

THE HOUSTON/GALVESTON/BRAZORIA AREA

Minor Source Rule

*An Air Quality Rule for
Equipment at Your Business*

■ **Boilers** _____

■ **Process Heaters**

■ **Generators** _____

■ **Stationary Engines**

■ **Turbines**

Some citations contained within this document are scheduled to be recodified in the summer of 2007. This publication may be revised in the future to reflect these recoding changes. The substance of the rule will not change during the recodification process. Only the numbering of some rule citations will change.



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What Can this Guide Do for Me?

This guide summarizes the Texas Commission on Environmental Quality's (TCEQ) air quality rules in Title 30, Texas Administrative Code, Chapter 117, Subchapter D, Division 2, for controlling nitrogen oxide emissions from certain combustion sources in the Houston/Galveston/Brazoria area. These sources are equipment such as boilers, process heaters, generators and stationary engines, and turbines. These rules apply only to businesses that qualify as minor sources. These rules are designed to protect air quality and human health in the Houston/Galveston/Brazoria area.

This guide will lead you through the actions you need to take in order to operate your equipment in accordance with the rules found in 30 Texas Administrative Code (TAC), Chapter 117, Subchapter D, Division 2, §117.471- §117.481 (§=section; §§=sections). **Follow the guide, to determine if and how the rule may apply to your business.**

What If I'm in Violation of TCEQ Rules?

It is always better to report your own violations than to be the subject of a complaint or to have violations discovered by the TCEQ during an inspection. If you find that you are in violation of TCEQ rules, you are encouraged to make good-faith efforts to report problems as soon as you are aware of them and develop a TCEQ-approved plan to correct those problems.

For technical questions and assistance, call the Small Business and Local Government Assistance Section (SBLGA) for free, confidential help at 1-800-447-2827. SBLGA is an independent section of the TCEQ. The Enforcement Division of the TCEQ cannot seek information about your contact with the SBLGA.

KEEP IN MIND THAT THIS GUIDE DOES NOT CONTAIN THE COMPLETE RULES OR ALL THE INFORMATION YOU MAY NEED TO BE IN COMPLIANCE.

See Appendix C for instructions on finding the text of the Chapter 117 rules and other state environmental rules on the Secretary of State's web site. You may keep up to date with efforts to improve air quality in the Houston/Galveston/Brazoria area by signing up for TCEQ's State Implementation Plan (SIP) listserv. To join the listserv, send a blank e-mail with no subject or message to: join-sip@listserv.tceq.state.tx.us. By doing so, you will be notified of stakeholder meetings, public hearings, and comment periods for draft rules and air quality plans.

Glossary of Important Terms

To assist in answering the questions in this document, you should refer to the following definitions. These definitions paraphrase the specific definitions found in the TCEQ rules. Most of these definitions are found in Subchapter A, §117.10. This is how the TCEQ generally defines certain terms used in the rules and used in the questions and instructions below:

Annual Capacity Factor—The total annual fuel consumed by a unit divided by the fuel which could be consumed by the unit if operated at its maximum rated capacity for 8,760 hours per year.

Boiler—Any combustion equipment fired with solid, liquid, and/or gaseous fuel used to produce steam or to heat water. [§117.10(6)]

CEMS—Continuous Emissions Monitoring System

CO—The chemical symbol for carbon monoxide.

Diesel engine—A compression-ignited two- or four-stroke engine in which liquid fuel injected into the combustion chamber ignites when the air charge has been compressed to a temperature sufficiently high for auto-ignition. [§101.1(11)]

ESAD—Emission Specifications for Attainment Demonstration

Heat Input—The chemical heat released due to fuel combustion in a unit, using the higher heating value of the fuel. This does not include the sensible heat of the incoming combustion air. In the case of carbon monoxide (CO) boilers, the heat input includes the enthalpy of all regenerator off-gases and the heat of combustion of the incoming CO and of the auxiliary fuel. The enthalpy change of the fluid catalytic cracking unit regenerator off-gases refers to the total heat content of the gas at the temperature it enters the CO boiler, referring to the heat content at 60 degrees Fahrenheit, as being zero. [§117.10(17)]

Maximum rated capacity—The maximum design heat input, usually expressed in MMBtu/hr. [§117.10(30)]

Nonattainment area—A defined region within the state that is designated by the United States Environmental Protection Agency (EPA) as failing to meet the national ambient air quality standard for a pollutant for which a standard exists [§101.1(71)]. The Houston/Galveston/Brazoria (HGB) ozone nonattainment area consists of Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller counties.

NO_x—The chemical symbol for nitrogen oxides, products of combustion that are air pollutants which contribute to the production of smog.

O₂—The chemical symbol for oxygen.

PEMS—Predictive Emissions Monitoring System

Process heater—Any combustion equipment fired with liquid and/or gaseous fuel used to transfer heat from combustion gases to a process fluid, superheated steam, or water to heat the process fluid or causing a chemical reaction. [§117.10(40)]

Site—The total of all stationary sources located on one or more contiguous or adjacent properties, which are under common control of the same person (or persons under common control). Your business location is frequently the same as your site.

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Source—A point of origin of air contaminants, whether privately or publicly owned or operated. [§101.1(97)]

Stationary gas turbine—Any gas turbine system that is gas and/or liquid fuel fired with or without power augmentation operated at a specific minor or major source for more than 90 days in any 12-month period. The equipment may be attached to a foundation or portable. Two or more gas turbines powering one shaft shall be treated as one unit. [§117.10(45)]

Stationary internal combustion engine—A reciprocating engine that remains or will remain at a single site at a building, structure, facility, or installation for more than 12 consecutive months. This includes any engine that is part of any piece of portable equipment while the equipment is onsite. Portable engines or equipment are designed to be and capable of being carried or moved from one location to another. Indicators of portability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform. If an engine is replaced, the consecutive-12-months period does not start over. The period begins to run from the date the initial engine was put in place. An engine is considered stationary if it is removed, then returned to the same location in an attempt to circumvent the consecutive-12-month period requirement. Non-road engines, as defined in 40 Code of Federal Regulations (CFR) §89.2, are not considered stationary for the purposes of these rules. [§117.10(46)]

| | |
|---|----|
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Eligibility Questions:

To find out if you have equipment that must comply with these NO_x rules, start by answering the questions below.

