIBITIONS.** (a) No owner or operator of an NO_x emissions unit may use any alternative monitoring system, alternative reference method or any other alternative for the required continuous emission monitoring system without having obtained prior written approval in accordance with s. NR 428.10.

(b) No owner or operator of an NO_x emissions unit may operate the unit so as to emit NO_x without accounting for all NO_x emissions in accordance with the applicable provisions of this subchapter.

(c) No owner or operator of an NO_x emissions unit may disrupt the continuous emission monitoring system, any portion thereof, or any other approved emission monitoring method, and thereby avoid monitoring and recording NO_x emissions, except for periods of recertification or periods when calibration, quality assurance testing or maintenance is performed in accordance with the applicable provisions of this subchapter.

(d) No owner or operator of an NO_x emissions unit may retire or permanently discontinue use of the continuous emission monitoring system.

toring system, any component thereof or any other approved emission monitoring system under this subchapter, except under one of the following circumstances:

1. The unit is within a period during which it is covered by a retired unit exemption under s. NR 409.05 that is in effect.

2. The owner or operator is monitoring emissions from the unit with another certified monitoring system approved, in accordance with the applicable provisions of this subchapter, by the department for use at that unit that provides emission data for the same pollutant or data for the same parameter as the retired or discontinued monitoring system.

History: Cr. Register, January, 2001, No. 541, eff. 2-1-01; CR 08-103: am. (intro.), (1) (a), (b) L., 3., (3) and (4) (c) Register August 2009 No. 644, eff. 9-1-09.

NR 428.08 Specific provisions for monitoring NO_x and heat input for the purpose of calculating NO_x emissions. (1) **UTILITY UNITS.** This subsection applies to NO_x emissions units subject to the requirements of s. NR 428.05 (3) (a).

(a) *Coal-fired units.* The owner or operator of a coal-fired boiler shall do one of the following:

1. Meet the general operating requirements in 40 CFR 75.10 for an NO_x-diluent continuous emission monitoring system, consisting of an NO_x pollutant concentration monitor, an O₂- or CO₂-diluent gas monitor and a data acquisition and handling system, to measure NO_x emission rate, and for a flow monitoring system and an O₂- or CO₂-diluent gas monitor to measure heat input, except as provided in accordance with subpart E of 40 CFR part 75.

2. Meet the general operating requirements in 40 CFR 75.10 for an NO_x concentration monitoring system, consisting of an NO_x pollutant concentration monitor and a data acquisition and handling system, to measure NO_x concentration and for a flow monitoring system. In addition, if heat input is required to be reported under this chapter, the owner or operator also shall meet the general operating requirements for a flow monitoring system and an O₂- or CO₂-diluent gas monitor to measure heat input, or, if applicable, use the procedures in Appendix D to 40 CFR part 75, incorporated by reference in s. NR 484.04 (27). These requirements shall be met, except as provided in subpart E of 40 CFR part 75.

(b) *Moisture correction.* If a correction for the stack gas moisture content is needed to properly calculate the NO_x emission rate in pounds per million Btu, i.e., if the NO_x pollutant concentration monitor measures on a different moisture basis from the diluent monitor, or NO_x mass emissions in tons, i.e., if the NO_x concentration monitoring system or diluent monitor measures on a different moisture basis from the flow rate monitor, the owner or operator of a boiler shall account for the moisture content of the flue gas on a continuous basis in accordance with 40 CFR 75.11(b) except that the term "SO₂" shall be replaced by the term "NO_x".

(c) *Gaseous fuel-fired nonpeaking units or oil-fired nonpeaking units.* The owner or operator of a boiler or combustion turbine that, based on information submitted in the monitoring plan, qualifies as a gaseous fuel-fired or oil-fired unit but not as a peaking unit, as defined in 40 CFR 72.2, shall do one of the following:

1. Meet the requirements of par. (a) and, if applicable, par. (b).

2. Meet the general operating requirements in 40 CFR 75.10 for an NO_x-diluent continuous emission monitoring system, except as provided in accordance with 40 CFR part 75 Subpart E, and use the procedures specified in Appendix D to 40 CFR part 75, incorporated by reference in s. NR 484.04 (27), for determining hourly heat input.

(d) *Gaseous fuel-fired or oil-fired peaking units.* The owner or operator of a boiler or combustion turbine that qualifies as a peaking unit and as either gaseous fuel-fired or oil-fired, as defined in 40 CFR 72.2, based on information submitted in the monitoring plan, shall do one of the following:

1. Meet the requirements of par. (c).

2. Use the procedures in 40 CFR part 75 Appendix D, incorporated by reference in s. NR 484.04 (27), for determining hourly heat input and the procedures specified in 40 CFR part 75 Appendix E, incorporated by reference in s. NR 484.04 (27), for estimating the hourly NO_x emission rate. In addition, if after certification of an excepted monitoring system under 40 CFR part 75 Appendix E, a unit's operations exceed a capacity factor of 20.0% in any calendar year or exceed a capacity factor of 10.0% averaged over 3 years, the owner or operator shall meet the requirements of par. (c) or, if applicable, par. (e), by no later than December 31 of the following calendar year.

(e) *Other units.* The owner or operator of a boiler or combustion turbine that combusts wood, refuse or other materials shall comply with the monitoring provisions specified in par. (a) and, where applicable, par. (b).

(2) **OTHER UNITS.** This subsection applies to NO_x emissions units subject to the requirements of s. NR 428.04 (2) or 428.05 (3) (b) to (e).

(a) *Coal-fired units.* The owner or operator of a coal-fired boiler shall do one of the following:

1. Meet the general operating requirements in 40 CFR 60.13 for an NO_x-diluent continuous emission monitoring system, consisting of an NO_x pollutant concentration monitor, an O₂- or CO₂-diluent gas monitor, and a data acquisition and handling system, to measure NO_x emission rate, and for a flow monitoring system and an O₂- or CO₂-diluent gas monitor to measure heat input, except as provided in accordance with 40 CFR 60.13(i).

2. Meet the general operating requirements in 40 CFR 60.13 for an NO_x concentration monitoring system, consisting of an NO_x pollutant concentration monitor and a data acquisition and handling system, to measure NO_x concentration and for a flow monitoring system. In addition, if heat input is required to be reported under this chapter, the owner or operator also shall meet the general operating requirements for a flow monitoring system and an O₂- or CO₂-diluent gas monitor to measure heat input, or, if applicable, use the procedures in Appendix E to 40 CFR part 75, incorporated by reference in s. NR 484.04 (27). These requirements shall be met, except as provided in 40 CFR 60.13(i).

(b) *Moisture correction.* If a correction for the stack gas moisture content is needed to properly calculate the NO_x emission rate in pounds per million Btu, i.e., if the NO_x pollutant concentration monitor measures on a different moisture basis from the diluent monitor, or NO_x mass emissions in tons, i.e., if the NO_x concentration monitoring system or diluent monitor measures on a different moisture basis from the flow rate monitor, the owner or operator of an NO_x emissions unit subject to the requirements of this subchapter shall account for the moisture content of the flue gas on a continuous basis in accordance with 40 CFR 75.11(b) except that the term "SO₂" shall be replaced by the term "NO_x".