Question 1

Is your equipment located in any of the counties listed below? *Check all that apply.*

- | | | | |
|-----------------------------------|-------------------------------------|------------------------------------|------------------------------------|
| <input type="checkbox"/> Brazoria | <input type="checkbox"/> Chambers | <input type="checkbox"/> Fort Bend | <input type="checkbox"/> Galveston |
| <input type="checkbox"/> Liberty | <input type="checkbox"/> Montgomery | <input type="checkbox"/> Waller | <input type="checkbox"/> Harris |

YES ---- Go to Question 2.

NO ----- This rule does not apply to you.

Question 2

Do you have any of the following at your site? *Check all that apply.*

- | | | |
|--|---|---|
| <input type="checkbox"/> Boiler | <input type="checkbox"/> Process Heater | <input type="checkbox"/> Stationary, Reciprocating Internal Combustion Engine |
| <input type="checkbox"/> Stationary Gas Turbine (including duct burners) | | |

YES ---- Go to Question 3.

NO ----- This rule does not apply to you.

Question 3

Is your site a Major Source of air contaminants?

YES ---- You are a Major Source. This rule does not apply to you. However, there are other TCEQ air quality requirements that apply to your site. Contact the Air Permit Program at 512-239-1250 for further information.

NO ----- Go to Question 4.

Don't know if you're a Major Source? Complete [Calculating Potential Emissions](#) in Appendix A. If you need further assistance, call the SBLGA hotline at 1-800-447-2827.

Question 4

YOU ARE A MINOR COMBUSTION SOURCE SUBJECT TO THIS COMBUSTION SOURCE RULE

Please answer the following question and follow the directions below:

Are you subject to the TCEQ Mass Emissions Cap and Trade Program (Cap and Trade)?

YES ---- If your equipment **IS** subject to Cap and Trade, check YES on line 13 of the [Equipment Profile Worksheet](#) that follows and then complete the rest of the information in the worksheet.

NO ----- If your equipment is **NOT** subject to Cap and Trade, check NO on line 13 of the [Equipment Profile Worksheet](#) that follows and then complete the rest of the information in the worksheet.

Don't know if you're subject to the TCEQ Mass Emissions Cap and Trade Program? Complete [Calculating Potential Emissions](#) in Appendix A. If you need further assistance, call the SBLGA hotline at 1-800-447-2827.

Now that you have determined that you are subject to this rule you should gather the following items and paperwork before continuing:

- | | |
|---|--|
| <ul style="list-style-type: none">■ Pencil, pad, and calculator■ Annual fuel usage for the entire site (your fuel bills should have this information)■ Equipment owner's manual and manufacturer information■ Initial set-up, testing, and vendor information■ Equipment profile worksheet (see next section for this worksheet)■ Annual maintenance records | <ul style="list-style-type: none">■ Annual testing records■ Monthly logs■ Any records of repairs, calibrations, testing, or other activities |
|---|--|

It is helpful to organize this information by piece of equipment and year. You can use folders or binders to do this.

Equipment Profile Worksheet

Please answer the following questions in order to profile each piece of equipment. Copy the worksheet below and complete it for each piece of equipment on your site. Keep the equipment profile with the other information about each piece of equipment.

As you work through the steps in this guidance document, please fill in your answers in the appropriate box on the worksheet. This will help you determine which standards apply to your equipment.

| | |
|-----------------|--------------|
| Unit ID: | Date: |
|-----------------|--------------|

1. Type of equipment as of December 31, 2000¹ *(check the one that applies)*
 - Boiler/process heater
 - Gas-fired stationary reciprocating internal combustion engine
 - Diesel stationary reciprocating internal combustion engine
 - Dual-fuel stationary reciprocating internal combustion engine
 - Gas turbine (including duct burners)

2. County where equipment is located as of the date this worksheet is initially completed _____

3. Date installed _____

4. Date of initial start of operation² _____

5. Date(s) of any modifications, reconstructions, or relocations³ _____

6. Manufacturer _____

7. Unit classification for this equipment⁴ _____

8. Averaging time applicable to this equipment⁴ _____

9. Permit number for this equipment _____

10. Date of the permit _____

11. Maximum rated capacity of this equipment⁴ _____

12. Emission specification for this equipment²
 - A. NO_x _____
 - B. CO _____
 - C. Ammonia _____

13. Is this equipment subject to the TCEQ Mass Emissions Cap and Trade Program? YES NO

14. Does this equipment have a CEMS or PEMS⁵ for? *(check all that apply)*
 - nitrogen oxides (NO_x) carbon monoxide (CO) ammonia

¹Equipment classification can be changed. Please indicate the classification as it was on or before December 31, 2000.

²Date your facility assumed control of the equipment.

³For any relocation, record the address of each location and the length of time the equipment was at each location.

⁴You will determine this later in this guidance document. At that time, record your answer in this worksheet.

⁵CEMS=Continuous Emissions Monitoring System PEMS=Predictive Emissions Monitoring System

At this point you have:

- Determined if your equipment is subject to the Minor Source Rule.
- Partially completed a profile for each piece of equipment at your business.

Next, you will determine:

Exemptions that apply to your equipment. (Part 1)

Emission specifications for your equipment. (Part 2)

Operating requirements for your equipment. (Part 3)

Monitoring, record-keeping, and reporting requirements for your equipment. (Part 4)

Part 1 | Determine if any exemptions apply to your equipment.

A variety of equipment may be entirely or partially exempt from the Minor Source requirements. To determine if your equipment qualifies for any exemptions, review the appropriate sections indicated in Table 1 below.

Table 1: What part of the rule applies to my equipment?

| Type of Equipment | Review the following |
|---|-----------------------------------|
| Boilers, process heaters | "Is my boiler exempt?" (Table 2) |
| Stationary, reciprocating internal combustion engines (gas, diesel, or dual-fuel engines) | "Is my engine exempt?" (Table 3) |
| Stationary gas turbines including duct burners | "Is my turbine exempt?" (Table 4) |

Is your equipment partially exempt or non-exempt?

Partially Exempt Equipment

If your equipment meets one of the descriptions in Tables 2, 3, or 4 you are "partially exempt" and must comply with only the indicated requirements.

Non-exempt Equipment

If your equipment is not described in Tables 2, 3, or 4, you must comply with ALL requirements of the Minor Source rule.

Table 2: Partial Exemptions for Boilers and Process Heaters*

| Boiler/Process Heater Description (Find your equipment in this column) | Requirements |
|---|---|
| Equipment has a maximum rated capacity of 2.0 MMBtu/hour or less. | Your equipment is exempt from the Chapter 117 minor source requirements discussed in this document. If this is the only equipment you have, you are finished with this guidance document. If not, proceed to determine the requirements for your other equipment. |
| Equipment has a maximum rated capacity greater than 2.0 MMBtu/hour and less than 5.0 MMBtu/hour and meets ALL of the following: <ul style="list-style-type: none"> ■ Is NOT subject to Cap and Trade ■ Is stationary ■ Has an annual heat input less than or equal to 1.8 (10⁹) Btu per calendar year (See Appendix B for help determining Btu per calendar year from monthly gas bills) <p style="text-align: center;">OR</p> Has a maximum rated capacity equal to or greater than 5.0 MMBtu/hour and meets ALL of the following: <ul style="list-style-type: none"> ■ Is NOT subject to Cap and Trade ■ Is stationary ■ Has an annual heat input less than or equal to 9.0 (10⁹) Btu per calendar year (See Appendix B for help determining Btu per calendar year from monthly gas bills) | <ul style="list-style-type: none"> ■ Install & maintain a totalizing fuel flow meter with ± 5% measurement accuracy for fuel usage. (A computer to collect, sum, and store data from continuous fuel flow meters is an acceptable alternative.) ■ Totalizing flow meters installed before 3/31/2005 that do not meet the accuracy requirements must be replaced by 3/31/2007. ■ Alternatives are available (See 30TAC §117.479(a)(2) for information.) ■ Equipment located at independent school district properties may keep specific records instead of having a totalizing fuel flow meter. See Part 4, Step 1, Question 2 for record-keeping requirements. ■ Meet the monitor installation schedule for minor sources. (See 30 TAC §117.534) ■ Maintain written or electronic records of annual fuel usage. Keep records available upon request for five years. |

*See Appendix D for assistance on keeping these records.

Instructions for Table 3:

1. Review engine descriptions in Column 1 to determine if your engine fits one of the descriptions. If so, go to #2. If not, your engine is not exempt, go to Part 2.
2. If your engine is
 - Diesel, Columns 2 – 6 apply to your equipment.
 - Gas Fired, Columns 3 and 6 apply to your equipment.
 - Dual-Fuel, Columns 2, 3, 5, and 6 apply to your equipment.

Table 3: Partial Exemptions for Gas, Diesel or Dual-fuel Engines *

✓ = Required

| Column 1 | Column 2 | Column 3 | Column 4 | Column 5 | Column 6 |
|--|--|--|--|--|--|
| Engine Description (Find Your Equipment in this Column) | Operating, Monitoring, Record-keeping, and Reporting Requirements | | | | |
| | Diesel or dual-fuel engines may not be operated for testing or maintenance between 6:00 am and noon except to : <ul style="list-style-type: none"> ■ Conduct manufacturer recommended testing requiring an 18 hour running time. ■ Verify reliability of emergency equipment following unforeseen repairs (NOT following routine maintenance such as oil changes). ■ Test firewater pumps used for emergency response training during the months of April through October. | All engines must maintain written records of: <ul style="list-style-type: none"> ■ Hours of engine operation per day ■ Purpose of operation | Diesel engines must use an elapsed run time meter to record hours of operation. (Meters installed after October 1, 2001 cannot be re-settable.) | Diesel or dual-fuel engines operated for testing and maintenance must maintain written records of: <ul style="list-style-type: none"> ■ Date(s) of operations ■ Operation start and end times ■ Identification of the engine ■ Monthly total hours of operation for the most recent 12 consecutive months | All engines must maintain written records of: <ul style="list-style-type: none"> ■ Type of emergency ■ Start and end times of operation ■ Dates of emergency |
| | Records must be kept for five years and be available upon request. | | | | |
| The engine has a horsepower rating of < 50 hp. | ✓ | ✓ | ✓ | ✓ | |
| The engine is used in research and testing only . | ✓ | ✓ | ✓ | ✓ | |
| The engine is used for performance verification and testing only . | ✓ | ✓ | ✓ | ✓ | |
| The engine is used solely to power other engines or gas turbines during start-ups. | ✓ | ✓ | ✓ | ✓ | |
| The engine is used during response to any officially declared disaster or state of emergency. | ✓ | ✓ | ✓ | ✓ | ✓ |
| The engine is used exclusively by agricultural operations for growing crops or raising fowl or animals. | ✓ | ✓ | ✓ | ✓ | |
| The engine is operated only in emergency situations AND : <ol style="list-style-type: none"> 1. Testing or maintenance operation is ≤52 hr/yr, based on a rolling 12-month average. 2. Diesel emergency engines placed into service before October 1, 2001, HAVE NOT been modified¹ after October 1, 2001. | ✓ | ✓ | ✓ | ✓ | ✓ |
| DIESEL engine meets ALL of the following conditions: <ol style="list-style-type: none"> 1. Placed into service before October 1, 2001, which: 2. Operates <100 hr/yr (based on a rolling 12-month average) 3. Has not been modified, reconstructed, or relocated¹ on or after October 1, 2001 | ✓ | ✓ | ✓ | ✓ | |
| Diesel engine meets ALL of the following conditions: <ol style="list-style-type: none"> 1. Placed into service on or after October 1, 2001 2. New, modified, reconstructed, or relocated¹ stationary engine 3. Operates <100 hr/yr in non-emergency situations, based on a rolling 12-month average 4. Meets emission standards for non-road engines² in effect at the time of installation, modification, reconstruction, or relocation. | ✓ | ✓ | ✓ | ✓ | |

¹ The terms "modification" and "reconstruction" have the meanings defined in 30 TAC § 116.10 and 40 CFR § 60.15 (December 16, 1975), respectively, and the term "relocated" means to newly install at an account, as defined in 30 TAC § 101.1, a used engine from anywhere outside the account.

² Applicable emission standards listed in 40 CFR §89.112(a), Table 1 (October 23, 1998). (See Appendix C(a) for directions on how to find 40 CFR on the web.)

* See Appendix D for assistance on keeping these records.


Table 4: Partial Exemptions for Gas Turbines (including Duct Burners)

| Turbine Description | Rule Requirements |
|---|--|
| Turbine meets ALL of the following conditions: ■ Rated at less than 1.0 megawatt ■ Initial start of operation date was on or before October 1, 2001. | This turbine is exempt from this rule. Stop Here. |

At this point you have:

- Determined if your equipment is subject to the Minor Source Rule.
- Partially completed a profile for each piece of equipment at your site.
- Determined whether your equipment is partially exempt from the rules.