(c) *Gaseous fuel-fired nonpeaking units or oil-fired nonpeaking units.* The owner or operator of a boiler or combustion turbine that, based on information submitted in the monitoring plan, qualifies as a gaseous fuel-fired or oil-fired unit but not as a peaking unit, as defined in 40 CFR 72.2, shall do one of the following:

1. Meet the requirements of par. (a) and, if applicable, par. (b).

2. Meet the general operating requirements in 40 CFR 60.13 for an NO_x-diluent continuous emission monitoring system, except as provided in accordance with 40 CFR 60.13(i), and use the procedures specified in Appendix D to 40 CFR part 75, incorporated by reference in s. NR 484.04 (27), for determining hourly heat input.

(d) *Gaseous fuel-fired or oil-fired peaking units.* The owner or operator of a boiler or combustion turbine that qualifies as a peaking unit and as either gaseous fuel-fired or oil-fired, as defined in 40 CFR 72.2, based on information submitted in the monitoring plan, shall do one of the following:

1. Meet the requirements of par. (c).

2. Use the procedures in 40 CFR part 75 Appendix D, incorporated by reference in s. NR 484.04 (27), for determining hourly heat input and the procedures specified in 40 CFR part 75 Appendix E, incorporated by reference in s. NR 484.04 (27), for estimating hourly NO_x emission rate. In addition, if after certification of an excepted monitoring system under 40 CFR part 75 Appendix E, a unit's operations exceed a capacity factor of 20.0% in any calendar year or exceed a capacity factor of 10.0% averaged over 3 years, the owner or operator shall meet the requirements of par. (c) or, if applicable, par. (e), by no later than December 31 of the following calendar year.

(e) *Other units.* The owner or operator of a boiler or combustion turbine that combusts wood, refuse or other materials shall comply with the monitoring provisions specified in par. (a) and, where applicable, par. (b).

(f) An owner or operator of an emissions unit that installs and operates a continuous NO_x emissions monitoring system according to the requirements of 40 CFR part 75 satisfies requirements of this subsection.

History: Cr. Register, January, 2001, No. 541, eff. 2-1-01; CR 08-103: am. (1) and (2) (title), cr. (2) (f) Register August 2009 No. 644, eff. 9-1-09.

NR 428.09 Quarterly reports. The owner or operator of a unit subject to the NO_x requirements of this subchapter shall submit quarterly reports, as required under this section.

(1) **UNITS SUBJECT TO AN ACID RAIN EMISSION LIMITATION.** If a unit is subject to an acid rain emission limitation or if the owner or operator of the NO_x emissions unit chooses to meet the annual reporting requirements of this subchapter, the owner or operator shall submit a quarterly report for each calendar quarter beginning with the following quarters:

(a) For units commencing operation prior to December 31, 2002, the calendar quarter from April 1, 2003 to June 30, 2003. Data shall be recorded and reported from the first hour on May 1, 2003.

(b) For a unit that commences operation on or after December 31, 2002, the calendar quarter in which the unit commences operation. Data shall be reported from the date and hour corresponding to when the unit commenced operation.

(2) **UNITS NOT SUBJECT TO AN ACID RAIN EMISSION LIMITATION.** If an NO_x emissions unit is not subject to an acid rain emission limitation, the owner or operator of the NO_x emissions source shall comply with either of the following requirements:

(a) Meet all of the requirements of 40 CFR part 75 related to monitoring and reporting NO_x emissions during the entire year and meet the reporting deadlines specified in sub. (1).

(b) Submit a quarterly report for each calendar quarter, beginning with the following quarters:

1. For units commencing operation prior to December 31, 2002, the calendar quarter from April 1, 2003 to June 30, 2003. Data shall be reported from the first hour of April 1, 2003.

2. For units that commence operation on or after December 31, 2002, the calendar quarter in which the unit commences operation. Data shall be reported from the date and hour corresponding to when the unit commenced operation.

(3) **DEADLINES FOR SUBMITTALS.** The owner or operator of an NO_x emissions source shall submit each quarterly report to the department within 30 days following the end of the calendar quarter covered by the report according to the following schedule:

(a) For units subject to an acid rain emissions limitation, quarterly reports shall be submitted within 30 days following the end of the calendar quarter covered by the report and include all of the data and information required in subpart G of 40 CFR part 75.

(b) For units not subject to an acid rain emissions limitation, reports shall be submitted with the compliance reports required under the facility's operation permit.

(4) **COMPLIANCE CERTIFICATION.** The owner or operator of an NO_x emissions source shall submit to the department a com-

pliance certification in support of each quarterly report based on reasonable inquiry of those persons with primary responsibility for ensuring that all of the unit's emissions are correctly and fully monitored. The certification shall state the following:

(a) The monitoring data submitted were recorded in accordance with the applicable requirements of this subchapter, including the quality assurance procedures and specifications.

(b) For a unit with add-on NO_x emission controls and for all hours where data are substituted in accordance with 40 CFR 75.34(a)(1), the add-on emission controls were operating within the range of parameters listed in the monitoring plan and the substitute values do not systematically underestimate NO_x emissions.

(c) For a unit that is reporting on an ozone season basis under this subsection, the NO_x emission rate and NO_x concentration values substituted for missing data under subpart D of 40 CFR part 75 are calculated using only values from an ozone season and do not systematically underestimate NO_x emissions.

History: Cr. Register, January, 2001, No. 541, eff. 2-1-01; CR 08-103: am. (2) (a) Register August 2009 No. 644, eff. 9-1-09.

NR 428.10 Petitions. The owner or operator of an NO_x emissions source may submit a petition to the department requesting approval to apply an alternative to any requirement of this subchapter. Application of an alternative to any requirement of this subchapter is in accordance with this subchapter only to the extent that the petition under this section is approved by the department.

History: Cr. Register, January, 2001, No. 541, eff. 2-1-01.

NR 428.11 Additional requirements to provide heat input data. The owner or operator of a unit that either monitors and reports or elects to monitor and report NO_x mass emissions using an NO_x concentration system and a flow system shall also monitor and report heat input at the unit level.

History: Cr. Register, January, 2001, No. 541, eff. 2-1-01.

NR 428.12 Alternative monitoring, recordkeeping and reporting. (1) **RACT EMISSIONS UNITS.** The owner or operator of an NO_x emissions unit that is also subject to an emission limitation in s. NR 428.22 may satisfy the NO_x emissions monitoring and reporting requirements of this subchapter by meeting the applicable NO_x emissions monitoring requirements in s. NR 428.23 (1) (b) and (2) and the recordkeeping and reporting requirements in s. NR 428.24 (1).

(2) **NON-RACT EMISSIONS UNITS.** The owner or operator of an NO_x emissions unit subject to an emission limitation in s. NR 428.04 (2) or 428.05 (3) may satisfy the NO_x emissions monitoring and reporting requirements of this subchapter by meeting, as applicable by source type, the NO_x emissions monitoring requirements in s. NR 428.23 (1) (b) and (2) and the recordkeeping and reporting requirements in s. NR 428.24 (1).

History: CR 08-103: cr. Register August 2009 No. 644, eff. 9-1-09.

Subchapter IV — NO_x Reasonably Available Control Technology Requirements

NR 428.20 Applicability and purpose. (1) **APPLICABILITY.** The requirements of this subchapter apply to the owner or operator of an NO_x emissions unit which is in a source category identified in s. NR 428.22 and which is located at a facility with combined total maximum theoretical emissions for all NO_x emissions units of 100 tons per year or more of NO_x and which is in the county of Kenosha, Milwaukee, Ozaukee, Racine, Sheboygan, Washington or Waukesha.