Next, you will determine:

The emission specifications for your equipment. You will enter some information into the Equipment Profile Worksheet. Look for this symbol . It indicates information that should be recorded on the worksheet. (Part 2)

Operating requirements for your equipment. (Part 3)

Monitoring, record-keeping, and reporting requirements for your equipment. (Part 4)

Part 2 | Determine your emissions specifications.

Step 1. Determine the maximum capacity of your equipment.

Maximum Rated Capacity is the maximum amount of work that your equipment can perform. This value can be found on the faceplate of your equipment or in the owner's manual.

1. Enter the Maximum Rated Capacity of your equipment on 12/31/00 _____
2. Enter the Maximum Rated Capacity after 12/31/00 _____
3. Enter the greater of the numbers in row 1 or row 2 _____
4. If you have a permit that was administratively complete before 1/2/01 and issued on or after 1/2/01:
 - A. Enter the Maximum Rated Capacity from your **permit application** here _____
 - B. Enter the Maximum Rated Capacity from your **permit** here _____
 - C. If the number in row 4B is equal to or greater than the number in row 4A, enter it here. If not, leave this row blank. _____
5. You may choose either the number in row 3 or 4C.
 - ☛ This is your Maximum Rated Capacity. Enter it here and on line 11 of your Equipment Profile Worksheet.
 - ☛ Use this number in the Emission Specification Tables that follow. _____

Step 2. Determine your unit classification. (Example: Boiler, Process Heater, etc.)

What was your unit classified as on 12/31/2000? _____

- ☛ Use the unit classifications in the following Emission Specification Tables 7-11. Enter it on line 7 of your Equipment Profile Worksheet.

Step 3. Determine your applicable averaging time.

Question 1

Are you subject to the TCEQ Mass Emissions Cap and Trade Program? (You should have determined this by completing Calculating Potential Emissions in Appendix A for Question 4 of the Eligibility Questions on page 4 of this guidance.)

- YES** ---- Your averaging time is specified in the TCEQ Cap and Trade rule.
NO ---- Go to Question 2.

Question 2

Does your equipment have a NO_x CEMS or a PEMS?

- YES** ---- Your averaging time is specified in Table 5.
NO ---- Your averaging time is a block one-hour average, in the units of the applicable emission standard.

Table 5: Averaging Time for Units with a NO_x CEMS or PEMS, not subject to the TCEQ Cap & Trade Program

| |
|--|
| Use any of the following Averaging Time Procedures: |
| <ol style="list-style-type: none"> 30-day rolling average period (in units of the applicable standard) Block one-hour averaging period (in units of the applicable standard) Block one-hour averaging period in pounds per hour (boilers and process heaters, pounds per hour = maximum rated capacity X applicable limit of NO_x in lb/MMBtu.) |

Enter the appropriate averaging time on line 8 of the Equipment Profile Worksheet.

Step 4. Review the NO_x Emission Specification Table that applies to your equipment.

Table 6: What emission specification applies to your equipment?

| Type of Equipment | Review the following |
|--|----------------------|
| Boilers, process heaters | Go to Table 7 |
| Gas Turbines including Duct Burners | Go to Table 8 |
| Gas-fired, Reciprocating Internal Combustion Engines | Go to Table 9 |
| Dual-fuel, Reciprocating Internal Combustion Engines | Go to Table 10 |
| Diesel, Reciprocating Internal Combustion Engines | Go to Table 11 |

Table 7: Boilers and Process Heaters

| Type of Unit | Emission Specification |
|--------------|--|
| Gas-fired | 0.036 lb/MMBtu of heat input or 30 ppm by volume at 3% oxygen, dry basis |
| Liquid-fired | 0.072 lb/MMBtu of heat input or 60 ppm by volume at 3% oxygen, dry basis |

Table 8: Gas Turbines including Duct Burners

| Type of Unit | Emission Specification |
|--------------|------------------------|
| All | 0.15 lb/MMBtu |

Table 9: Gas-fired, Reciprocating Internal Combustion Engines

| Type of Unit | Emission Specification |
|-----------------------|---|
| Fired on landfill gas | 0.60 gram per horsepower-hour (g/hp-hr) |
| Other | 0.50 g/hp-hr |

Table 10: Dual-fuel, Reciprocating Internal Combustion Engines

| Type of Unit | Emission Specification |
|--------------|---|
| All | 5.83 gram per horsepower-hour (g/hp-hr) |

Table 11: Diesel, Reciprocating Internal Combustion Engines

Emission Specifications depend on the **combination of horsepower and date installed**, so be sure you have checked both to determine the applicable emission specification.

| Horsepower | Date Installed, Modified, Reconstructed, or Relocated | Emission Specification <i>in grams per horsepower-hour (g/hp-hr)</i> |
|--|---|--|
| Greater than 50 | Before October 1, 2001 AND not modified, reconstructed, or relocated on or after October 1, 2001 | The lower of 11.0 g/hp-hr OR the emission rate established by testing, monitoring, manufacturer's guarantee, or manufacturer's other data |
| Greater than or equal to 50 and less than 100 | On or after October 1, 2001 but before October 1, 2003 | 6.9 g/hp-hr |
| | On or after October 1, 2003 but before October 1, 2007 | 5.0 g/hp-hr |
| | On or after October 1, 2007 | 3.3 g/hp-hr |
| Greater than or equal to 100 and less than 175 | On or after October 1, 2001 but before October 1, 2002 | 6.9 g/hp-hr |
| | On or after October 1, 2002 but before October 1, 2006 | 4.5 g/hp-hr |
| | On or after October 1, 2006 | 2.8 g/hp-hr |
| Greater than or equal to 175 and less than 300 | On or after October 1, 2001 but before October 1, 2002 | 6.9 g/hp-hr |
| | On or after October 1, 2002 but before October 1, 2005 | 4.5 g/hp-hr |
| | On or after October 1, 2005 | 2.8 g/hp-hr |
| Greater than or equal to 300 and less than 600 | On or after October 1, 2001 but before October 1, 2005 | 4.5 g/hp-hr |
| | On or after October 1, 2005 | 2.8 g/hp-hr |
| Greater than or equal to 600 and less than 750 | On or after October 1, 2001 but before October 1, 2005 | 4.5 g/hp-hr |
| | On or after October 1, 2005 | 2.8 g/hp-hr |
| Greater than or equal to 750 | On or after October 1, 2001 but before October 1, 2005 | 6.9 g/hp-hr |
| | On or after October 1, 2005 | 4.5 g/hp-hr |

Step 5. Compare the emission specification from the tables in Step 4 to the specification in any applicable permit.