(2) **PURPOSE.** The purpose of this subchapter is to establish reasonably available control technology requirements for NO_x emissions units in the ozone nonattainment area consisting of the counties of Kenosha, Milwaukee, Ozaukee, Racine, Sheboygan, Washington and Waukesha to comply with sections 172(c) and 182(f) of the Act (42 USC 7502(c) and 7511a(f)).

History: CR 07-016: cr. Register July 2007 No. 619, eff. 8-1-07; CR 08-103: am. (1) Register August 2009 No. 644, eff. 9-1-09.

NR 428.21 Emissions unit exceptions. The emissions units described in this section are exempt from the emission limitation requirements of s. NR 428.22, but shall comply with applicable record keeping requirements under s. NR 428.24. Once an emissions unit no longer qualifies for an exemption, the owner or operator of the emissions unit shall comply with the requirements of s. NR 428.22 by December 31 of the following calendar year, unless an alternate date is approved in writing by the department and the administrator.

(1) GENERAL EXEMPTIONS. The following emissions units and processes are exempt from the emission limitations in s. NR 428.22:

(a) Any emissions unit operated only to restart electric generation in the event of a complete loss of facility power.

(b) Any emissions unit which is operated no more than 500 hours per year and no more than 200 hours during the ozone season and whose only purpose is to provide electricity to a facility if normal electricity service is interrupted or to replace normal critical operations at a facility.

(c) Any emissions unit whose only function is to pump water in the case of a fire emergency.

(d) Any emissions unit whose utilization is less than 10% of its capacity factor on an annual average basis over a 3-year rolling period and less than 20% of its capacity factor in any year of the 3-year rolling period and which is owned or operated by an electric generation utility or gas transmission utility.

(e) A research or development unit.

(f) An engine testing operation or process line.

(g) Any gaseous fuel fired unit used to control VOC emissions from a commercial or industrial process.

(2) LOW OPERATING UNIT. An emissions unit described in s. NR 428.20 is exempt from the emission limitations of s. NR 428.22 if, during each ozone season, the emissions unit's utilization based on actual measured heat input or output is less than the utilization threshold for the source category according to the following equation:

$$UU_i < (\text{Category capacity}) \times (3,672 \text{ hours} / \text{Ozone Season}) \\ \times \text{Capacity Factor} \quad \text{Equation 1}$$

where:

UU_i is the unit's actual fuel consumption or output in measurement units consistent with the calculated utilization threshold for the source category in s. NR 428.22

Category capacity is the lower value in the range of unit capacity or design output used to describe the unit's source category i in s. NR 428.22

Capacity factor is 0.20 for all source categories in s. NR 428.22

(2m) RECIPROCATING ENGINES. Any reciprocating engine that is certified to meet the applicable federal non-road engine emission standards specified in this subsection is exempt from the emission limitations of s. NR 428.22 (1) (i):

(a) A reciprocating compression ignition engine that is certified as meeting Tier 1 requirements as specified in 40 CFR part 89, if one of the following applies:

1. The engine has a maximum design power output of less than 2,000 horsepower.

2. The engine has a maximum design power output equal to or greater than 2,000 horsepower and has a total utilization during each ozone season of less than 1.5 million horsepower-hours, based on actual measured output.

(b) A reciprocating compression ignition engine that is certified as meeting the Tier 2 standard, as specified in 40 CFR part 89, or a reciprocating compression ignition engine that is certified as meeting the requirements of a more stringent Tier standard, as specified in 40 CFR part 89 or 1039.

(c) A reciprocating spark ignition engine that is certified as meeting the Tier 1 standard or a reciprocating spark ignition engine that is certified as meeting a more stringent Tier standard, as specified in 40 CFR part 1048.

(3) OTHER REGULATED UNIT. An emissions unit which is subject to and meeting an emission limitation in s. NR 428.04 or 428.05 (3) is exempt from the emission limitations in s. NR 428.22, if one of the following applies:

(a) The emissions unit is subject to a federally enforceable condition in an air permit which limits its emissions to no more than 75 tons of NO_x per year.

(b) The emissions unit, because of a physical operating constraint, cannot emit more than 75 tons of NO_x per year.

History: CR 07-016: cr. Register July 2007 No. 619, eff. 8-1-07.

NR 428.22 Emission limitation requirements.

(1) EMISSION LIMITS. Except as provided in sub. (2), on or after May 1, 2009, no person may cause, allow or permit NO_x to be emitted in excess of the following emission limitations on a 30-day rolling average basis:

(a) *Boilers.* 1. For a solid fuel-fired boiler with a maximum heat input capacity equal to or greater than 1,000 mmBtu per hour, one of the following, as applicable:

a. If tangential, wall, cyclone or fluidized bed-fired, 0.10 pound per mmBtu of heat input.

b. If arch-fired, 0.18 pound per mmBtu of heat input.

2. For a solid fuel-fired boiler with a maximum heat input capacity equal to or greater than 500 mmBtu per hour and less than 1,000 mmBtu per hour, one of the following, as applicable:

a. If tangential-fired, 0.15 pound per mmBtu of heat input.

b. If wall-fired with a heat release rate equal to or greater than 17,000 Btu per cubic feet per hour, 0.17 pound per mmBtu of heat input.

c. If wall-fired with a heat release rate less than 17,000 Btu per cubic feet per hour, 0.15 pound per mmBtu of heat input.

d. If cyclone-fired, 0.15 pound per mmBtu of heat input.

e. If arch-fired, 0.18 pound per mmBtu of heat input.

f. If fluidized bed-fired, 0.10 pound per mmBtu of heat input.

3. For a solid fuel-fired boiler with a maximum heat input capacity equal to or greater than 250 mmBtu per hour and less than 500 mmBtu per hour, one of the following, as applicable:

a. If tangential-fired, 0.15 pound per mmBtu of heat input.

b. If wall-fired with a heat release rate equal to or greater than 17,000 Btu per cubic feet per hour, 0.17 pound per mmBtu of heat input.

c. If wall-fired with a heat release rate less than 17,000 Btu per cubic feet per hour, 0.15 pound per mmBtu of heat input.

d. If cyclone-fired, 0.15 pound per mmBtu of heat input.

f. If arch-fired, 0.18 pound per mmBtu of heat input.

g. If fluidized bed-fired, 0.10 pound per mmBtu of heat input.

h. If stoker-fired, 0.20 pound per mmBtu of heat input.

4. For a solid fuel-fired boiler with a maximum heat input capacity equal to or greater than 50 mmBtu per hour and less than 250 mmBtu per hour, one of the following, as applicable:

a. If tangential-fired, 0.15 pound per mmBtu of heat input.

b. If wall-fired with a heat release rate equal to or greater than 17,000 Btu per cubic feet per hour, 0.17 pound per mmBtu of heat input.

c. If wall-fired with a heat release rate less than 17,000 Btu per cubic feet per hour, 0.15 pound per mmBtu of heat input.

d. If cyclone-fired, 0.15 pound per mmBtu of heat input.

e. If fluidized bed-fired, 0.10 pound per mmBtu of heat input.

f. If stoker-fired, 0.25 pound per mmBtu of heat input.

5. For a gaseous fuel-fired boiler with a maximum heat input capacity equal to or greater than 100 mmBtu per hour, 0.08 pound per mmBtu of heat input.

6. For a distillate fuel oil–fired boiler with a maximum heat input capacity equal to or greater than 100 mmBtu per hour, 0.10 pound per mmBtu of heat input.

7. For a residual fuel oil–fired boiler with a maximum heat input capacity equal to or greater than 65 mmBtu per hour, 0.15 pound per mmBtu of heat input.

(b) *Lime kilns.* For a lime kiln with a maximum heat input capacity equal to or greater than 50 mmBtu per hour, one of the following as applicable:

1. For a gaseous fuel–fired unit, 0.10 pound per mmBtu of heat input.

2. For a distillate oil–fired unit, 0.12 pound per mmBtu of heat input.

3. For a residual oil–fired unit, 0.15 pound per mmBtu of heat input.

4. For a coal–fired unit, 0.60 pound per mmBtu of heat input.

5. For a coke–fired unit, 0.70 pound per mmBtu of heat input.

(c) *Reheat, annealing or galvanizing furnaces.* For a reheat, annealing or galvanizing furnace with a maximum heat input capacity equal to or greater than 75 mmBtu per hour, 0.08 pounds per million Btu of heat input.

(d) *Glass furnaces.* 1. For a glass manufacturing furnace with a maximum heat input capacity equal to or greater than 50 mmBtu per hour, 2.0 pounds per ton of produced glass, except as provided in subd. 2.

2. When, on a daily basis, a glass furnace is operated at less than 25% of glass production capacity, the owner or operator shall operate the furnace according to the combustion optimization requirements of s. NR 439.096 and shall meet the monitoring requirements of s. NR 428.05 (2) (e).

(e) *Asphalt plants.* For an asphalt plant with a maximum heat input capacity equal to or greater than 65 mmBtu per hour, one of the following as applicable:

1. For a gaseous fuel–fired unit, 0.15 pound per million Btu of heat input.

2. For a distillate fuel oil–fired unit, 0.20 pound per million Btu of heat input.

3. For a residual fuel oil–fired or waste oil–fired unit, 0.27 pound per million Btu of heat input.

(f) *Process heating.* For a process heater, dryer, oven or other process heating device, one of the following as applicable:

1. For a gaseous fuel–fired unit with a maximum heat input capacity equal to or greater than 100 mmBtu per hour, 0.10 pound per mmBtu of heat input.

2. For a distillate oil–fired unit with a maximum heat input capacity equal to or greater than 100 mmBtu per hour, 0.12 pound per mmBtu of heat input.

3. For a residual oil–fired unit with a maximum heat input capacity equal to or greater than 65 mmBtu per hour, 0.18 pound per mmBtu of heat input.

(g) *Simple cycle combustion turbines.* For a simple cycle combustion turbine, one of the following exhaust outlet concentrations, corrected to 15% O₂ and at ambient temperatures greater than 0°F, as applicable:

1. For a unit with a maximum design power output equal to or greater than 50 megawatts, one of the following, as applicable:

a. If natural gas–fired, 25 parts per million dry volume.

b. If distillate oil fuel–fired, 65 parts per million dry volume.

c. If biologically derived gaseous fuel–fired, 35 parts per million dry volume.

2. For a unit with a maximum design power output equal to or greater than 25 megawatts and less than 50 megawatts, one of the following as applicable:

a. If natural gas–fired, 42 parts per million dry volume.

b. If distillate oil fuel–fired, 96 parts per million dry volume.

c. If biologically derived gaseous fuel–fired, 35 parts per million dry volume.

(h) *Combined cycle combustion turbines.* For a combined cycle combustion turbine, one of the following exhaust outlet concentrations, corrected to 15% O₂ and at ambient temperatures greater than 0°F, as applicable:

1. For a natural gas–fired unit with a maximum design power output equal to or greater than 25 megawatts, 9 parts per million dry volume.

2. For a natural gas–fired unit with a maximum design power output equal to or greater than 10 megawatts and less than 25 megawatts, 42 parts per million dry volume.

3. For a distillate oil fuel–fired unit with a maximum design power output equal to or greater than 10 megawatts, 42 parts per million dry volume.

4. For a biologically derived gaseous fuel–fired unit with a maximum design power output equal to or greater than 10 megawatts, 35 parts per million dry volume.

(i) *Reciprocating engines.* For a reciprocating engine with a maximum design power output equal to or greater than 500 horsepower, one of the following as applicable:

1. For a rich–burn spark ignition unit, 3.0 grams per brake horsepower–hour.

2. For a lean–burn spark ignition unit, 3.0 grams per brake horsepower–hour.

3. For a diesel fuel–fired compression unit, 3.0 grams per brake horsepower–hour.

4. For a dual fuel–fired compression unit, 3.0 grams per brake horsepower–hour.

(2) **ELECTRIC UTILITY BOILER COMPLIANCE SCHEDULE.** The owner or operator of an electric utility boiler shall demonstrate compliance with the following interim NO_x emission limitations, as applicable, on a 30–day rolling average by May 1, 2009 and with the emission limitations in sub. (1) (a) on and after May 1, 2013:

(a) For a solid fuel–fired boiler with a maximum heat input capacity equal to or greater than 1,000 mmBtu per hour, one of the following, as applicable:

1. If tangential, wall, cyclone or fluidized bed–fired, 0.15 pound per mmBtu of heat input.

2. If arch–fired, 0.18 pound per mmBtu of heat input.

(b) For a solid fuel–fired boiler with a maximum heat input capacity equal to or greater than 500 mmBtu per hour and less than 1,000 mmBtu per hour, one of the following, as applicable:

1. If tangential–fired, 0.15 pound per mmBtu of heat input.

2. If wall–fired, 0.20 pound per mmBtu of heat input.

3. If cyclone–fired, 0.20 pound per mmBtu of heat input.

4. If arch–fired, 0.18 pound per mmBtu of heat input.

5. If fluidized bed–fired, 0.15 pound per mmBtu of heat input.

History: CR 07–016: cr. Register July 2007 No. 619, eff. 8–1–07; CR 08–103: renum. (1) (d) to be (1) (d) 1. and am., cr. (1) (d) 2., am. (2) (intro.) Register August 2009 No. 644, eff. 9–1–09.

NR 428.23 Demonstrating compliance with emission limitations. The owner or operator of an emissions unit shall determine the emissions unit's NO_x emissions and shall determine compliance with the emission limitations in s. NR 428.22 according to the applicable methods in this section.

(1) **EMISSIONS MONITORING REQUIREMENTS.** (a) *Installation and operation.* No later than April 1, 2009 or April 1 of the year an emissions unit first becomes subject to an emission limitation in s. NR 428.22, the owner or operator of the emissions unit shall do the following:

1. Submit to the department in writing, a certification of the installation and operation of all monitoring systems or a certification of the completion of initial emission performance tests required under par. (b).

2. Begin and continue to monitor, measure and record all data necessary to determine emissions in the measurement units of the applicable emission limitation according to the methods of this section.

(b) *Monitoring systems and procedures.* 1. 'Part 75 continuous emissions monitoring.' The owner or operator of an electric utility boiler or combustion turbine that is subject to or becomes subject to the requirements of 40 CFR part 75 and 40 CFR part 75, Appendices A to I, incorporated by reference in s. NR 484.04 (27), shall use those monitoring methods and specifications for monitoring NO_x emissions for purposes of this subsection.