1. Enter your NO_x emission specification from the tables in Step 4. _____
2. Enter NO_x permit limit from any permit issued before 1/2/01. _____
3. Enter NO_x permit limit from any permit issued on or after 1/2/01 **if** the application for the permit was **administratively complete** before 1/2/01. _____
4. Enter NO_x permit limit from any permit by rule **if construction** under the permit **began before 1/2/01**. _____
5. Enter the lowest of the numbers in rows 1, 2, 3, or 4. _____
 This value is the NO_x limit for your equipment. Enter it on line 12 A of your Equipment Profile Worksheet.

Step 6. If your equipment has an annual capacity factor of 0.0383 or less, see §117.475(c)(6) and §117.475(h) under “Additional Emission Specifications” in Appendix C.

If you make changes after December 31, 2000, to equipment not subject to any of the emission specifications in these rules and the changes increase the equipment’s NO_x emissions, see §117.475(f) under “Additional Emission Specifications” in Appendix C.

Step 7: If your unit is subject to any of the emission specifications in the tables in Step 4, there are additional emission specifications for gases other than NO_x. These standards are described in Table 12.

Enter any CO emission standards on line 12 B of your Equipment Profile Worksheet.
Enter any ammonia emission standards on line 12 C of your Equipment Profile Worksheet.

Table 12: Additional Emission Standards

| Applicable Compound | Equipment | Emission Standard | Averaging Period | |
|----------------------|---|---|---|---------------------------------|
| | | | With CEMS or PEMS for the applicable compound | Without CEMS or PEMS |
| Carbon monoxide (CO) | Boilers, process heaters, gas turbines | 400 ppmv at 3.0% O ₂ (dry basis) | On a rolling 24-hour averaging period | On a one-hour average |
| | Stationary internal combustion engines | 3.0 g/hp-hr | | |
| Ammonia | Boilers and process heaters that inject urea or ammonia into the exhaust stream | 10 ppmv at 3.0% O ₂ (dry basis) | On a rolling 24-hour averaging period | Block one-hour averaging period |
| | Gas Turbines (including duct burners) and gas-fired, lean-burn engines | 10 ppmv at 15.0% O ₂ (dry basis) | | |
| | All other equipment | 10 ppmv at 3.0% O ₂ (dry basis) | | |

NOTE: If your equipment cannot meet the limits for carbon monoxide (CO) or ammonia in Table 12, a different emission specification may be approved by the TCEQ. See 30 TAC §117.481 for the details regarding this approval process.

At this point you have:

- Determined that your equipment is subject to the Minor Source Rule.
- Determined that your equipment is not exempt from the rules.
- Completed a profile for each piece of equipment at your facility.

Next, you will determine:

Operating requirements for your equipment. (Part 3)

Monitoring, record-keeping, and reporting requirements for your equipment. (Part 4)

WARNING: The regulations in [Parts 3 & 4](#) are quite complex. To obtain assistance with these environmental requirements, please contact your local equipment technician, equipment operator, or stack testing specialist.

A stack testing company will be able to perform an emissions test to determine if your equipment:

- Meets the emissions limits; or
- Does not meet the emissions limits.

IMPORTANT: If your equipment **does not** meet the emissions limits, you **must** repair, retrofit, or replace the equipment.

Once your equipment has been repaired, retrofitted, or replaced you must perform another stack test within 180 days of the start date of the equipment in order to determine emission requirements. Send this stack test to the TCEQ Region 12 office.

Part 3 | Determine operating requirements for your equipment.

Review Table 13 below to determine operating requirements in these rules that apply to your equipment. There may be several operating requirements that apply so review every line in the table and check the ones that apply.

Table 13: Equipment Operating Requirements

| Equipment | Operating Requirement |
|---|---|
| Boilers except wood-fired boilers | Must be operated with Oxygen (O ₂), carbon monoxide (CO), or fuel trim. |
| Boiler or process heater with forced flue gas recirculation (FGR) to reduce NO _x emissions | Proportional design rate of FGR must be maintained, consistent with combustion stability, over the operating range. |
| Equipment with post combustion control techniques | Reducing agent injection must limit NO _x concentrations to less than or equal to the NO _x concentrations at maximum rated capacity. |
| Stationary internal combustion engine controlled with nonselective catalytic reduction (NSCR) | Must be equipped with an automatic air-fuel ratio (AFR) controller operating on exhaust O ₂ or CO and meet applicable emission standards. |
| Stationary internal combustion engine monthly run time exceeds 10 hours | <p>Check for proper operation by recording NO_x and CO emissions:</p> <ul style="list-style-type: none"> ■ Quarterly ■ Within 2 weeks of: <ul style="list-style-type: none"> ◆ any engine maintenance which might increase emissions; OR ◆ O₂ sensor replacement; OR ◆ catalyst cleaning or replacement ■ After installing any controls ■ After major repair work ■ Any time you believe emissions may have changed |
| Stationary internal combustion engine monthly run time does not exceed 10 hours | <p>Check for proper operation by recording NO_x and CO emissions:</p> <ul style="list-style-type: none"> ■ Within 2 weeks of: <ul style="list-style-type: none"> ◆ any engine maintenance which might increase emissions; OR ◆ O₂ sensor replacement; OR ◆ catalyst cleaning or replacement ■ After installing any controls ■ After major repair work ■ Any time you believe emissions may have changed |

Part 4

Determine monitoring, testing, record-keeping, and reporting requirements for your equipment.

Step 1. Determine monitoring requirements.

Question 1

Are you subject to the TCEQ Mass Emissions Cap and Trade Program? (You should have determined this by completing Calculating Potential Emissions in Appendix A for Question 4 of the Eligibility Questions on page 3 of this guidance.)

- YES** ---- Review Totalizing Flow Meter and Other Monitors in Table 14.
NO ---- Go to Question 2.

Question 2

Are you an exempt boiler located on independent school district property?