2. 'Continuous emissions monitoring.' Except as provided in subd. 1., the owner or operator of an emissions unit subject to an emissions limitation in s. NR 428.22 (1) (a) to (d) shall monitor NO_x emissions for requirements of this subsection according to the following specifications, as applicable:

a. The owner or operator shall install and operate a continuous emissions monitoring system that measures the hourly average NO_x emission rate.

b. The emissions monitoring system shall consist of an NO_x diluent continuous emissions analyzer and, as applicable, an O₂ or CO₂ diluent continuous emissions analyzer to correct all emissions data and heat rate values for the emissions unit to the same moisture and diluent gas basis, as required in subd. 6. b.

c. The owner or operator shall calibrate, maintain and operate the emissions monitoring system according to the requirements of s. NR 439.09 (9), the applicable operating requirements of 40 CFR 60.13, the performance specifications in 40 CFR part 60, Appendix B, incorporated by reference in s. NR 484.04 (21) and the quality assurance procedures of 40 CFR part 60, Appendix F, incorporated by reference in s. NR 484.04 (21m).

d. For an emissions unit subject to an NO_x emission limit on a pound per million Btu basis, the emissions shall be determined using the F-factor method according to methods in Method 19 of 40 CFR part 60, Appendix A, incorporated by reference in s. NR 484.04 (16m).

e. Except for an emissions unit subject to subd. 1. or an emissions unit subject to an emission limitation in s. NR 428.22 (1) (a) 1. to 4., an owner or operator of an emissions unit may measure NO_x emissions for compliance determination purposes using continuous parametric monitoring methods meeting emissions monitoring specifications in 40 CFR part 75, Appendix E, incorporated by reference in s. NR 484.04 (26m) (cm).

3. 'Periodic emissions performance test.' Except as provided in subd. 1., the owner or operator of an emissions unit subject to s. NR 428.22 (1) (e) to (i) shall conduct an initial performance test and a subsequent performance test every 2 years thereafter, according to the following requirements, as applicable, to determine the emissions unit's NO_x emission rate for each fuel fired in the emissions unit. A performance test is not required for a fuel used only for startup or for a fuel constituting less than 1% of the unit's annual fuel consumption.

a. The emissions performance test shall be conducted according to one of the following methods as applicable: Method 7, 7A, 7B, 7C, 7D or 7E in 40 CFR part 60, Appendix A, incorporated by reference in s. NR 484.04 (15m).

b. Except for units specified in subd. 3. c., the initial emissions performance test shall include a determination of the capacity load point of the unit's maximum NO_x emissions rate based on one 30 minute test run at each capacity load point for which the unit is operated, other than for startup and shutdown, in the load ranges of 20 to 30%, 45 to 55%, 70 to 80% and 90 to 100%.

c. The emissions performance tests for emissions units subject to s. NR 428.22 (1) (g) or (h) shall be conducted within 10% of full load operation.

d. The emissions performance test shall determine compliance based on the average of 3 60-minute test runs performed at the capacity load specified in subd. 3. b. or c.

e. An additional performance test shall be conducted according to subd. 3. b. or c. within 90 days of completing an equipment modification or change in fuel which has the potential to increase the NO_x emissions concentration or rate.

4. 'Continuous monitoring for an output based standard.' In addition to applicable monitoring and measuring requirements under subd. 2., the owner or operator of an emissions unit subject to an output emission limitation in s. NR 428.22 (1) (d) shall do the following:

a. Install, maintain and operate monitoring equipment for measuring and recording the output on an hourly basis with plus or minus 5% accuracy, in units consistent with the applicable emission limitation.

b. Calculate on an hourly basis, the output based emission rate as the hourly mass of NO_x emissions determined according to subd. 5. divided by the emissions unit's total output for that hour.

5. 'Continuous monitoring of total heat input and mass emissions.' The owner or operator of an emissions unit required to measure total heat input or mass NO_x emissions for requirements of subd. 4., sub. (2) (c) and s. NR 428.25 (1) (b) or (c) shall perform the applicable measurements according to following:

a. Except as allowed in subd. 5. d., install, calibrate, maintain and operate a volumetric flue gas flow monitoring system meeting specifications in subd. 2. c. The hourly heat input shall be determined using the F-factor and the as fired fuel heat content according to Method 19 of 40 CFR part 60, Appendix A, incorporated by reference in s. NR 484.04 (16m).

b. Unless specified in Method 19 of 40 CFR part 60, Appendix A, incorporated by reference in s. NR 484.04 (16m), the heat content value for each fuel shall be based on a heat content analysis.

c. The mass of NO_x emissions shall be determined on an hourly basis by either multiplying the NO_x concentration by the flue gas flow rate corrected for diluent gas and moisture or, by multiplying the monitored hourly average emission rate in mass per mmBtu by the total heat input as determined under subd. 5. a. or b. The calculations of mass emissions are to be performed according to conversion procedures in 40 CFR part 75, Appendix F, incorporated by reference in s. NR 484.04 (26m) (d).

d. For a liquid or gaseous fuel fired system, the total heat input and mass of NO_x emissions may be determined using a fuel flow monitoring system capable of determining the hourly flow with plus or minus 5% accuracy and using continuous parametric monitoring as specified under subd. 2. e. The total heat input shall be calculated as the total fuel flow multiplied by the fuel heat content.

6. 'General monitoring requirements.' Unless otherwise specified in this subsection, an owner or operator shall meet the following requirements:

a. All certification tests or emissions performance tests shall be performed according to procedures of s. NR 439.07.

b. The determination of emission rates, mass emissions and total heat input shall be calculated and corrected to the same basis for flue gas moisture and diluent gases according to Method 19 of 40 CFR part 60, Appendix A, incorporated by reference in s. NR 484.04 (16m), or 40 CFR part 75, Appendix F, incorporated by reference in s. NR 484.04 (26m) (d).

c. For emissions units with a common flue gas stack system, all sampling locations and apportionment of emissions to an individual emissions unit shall conform to applicable procedures and methods in 40 CFR part 75, Appendix F, incorporated by reference in s. NR 484.04 (26m) (d).

7. 'Malfunction and abatement.' An owner or operator of an emissions unit subject to the malfunction and abatement plan requirement of s. NR 439.11 shall include a malfunction plan for the emissions monitoring system and a monitoring and operating plan for continuing operation of the emissions unit in a manner consistent with meeting all applicable emission limitations during any period when the monitoring system malfunctions or is inoperable other than for scheduled maintenance.

8. 'Alternate emissions monitoring.' An owner or operator of an emissions unit may request and monitor NO_x emissions for compliance determination purposes using an equivalent alternative method to any requirement of this subsection with written approval of the department and the administrator.

9. 'Emissions monitoring preference.' a. The owner or operator of an emissions unit that installs and operates a continuous NO_x emissions monitoring system according to the requirements of 40 CFR part 75 shall satisfy the applicable monitoring requirements of this section.

b. The owner or operator of an emissions unit that installs and operates a continuous NO_x emissions monitoring system according to the requirements of 40 CFR part 60 shall satisfy the applicable monitoring requirements of subd. 3.

(2) **COMPILATION OF EMISSIONS.** An owner or operator shall compile the measured emissions data in measurement units consistent with the units of the applicable emission limitation according to the following applicable calculation and tabulation methods for purposes of demonstrating compliance:

(a) *Continuous emissions monitoring.* When measuring emissions according to requirements in sub. (1) (b) 1. or 2.:

1. The average emission rate shall be the average of the hourly average emissions obtained from the continuous emissions monitoring system for the hours the emissions unit operated during the averaging period. The calculation is as follows:

$$E_A = \left(\frac{1}{n} \right) \sum_{j=1}^n E_{H,j} \quad \text{Equation 2}$$

where:

E_A is the average emission rate for the compliance period in units consistent with units of the applicable emission limit

$E_{H,j}$ is the hourly average emission rate for each hour, j , for which the emissions unit is operating during the compliance period in units consistent with units of the applicable emission limit

n is the total number of hours the emissions unit operated during the compliance period

2. The 30-day rolling period shall consist of the day of monitoring and the previous 29 consecutive calendar days. A new 30-day rolling average emission rate (E_A) shall be calculated and recorded at the end of each day.

(b) *Emissions performance testing.* When measuring emissions according to performance testing requirements of sub. (1) (b) 3., the 30-day rolling average emission rate or concentration shall be the emissions determined in sub. (1) (b) 3. d. for the most recent performance test.

(c) *Multiple fuel-fired emissions units.* When measuring emissions for an emissions unit firing multiple fuels, compliance shall be determined according to one of the following methods:

1. The unit's emissions shall be monitored and compiled according to applicable methods in par. (a) or (b) for each individual fuel and compliance demonstrated with the emission limitation for each fuel.

2. The unit's emissions and a multiple fuel emission limit shall be determined on a total heat input fuel weighted basis according to equation 3. A fuel representing less than 1% of the unit's annual fuel consumption on a heat input basis may be excluded in determining the multiple fuel emission limit.

$$E_{HI\text{Weighted}} = \frac{\sum_{f=1}^n E_f HI_f}{\sum_{f=1}^n HI_f} \quad \text{Equation 3}$$

where:

$E_{HI\text{Weighted}}$ is the heat input weighted multiple fuel emission rate or emission limitation for the compliance period in units consistent with the units of the emission limitation

E_f is the emission rate or emission limit for fuel f during the compliance period in units consistent with the units of the emission limitation

HI_f is the total heat input for fuel f during the compliance period

n is the number of different fuels used during the compliance period

(d) *Total heat input and mass emissions.* When measuring hourly heat input or mass of NO_x emissions according to sub. (1) (b) 5., the totals over a period of time shall be compiled according to the following procedures:

1. The total hourly heat input shall be summed for the hours the emissions unit operated during the applicable period of time according to equation 4.

$$HI_{\text{total}} = \sum_{h=1}^n HI_h \quad \text{Equation 4}$$

where:

HI_{total} is the total heat input by fuel over the period of time

HI_h is the heat input by fuel for hour h

n is the number of hours over which the specific fuel was burned

2. The total hourly mass of NO_x emissions shall be summed for the hours the emissions unit operated during the applicable period of time according to equation 5.

$$NO_x \text{ Mass}_{\text{total}} = \sum_{h=1}^n \text{Mass}_h \quad \text{Equation 5}$$

where:

$NO_x \text{ Mass}_{\text{total}}$ is the total mass of NO_x emissions over the period of time

Mass_h is the mass of NO_x emissions for hour h

n is the number of hours the emissions unit is operating during the specified period of time

History: CR 07-016: cr. Register July 2007 No. 619, eff. 8-1-07; CR 08-103: am. (1) (b) 1., cr. (1) (b) 9. Register August 2009 No. 644, eff. 9-1-09.

NR 428.24 Recordkeeping and reporting. (1) **EMISSION LIMITATIONS.** The owner or operator of an emissions unit subject to an emission limitation in s. NR 428.22 shall meet the recordkeeping and reporting requirements of this subsection.

(a) *Recordkeeping.* In addition to the recordkeeping requirements of ss. NR 439.04 (1) and (2) and 439.05, the owner or operator shall maintain records of all of the following:

1. The applicable emission limit and calculated heat input weighted emission limit for an emissions unit demonstrating compliance for multiple fuels.

2. The 30-day rolling average emission rate on a daily basis determined according to s. NR 428.23.

3. The total monthly heat input for each fuel or the emissions unit output, as applicable, in measurement units consistent with the units of the applicable emission limitation.

4. The emissions unit's annual and ozone season capacity utilization in measurement units consistent with the units of the applicable emission limitation.

5. For the emissions monitoring system required in s. NR 428.23 (1) (b) on an annual and on an ozone season basis, records of performed maintenance, hours of malfunction and necessary repairs, and the percent of hours the monitoring system operated during the emissions unit's operating hours.

(b) *Reporting.* In the reports to the department required under s. NR 428.25 (1), if applicable, or s. NR 439.03 (1) (b), the owner or operator shall submit the following information:

1. A certification of compliance with the applicable emission limitation in s. NR 428.22 or identification of the periods of non-compliance, with a quantification of the excess emission rate and the excess mass emissions.

2. For each calendar month, the highest 30-day rolling average emission rate. The emissions data shall be reported in the measurement units of the applicable emission limitation.

3. The emissions unit's annual and ozone season total operating hours, capacity utilization, and the percent operation of any required continuous emissions or combustion monitoring systems during the hours the emissions unit was operating.

(2) **GENERAL EXEMPTION UNIT.** The owner or operator of an emissions unit claiming exemption under s. NR 428.21 (1), shall record operational parameters necessary to demonstrate the unit's qualification for the exemption status.

(2m) **RECIPROCATING ENGINES.** The owner or operator of an emissions unit claiming exemption under s. NR 428.21 (2m) (a) 2., shall maintain a record of horsepower-hours of operation for each ozone season. Measurement of horsepower-hours may be determined using recorded data which can be directly related to actual horsepower-hours of operation of the engine including actual total operating hours, fuel consumption, or load and duration measurements.

(3) **LOW OPERATING UNIT.** The owner or operator claiming a low operating unit exemption for an emissions unit under s. NR 428.21 (2), shall maintain a record of the unit's applicable fuel heat input or production output, as applicable, the unit's total capacity utilization on an ozone season and on an annual basis for each calendar year and calculations demonstrating the unit's qualification for the exemption.

(4) **OTHER REGULATED UNIT.** The owner or operator claiming a regulated emissions unit exemption for an emissions unit under s. NR 428.21 (3), shall maintain a record of all performance tests, calculations, assumptions and methods used to determine the emissions unit's potential emissions.

History: CR 07-016; cr. Register July 2007 No. 619, eff. 8-1-07; CR 08-103; am. (1) (b) (intro.) Register August 2009 No. 644, eff. 9-1-09.

NR 428.25 Alternative compliance methods and approaches. (1) **EMISSIONS AVERAGING.** The owner or operator of an emissions unit may demonstrate compliance with an NO_x emission limitation in s. NR 428.22 by participating in an emissions rate averaging program according to the general provisions of par. (a) and either the specifications for facility wide averaging in par. (b) or for multi-facility averaging in par. (c).