- YES** ---- Review Table 14, Totalizing Flow Meter and Other Monitoring Requirements **OR** Keep written or electronic records of the following:
- annual fuel usage for the equipment
 - total monthly fuel usage for the entire site
 - estimated monthly hours of operation for each unit
 - estimated monthly average operating rate (a percentage of the maximum rated capacity) for each unit
 - estimated monthly fuel usage for each unit

Records must be available upon request for a period of five years. Within 60 days of a records request, submit all methods, engineering calculations, and process information used to estimate hours of operation, operating rates, and fuel usage of each unit. (See Appendix D for guidance on keeping these records.)

- NO** ---- Review Table 14, Totalizing Fuel Flow Meters and Other Monitoring Requirements

Table 14: Totalizing Fuel Flow Meters and Other Monitoring Requirements

| Totalizing Fuel Flow Meters |
|--|
| Totalizing Fuel Flow Meters Must: <ul style="list-style-type: none">■ Be accurate within $\pm 5\%$.■ Collect, sum, and store data from a continuous fuel flow meter. A computer may perform these functions.■ Meet accuracy requirements or be re-certified or replaced by March 31, 2007.■ Be installed according to the schedule in 30 TAC §117.534. NOTE: If your equipment has a pilot, see "Units with Pilots" in Appendix C. |

Table 14: Totalizing Fuel Flow Meters and Other Monitoring Requirements (cont.)

| Alternatives to Totalizing Fuel Flow Meters |
|--|
| <ol style="list-style-type: none"> 1. Equipment operating with a NO_x and diluent CEMS may monitor stack exhaust flow using specifications found in 40 CFR Part 60, Appendix B, Performance Specification 6 or 40 CFR Part 75, Appendix A. 2. Units that vent to a common stack with a NO_x and diluent CEMS may use a single totalizing flow meter. (See 30 TAC §117.479(a)(2)(B) for details.) 3. Diesel engines operating with run time meters may meet the fuel flow monitoring requirements through monthly fuel use records. 4. Units of the same category and subject to Cap and Trade may share a single totalizing fuel flow meter. See 30 TAC §117.479(a)(2)(D) for details. 5. Exempt boilers may share a single totalizing fuel flow meter. (See 30 TAC §117.479(a)(2)(F) for details.) |
| Oxygen (O ₂) Monitors |
| <ul style="list-style-type: none"> ■ If oxygen monitors are installed, they must comply with 30 TAC §117.213(e) regarding location and calibration. ■ Installation must be performed according to the schedule in 30 TAC §117.534. |
| NO _x Monitors |
| <ul style="list-style-type: none"> ■ If a CEMS or PEMS is installed, it must meet the requirements of 30 TAC §117.213(e) or (f). ■ Installation must be performed according to the schedule in 30 TAC §117.534. |

Step 2. Determine testing requirements for your equipment.

Question

Are you subject to the TCEQ Mass Emissions Cap and Trade program?

YES ---- Review Table 15, Testing Requirements and Table 16, Emission Allowances.

NO ----- Review Table 15, Testing Requirements.

Table 15: Testing Requirements

| <ul style="list-style-type: none"> ■ Testing must be performed in accordance with the schedule in 30 TAC §117.534(1). ■ Submit test reports to TCEQ within 60 days of completing the test. ■ Each unit must be tested for NO_x, CO, and O₂ emissions. ■ If urea or ammonia is injected into the exhaust stream for NO_x control, use one of the ammonia monitoring procedures in 30 TAC §117.214(a)(1)(D) to demonstrate compliance with the emission specification in 30 TAC §117.475(i)(2). ■ All testing must be done with the equipment running as close as possible to maximum capacity. ■ Compliance is determined by averaging three, one-hour emission test runs using any one of several different testing methods. Your testing service provider can help you determine which test method is the best choice for you. (See §117.479(e)(3) for a list of the applicable methods.) ■ Test results must be in the units of the appropriate emission limit and averaging period. (If you use a test method from 40 CFR Part 60, Appendix A, the testing report must contain the information specified in 30 TAC §117.211(g).) | |
|---|--|
| Units with CEMS or PEMS | Units without CEMS or PEMS |
| <ul style="list-style-type: none"> ■ CEMS or PEMS must be operational before testing is performed. Verification that CEMS or PEMS is operational must include: <ol style="list-style-type: none"> a. completion of the initial monitor certification; and b. manufacturer's written requirements or recommendations for installation, operation, and calibration. ■ Initial compliance with emission specifications must be demonstrated after monitor certification testing using the NO_x CEMS or PEMS. | <ul style="list-style-type: none"> ■ Retesting is required within 60 days of any modification that could increase the NO_x emissions. ■ Retesting may be done after any modification that could decrease the NO_x emissions. ■ Retesting establishes a new NO_x emission factor. This new factor is used to calculate actual emissions from the date of the retest forward. |

Table 16: Emission Allowances

- NO_x testing and monitoring data and equipment activity data are used to establish the emission factor. The emission factor is used to calculate actual emissions for compliance with the TCEQ Cap and Trade Program.
- If a unit requires retesting, the retesting is used to establish a new NO_x emission factor for calculations under the TCEQ Cap and Trade Program.
- See 30 TAC §117.479(e)(7)(C) and 30 TAC §117.479(f) for details.

Step 3. Determine record-keeping requirements for your equipment.

1. Required equipment records depend upon the following:
 - Type of equipment;
 - Whether or not the equipment is partially exempt from this rule;
 - Whether or not the equipment has a CEMS or a PEMS installed; and
 - Type of fuel.

The specific records for each type of equipment are listed in 30 TAC §117.479(g).
2. The easiest way to insure that you have all the necessary records is to place all records for each piece of equipment in a folder or binder. See Appendix D: Record-keeping Requirements for Minor Sources in the Houston/Galveston/Brazoria Nonattainment Area.
3. Table 17 outlines records you must keep if your equipment is not partially exempt. Record-keeping requirements for partially exempt equipment are outlined in Tables 2, 3, and 4.