(a) *General provisions.* 1. 'Participating units.' a. The participation of an emissions unit in an emissions averaging program shall be designated for each calendar year. Individual emissions units may not be withdrawn from an averaging program during a calendar year, unless each emissions unit in the averaging program meets its applicable emission limit in s. NR 428.22.

b. If an emissions unit at a facility participates in an averaging program, all similar units at the facility shall be included in the averaging program unless the unit is complying with an emission limit in s. NR 428.22 or is participating in another emissions averaging program under this subsection. Similar units at a facility are

those which serve a similar process or purpose and which are described by the same general source category under s. NR 428.22 without regard to fuel type or unit size threshold.

c. An emissions unit for which the department has approved an alternative emission limit or compliance schedule under sub. (3) may not participate in an emissions averaging program under this subsection for the purpose of demonstrating compliance with the approved alternative emission limitation or compliance schedule.

2. 'Monitoring requirement.' The owner or operator of an emissions unit participating in an emissions averaging program shall monitor all necessary NO_x emissions, as applicable, according to requirements of s. NR 428.23 (1) (b) 1. or 2. The total heat input and NO_x mass emissions shall be monitored and measured according to s. NR 428.23 (1) (b) 5. and compiled according to s. NR 428.23 (2) (d).

3. 'New units'. An emissions unit which begins operation on or after August 1, 2007 may not participate in an emissions averaging program under this subsection.

4. 'Emission reductions.' For purposes of this subsection, only emission reductions which go beyond all state and federal requirements are considered excess emission reductions.

(b) *Facility averaging.* An owner or operator may average emissions from emissions units at one facility by complying with the following procedures for demonstrating compliance on an annual and on an ozone season basis with an aggregate NO_x emission limit and mass emissions cap:

1. 'Notification.' The owner or operator shall submit to the department a notification of an NO_x emissions averaging program by October 1 of the year prior to the emissions averaging year. The notification shall include the following information:

a. The participating emissions units.

b. The owner or operator of each emissions unit.

c. For a unit subject to s. NR 428.22, the applicable emission limitation.

d. For a participating emissions unit not subject to s. NR 428.22, the average emission rate by fuel type over the unit's normal operating range determined according to methods of s. NR 428.23 (1) (b) 3. The tested average emission rate may be adjusted based on a heat input weighted average of the emissions unit's annual percent operation at different load points in the previous calendar year.

e. For averaging programs effective on or after January 1, 2013, for each emissions unit, the annual and ozone season heat input for 2000 to 2005, and the annual and ozone season average of the 3 years of highest annual heat input for 2000 to 2005.

f. For averaging programs effective on or after January 1, 2013, an annual and ozone season NO_x mass emissions cap in aggregate for the emissions units in the averaging program. The mass emissions caps shall be the summation of the products for each emissions unit of the emission limitation in subd. 1. c. or the average emission rate in subd. 1. d. and the 3-year average annual or ozone season heat input. The mass emission cap shall be calculated as follows:

$$MC = \sum_{i=1}^n \left[\sum_{j=1}^k E_j HI_j \right]_i \quad \text{Equation 6}$$

where:

MC is either the annual mass emissions cap or the ozone season mass emissions cap in tons of NO_x for all units participating in the averaging program

E_j is the applicable emission limitation for fuel j submitted in subd. 1. c. or the average emission rate in subd. 1. d.

HI_j is either the average annual or ozone season heat input for fuel j , submitted in subd. 1. e., for the 3 years of highest heat input from 2000 to 2005

k is the number of fuels fired by a unit either during the year or during the ozone season

n is the number of units participating in the averaging program

2. 'Implementation.' The department shall review the proposed averaging program provided in the notification and unless the department, within 30 days of receiving the proposed averaging program, requests additional information or revisions to the program, the owner or operator shall comply with the submitted emissions averaging program.

3. 'Compliance demonstration.' The owner or operator of emissions units participating in the averaging program shall submit a compliance report containing the following information by March 1 of the calendar year following the averaging program year:

a. The annual and ozone season actual heat input by fuel type for each emissions unit in the averaging program.

b. The annual and ozone season actual NO_x mass emissions for each emissions unit.

c. The annual and ozone season actual average NO_x emission rate for each emissions unit calculated as follows:

$$ER_{avg} = \frac{NO_x \text{ Mass}}{\sum_{j=1}^n HI_j} \quad \text{Equation 7}$$

where:

ER_{avg} is the annual or ozone season average emission rate for each emissions unit

NO_x Mass is the total NO_x mass emissions for the averaging period

HI_j is the heat input for fuel type j for the averaging period

n is the number of fuels fired during the averaging period

d. The annual and ozone season actual NO_x mass emissions and heat input in aggregate for all emissions units.

e. The annual and ozone season actual aggregate NO_x emission rate for all emissions units. This emission rate is the summation of the total mass of NO_x emissions for all emissions units divided by the total heat input for all emissions units and is calculated as follows:

$$ER_{aggr} = \frac{\sum_{u=1}^n NO_x \text{ Mass}_u}{\sum_{u=1}^n HI_u} \quad \text{Equation 8}$$

where:

ER_{aggr} is the emission rate in aggregate for all emissions units on an annual or ozone season basis

$NO_x \text{ Mass}_u$ is the total NO_x mass emissions for emissions unit u , for the averaging period

HI_u is the total heat input for each emissions unit u , for the averaging period

n is the number of emissions units participating in averaging

f. The annual and ozone season aggregate emission limitation for all emissions units. These emission limitations are the summation of the product of each unit's actual heat input and emission limitation by fuel type divided by the summation of the actual heat

input for all emissions units. The aggregate emission limitations shall be calculated as follows:

$$EL_{aggr} = \frac{\sum_{u=1}^n \left(\sum_{f=1}^j HI_f EL_f \right)}{\sum_{u=1}^n HI_u} \quad \text{Equation 9}$$

where:

EL_{aggr} is the aggregate emission limit for all emissions units on an annual or ozone season basis

HI_f is the heat input for fuel f , for unit u

EL_f is the emission limit for fuel f , for unit u

HI_u is the total heat input for emissions unit u , for the averaging period

n is the number of emissions units participating in averaging

j is the number of fuels for unit u

g. Compliance on an annual and ozone season basis is demonstrated if the aggregate emission rate required in subd. 3. e. is less than the aggregate emission limit required in subd. 3. f., and the NO_x mass emissions required in subd. 3. b. is less than the mass emissions cap required in subd. 1. f.

4. 'Heat input conversion.' For an emissions unit subject to emission limitations expressed in units other than heat input, the emission limitation shall be converted to a heat input basis. All required calculations shall be on a common basis with necessary conversions performed according to the methods in 40 CFR part 60, Appendices A and B, incorporated by reference in s. NR 484.04 (13) and (21).

5. 'Mass emissions cap exceedance.' If the total NO_x emissions from the emissions units in the averaging program exceed either the annual or ozone season emissions caps determined in subd. 1. f., the owner or operator shall achieve additional NO_x reductions to compensate for the excess emissions within 3 calendar years after the averaging year with the exceedance.

(c) *Multi-facility average.* An owner or operator may average emissions from emissions units at multiple facilities by complying with the following procedures for demonstrating compliance on an annual and ozone season basis with an aggregate NO_x emission limitation:

1. 'Notification.' The owner or operator shall submit to the department a notification of an NO_x emissions averaging program by October 1 of the year prior to the emissions averaging year. The notification shall include the following information:

a. The participating emissions units.

b. The owner or operator of each emissions unit.

c. The applicable emission limitation in s. NR 428.22 for each emissions unit.

d. The projected heat input, capacity utilization, NO_x emission rate and total NO_x mass emissions for each emissions unit on an annual and ozone season basis.

e. The projected heat input, capacity utilization, NO_x emission rate and total NO_x mass emissions in aggregate for all emissions units participating in the averaging program.