Table 17: Record-keeping Requirements for Non-exempt Equipment

✓ = Required

| Required Records | Type of Equipment | | | |
|--|------------------------------|---------------------------|---------|-----------------------------|
| | Units without a CEMS or PEMS | Units with a CEMS or PEMS | Engines | Diesel or dual-fuel engines |
| Annual fuel usage by the unit | ✓ | ✓ | ✓ | ✓ |
| Hourly emissions and fuel usage OR stack exhaust flow for units complying with an emission limit enforced on a block one-hour average | | ✓ | | |
| Daily emissions and fuel usage OR stack exhaust flow for units with an emission limit enforced on a 30-day rolling average in lb/Btu heat input and lbs/day or tons/day | | ✓ | | |
| Maintenance on catalytic converter, air-fuel ratio controller, and other emissions-related control systems including the date and specific maintenance performed | | | ✓ | ✓ |
| Quarterly NO _x and CO measurements (see §117.478(b)(5) for specifics on measuring) | | | ✓ | ✓ |
| NO _x and CO measurements within 2 weeks of <ul style="list-style-type: none"> ■ any engine maintenance that could increase NO_x emissions ■ O₂ sensor replacement ■ catalyst cleaning; or ■ catalyst replacement (see §117.478(b)(5) for specifics on measuring) | | | ✓ | ✓ |
| Results of initial certification testing, evaluations, calibrations, checks, adjustments, and maintenance of CEMS, PEMS, or steam-to-fuel or water-to-fuel ratio monitoring systems | ✓ | ✓ | ✓ | ✓ |
| Results of performance and other testing (see §117.479(e) for testing details) | ✓ | ✓ | ✓ | ✓ |
| Dates of operation | | | | ✓ |
| Start and end times of operation | | | | ✓ |
| Identification of the engine | | | | ✓ |
| Total hours of operation for each month and for the most recent 12 consecutive months | | | | ✓ |

Appendix A | Calculating Potential Emissions

To determine if the Mass Emissions Cap and Trade Program applies to your site or whether you are a Major Source, you must review all the equipment on your site that can emit NO_x. Then use the calculations listed below to estimate your potential emissions. The calculations are **only estimates**, not the final and most accurate determination of your emissions.

Step 1. List each unit at your site that can emit NO_x.

Step 2. Cross any of the following off your list:

Flares

General Engines:

- Engines with a horsepower rating of less than 50 hp.
- Engines used in research and testing only.
- Engines used for performance verification and testing only.
- Engines used solely to power other engines or gas turbines during start-ups.
- Engines used exclusively by agricultural operations for growing crops or raising fowl or animals.

Emergency Engines:

- Engines operated only in emergency situations for which testing or maintenance operation is 52 hours or less per year, based on a rolling 12-month average. (If the engine is diesel it must have been placed into service before October 1, 2001, and must not have been modified after October 1, 2001.)
- Engines used in response to any officially declared disaster or state of emergency.

Diesel Engines:

- Placed into service **before** October 1, 2001 that
 - ◆ Operate less than 100 hours per year (based on a rolling 12-month average); and
 - ◆ Have not been modified, reconstructed, or relocated on or after October 1, 2001.
- Placed into service **after** October 1, 2001 that
 - ◆ Operate less than 100 hours per year in non-emergency situations (based on a rolling 12-month average); and
 - ◆ Meet emission standards for non-road engines in effect at the time of installation, modification, reconstruction, or relocation.

Boilers:

- Maximum rated capacity of 2.0 MMBtu/hour or less.

Step 3. For all units remaining on the list, calculate the Design Capacity Emission Rate using the following formulas:

CALCULATION NOTE:

- Emission factor can be determined by stack testing or vendor's guarantee. The emission factor is the amount of NO_x emitted BEFORE any pollution controls are applied.
- Design capacity is from information supplied by the manufacturer. It may be on the name plate on the equipment.
- The number of operating hours in a year is 8760 (for these calculations).
- The number of pounds in a ton is 2000.
- The number of grams in a ton is 907,184.74.

A. For boilers, heaters, furnaces, duct burners, and turbines

a = Emission factor in lbs of NO_x/MMBtu

b = Design capacity in MMBtu/hr

$$(a \times b) \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}}$$

Example 1: Boiler rated at 20 MMBtu/hr with an emission factor of 0.14 lbs NO_x/MMBtu

a = 0.14 lbs NO_x/MMBtu

b = 20 MMBtu/hr

$$\begin{aligned} & \left(\frac{0.14 \text{ lbs NO}_x}{\text{MMBtu}} \times \frac{20 \text{ MMBtu}}{\text{hr}} \right) \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} \\ &= \left(\frac{2.8 \text{ lbs NO}_x}{\text{hr}} \right) \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} \\ &= \frac{24,528 \text{ lbs NO}_x}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} \\ &= \frac{12.264 \text{ tons NO}_x}{\text{yr}} \end{aligned}$$

B. For oil-fired boilers, heaters, and furnaces

a = Emission factor in lbs of NO_x/Mgal

b = Design capacity in Mgal/hr

$$(a \times b) \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}}$$

Example 2: Boiler rated at 30 Mgal/hr with an emission factor of 0.5 lbs NO_x/Mgal

a = 0.5 lbs NO_x/Mgal

b = 30 Mgal/hr

$$\begin{aligned} & \left(\frac{0.5 \text{ lbs NO}_x}{\text{Mgal}} \times \frac{30 \text{ Mgal}}{\text{hr}} \right) \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} \\ &= \left(\frac{15 \text{ lbs NO}_x}{\text{hr}} \right) \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} \\ &= \frac{131,400 \text{ lbs NO}_x}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} \\ &= \frac{65.7 \text{ tons NO}_x}{\text{yr}} \end{aligned}$$

C. For engines

a = Emission factor in grams of NO_x/horsepower/hour (g/hp-hr)

b = Design capacity in hp

$$(a \times b) \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{907,184.74 \text{ grams}}$$

Example 3: 100 horsepower engine with an emission factor of 6.3 gNO_x/hp-hr

a = 6.3 gNO_x/hp-hr

b = 100 horsepower

$$\begin{aligned} & \left(\frac{6.3 \text{ gNO}_x}{\text{hp} - \text{hr}} \times 100 \text{ hp} \right) \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{907,184.74 \text{ grams}} \\ &= \left(\frac{630 \text{ gNO}_x}{\text{hp} - \text{hr}} \right) \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{907,184.74 \text{ grams}} \\ &= \frac{5,518,800 \text{ gNO}_x}{\text{yr}} \times \frac{\text{ton}}{907,184.74 \text{ grams}} \\ &= \frac{0.6127 \text{ tons NO}_x}{\text{yr}} \end{aligned}$$

Step 4. Add together the amounts from the calculations for each piece of equipment.