2. 'Implementation.' The department shall review the proposed averaging program provided in the notification and unless the department, within 30 days of receiving the proposed averaging program, requests additional information or revisions to the program, the owner or operator shall comply with the submitted emissions averaging program.

3. 'Public notice.' a. The owner or operator proposing to average emissions units at multiple facilities shall provide public notice 60 days prior to the calendar year of the averaging program

in newspapers of general circulation for the areas of the emissions units.

b. The public notice shall describe the proposed averaging program, the participating emissions units and how to obtain a copy of the averaging program information required in subd. 1.

c. In addition to the information required in subd. 1., the averaging program information provided to the public upon request shall indicate whether any of the emissions units identified in the proposed averaging program participated in prior averaging programs under this subsection and whether that participation resulted in a violation of the emission limits.

4. 'Compliance demonstration.' The owner or operator participating in an averaging program shall submit a compliance report containing the following information by March 1 of the calendar year following the averaging program year:

a. The annual and ozone season actual heat input for each emissions unit.

b. The annual and ozone season actual NO_x mass emissions for each emissions unit.

c. The annual and ozone season actual average NO_x emission rate for each emissions unit calculated using equation 7 in par. (b) 3. c.

d. The annual and ozone season actual NO_x mass emissions and heat input in aggregate for all emissions units.

e. The annual and ozone season aggregate NO_x emission rate for all emissions units calculated using equation 8 in par. (b) 3. e.

f. The annual and ozone season aggregate emission limitation for all emissions units. These emission limitations are the summation of the product of the each unit's actual heat input and emission limitation divided by the summed actual heat input for all emissions units less an averaging program environmental benefit factor. The aggregate emission limitations are calculated as follows:

$$EL_{aggr} = \frac{\sum_{u=1}^n HI_u EL_u}{\sum_{u=1}^n HI_u} \times (1 - EBF) \quad \text{Equation 10}$$

where:

EL_{aggr} is the aggregate emission limit in aggregate for all emissions units on an annual or ozone season basis

HI_u is the heat input for each emissions unit, u, for the specified period of time

EL_u is the emission limit for each emissions unit, u. For emission limitations in units other than heat input, the emission limitations shall be converted to a heat input basis according to par. (b) 4.

EBF is the environmental benefit factor. For averaging programs effective on or after January 1, 2013, the EBF is 10% for the annual emission limit and 10% for the ozone season emission limit. Prior to this date the EBF is 0%.

g. A demonstration of compliance on an annual and ozone season basis consisting of the aggregate emission rates under subd. 4. e. compared to the aggregate emission limitations calculated in subd. 4. f.

(d) *Violations and penalties.* 1. All emissions units participating in an emissions averaging program are considered out of compliance if emissions exceed any of the averaging program emission limitations on either an annual or ozone season basis.

2. Each emissions unit participating in the averaging program shall be considered in violation for each day of non-compliance until corrective action is taken to achieve compliance.

3. Except for those periods of time for which the department grants an electric or steam utility reliability waiver under s. NR

428.26 to the emissions units exceeding the applicable aggregate average emission limitation, the department shall require the owners or operators of the emissions units in the program to achieve reductions equivalent to the amount of the exceedance. The additional emission reductions shall be achieved within the subsequent 3 years on an annual or ozone season basis, consistent with the period of the exceedance.

4. All owners or operators of emissions units considered out of compliance with an averaging program emission limitation are liable for each violation and subject to enforcement and penalty provisions under ss. 285.83 and 285.87, Stats. The owners or operators of the emissions units in the averaging plan shall evaluate the emissions and operating data for any period of non-compliance to determine which units are responsible for the non-compliance event. The information used in this evaluation shall be made available to the department within 30 days of the discovery of a non-compliance event.

5. The parameters required in the notice under par. (c) 1. d. shall constitute annual and ozone season alternative compliance limits for each unit participating in a multi-facility averaging program under par. (c). If compliance is demonstrated under par. (c) 4. g., all emissions units in the averaging program shall be deemed to be in compliance with the alternative compliance limits.

(2) **CAIR EMISSIONS UNITS.** The owner or operator of an emissions unit which is subject to the emission reduction requirements of the clean air interstate rule (CAIR) under 40 CFR part 97 may demonstrate that the NO_x emission reductions achieved by the emissions unit in complying with the CAIR requirements constitute compliance with the NO_x RACT emission limitation requirements of this subchapter.

(3) **ALTERNATIVE RACT REQUIREMENT.** (a) The owner or operator of an emissions unit may request that the department establish an alternative emission limitation or alternative compliance deadline to the requirements in s. NR 428.22 if the owner or operator demonstrates that it is economically or technically infeasible to meet the requirement.

(b) The owner or operator of the emissions unit shall submit the request with the demonstration for an alternative RACT requirement by the following deadlines:

1. By May 1, 2008 for an emissions unit subject to a compliance date of May 1, 2009.

2. By May 1, 2011 for an emissions unit subject to a compliance date of May 1, 2013.

3. By May 1 of the year following the calendar year in which an emissions unit first becomes subject to an emission limitation in s. NR 428.22, if the emissions unit first becomes subject to an emission limitation in s. NR 428.22 after December 31, 2007.

(c) Any request for an alternative RACT requirement made under this subsection shall be subject to the requirements and procedures of s. NR 436.05 and written approval of the administrator.

History: CR 07-016: cr. Register July 2007 No. 619, eff. 8-1-07; CR 08-103: am. (1) (a) 1. a., c., and (3) (b) Register August 2009 No. 644, eff. 9-1-09.

NR 428.26 Utility reliability waiver. The owner or operator of an emissions unit used for purposes of electric or steam utility generation or natural gas utility transmission and subject to an emission limitation in s. NR 428.22 may request that the department grant a waiver from meeting the emission limitation for a specific period of time based on the following criteria and procedures:

(1) The waiver request is due to the utility's need to maintain a supply of electricity, steam, or natural gas to non-interruptible customers.

(2) A waiver request may only be based on an unavoidable or unforeseeable event including:

(a) A major electric supply event affecting the utility.

(b) A major fuel supply disruption affecting the utility.

(c) A disruption in the operation of a generating unit or pollution control equipment.

(3) The owner or operator of a utility shall submit a written request for a waiver that provides information sufficient to demonstrate to the department's satisfaction that granting the waiver is warranted. The request shall include the following:

(a) The duration of the conditions warranting the waiver.

(b) The specific measures taken to mitigate emissions during the duration for which the waiver is requested.

(c) The reasons why the utility was unable to achieve compliance with the emission requirement.

(4) The department may grant a waiver under this section if, in consultation with the public service commission and written approval by the administrator, the department determines that the

owner or operator's failure to meet a requirement under s. NR 428.22 is consistent with criteria of sub. (2).

(5) Within 60 days after the receipt of a complete request, the department shall publish a public notice of the receipt of the waiver request and the department's preliminary determination to approve, partially approve, or deny the request. The department shall provide an opportunity for public comments on the request and the department's preliminary determination. The department shall hold a public hearing on the request if a hearing is requested by a person affected by the waiver request.

(6) Following the public comment period, the department shall notify the applicant in writing of the final determination to approve, conditionally approve or deny the waiver request.

History: CR 07-016: cr. Register July 2007 No. 619, eff. 8-1-07.