Example 1: 12.264 tons NO_x/year

Example 2: 65.7 tons NO_x/year

Example 3: 0.6127 tons NO_x/year

$$\begin{array}{r} \text{Total Tons Per Year for Example Site:} \quad 12.2640 \text{ tons NO}_x \text{ per year} \\ + \quad 65.7000 \text{ tons NO}_x \text{ per year} \\ + \quad 0.6127 \text{ tons NO}_x \text{ per year} \\ \hline = \quad 78.5767 \text{ tons NO}_x \text{ per year} \end{array}$$

Step 5: Is my site subject to the following air quality rules?

TCEQ Mass Emissions Cap and Trade Program

If Total Tons Per Year = 9 tons or more, you may be subject to the TCEQ Cap and Trade Program.

The Cap and Trade determination amount is 10 tons or more. Because this calculation is only an estimate, it is recommended that you contact the program if your total is 9 tons or more. Contact TCEQ Cap and Trade Program at 512-239-1250 to determine if your site must participate in this program.

Major Source Rules

If Total Tons Per Year = 23 tons or more, you may be a major source of air contaminants.

The Major Source determination amount is 25 tons or more. The calculation above is only an estimate; therefore, it is recommended that you contact the Air Permit Program at 512-239-1250 if your total is 23 tons or more to determine if any air authorizations are required.

In general, facilities designated as Major Sources have a State Air Authorization or Title V operating permit administered by the TCEQ. Major Source facilities are stationary and may:

- Have a single source or group of sources within close proximity;
- Be located within a contiguous area;
- Have all sources under common control; **AND**
- Emit or have the potential to emit 25 tons per year of NO_x.

If your site is a Major Source as of December 31, 2000, it will always be a Major Source. If your site was a Minor Source or did not exist on December 31, 2000, but became a Major Source after December 31, 2000, it is a Major Source from that time forward.

Appendix B

Calculating Annual Heat Input in MMBtu

Step 1. Gather your monthly gas bills for January through December.

Step 2. Fill in the following table.

| Month | Gas used per bill | Month | Gas used per bill | Month | Gas used per bill | |
|----------|-------------------|--------|-------------------|-----------|--------------------|--|
| January | | May | | September | | |
| February | | June | | October | | |
| March | | July | | November | | |
| April | | August | | December | | |
| | | | | | Total for the year | |

Step 3. Multiply the total in Step 2 by the appropriate factor.

| Gas unit on bill | Multiplier |
|--------------------------------|------------|
| Cubic feet (scf) | 1 |
| Hundreds of cubic feet (Cscf) | 100 |
| Thousands of cubic feet (Mscf) | 1,000 |
| Millions of cubic feet (MMscf) | 1,000,000 |

If you are not sure which multiplier to use, call your gas company and ask what the unit is on your bill.

Step 4. Multiply the answer to Step 3 by 1,000 to get the number of Btu.

Step 5. Divide the number in Step 4 by 1,000,000 to get the number of MMBtu.

Example: Heat input for a boiler with gas bills measured in hundreds of cubic feet.

Step 1. Gather your gas bills for the entire year.

Step 2. Figure out how much gas the boiler used for the entire year.

| Month | Gas used per bill | Month | Gas used per bill | Month | Gas used per bill | |
|----------|-------------------|--------|-------------------|-----------|--------------------|-------|
| January | 522 | May | 356 | September | 298 | |
| February | 580 | June | 300 | October | 322 | |
| March | 493 | July | 295 | November | 446 | |
| April | 485 | August | 290 | December | 521 | |
| | | | | | Total for the year | 4,908 |

Step 3. The gas bill gives the amount in hundreds of cubic feet so use 100 as the multiplier.

$$4,908 \text{ Cscf} \times 100 = 490,800 \text{ cubic feet}$$

Step 4. Calculate the number of Btu.

$$490,800 \text{ scf} \times 1,000 = 490,800,000 \text{ Btu}$$

Step 5. Convert Btu to MMBtu.

$$490,800,000 \div 1,000,000 = 490.8 \text{ MMBtu} = 0.4908(10^9) \text{ Btu}$$

Appendix C | Rules

(a) How to Locate TCEQ and EPA Rules

This regulatory guidance document explains the Minor Source rule (30 TAC §117.471 - §117.481) of the State of Texas' environmental rules.

To find the text of this rule, follow these steps:

1. Go to <http://www.sos.state.tx.us/tac/>
2. Click the [http://info.sos.state.tx.us/pls/pub/readtac\\$ext.viewtac](http://info.sos.state.tx.us/pls/pub/readtac$ext.viewtac) link at the bottom of the page
3. Click Title 30 Environmental Quality
4. Click Part 1 Texas Commission on Environmental Quality
5. Click Chapter 117 Control of Air Pollution from Nitrogen Compounds
6. Click Subchapter D Small Combustion Sources
7. Click Division 2 Boilers, Process Heaters, and Stationary Engines and Gas Turbines at Minor Sources

You can find the text of other state environmental rules by following steps 1 – 4 and then clicking on the appropriate chapter and subsequent links.

Federal environmental rules from the EPA are in Title 40 of the Code of Federal Regulations. This is commonly referred to as “40 CFR.” 40 CFR can be found at <http://www.access.gpo.gov/cfr/index.html>. There are multiple versions reflecting various amendments over the years. You should check the 2005 version unless a specific year is mentioned in a citation in this document.

(b) Additional Rule Requirements

1. Units with Pilots

Fuel flow to pilots for units with pilot fuel supplied by a separate fuel system or from an unmonitored portion of the same fuel system may be calculated using the manufacturer's design flow rates rather than measured with a fuel flow meter. The calculated pilot fuel flow rate must be added to the monitored fuel flow when fuel flow is totaled. [§117.479(a)]

2. Additional Emission Specifications

These specifications apply only in very unique situations. Please review them to determine if they apply to your site. If you have questions, contact TCEQ's Small Business and Local Government Assistance (SBLGA) hotline at 1-800-447-2827.

a. For equipment changes that cause NO_x emissions in other equipment to increase

§117.475(f) —Changes after December 31, 2000 to a unit subject to an emission specification in subsection (c) of this section (ESAD unit) which result in increased NO_x emissions from a unit not subject to an emission specification in subsection (c) of this section (non-ESAD unit), such as redirecting one or more fuel or waste streams containing chemical-bound nitrogen to an incinerator with a maximum rated capacity of less than 40 MMBtu/hr or a flare, is only allowed if:

1. the increase in NO_x emissions at the non-ESAD unit is determined using a CEMS or PEMS which meets the requirements of §117.479(c) of this title, or through stack testing which meets the requirements of §117.479(e) of this title; and
2. either of the following conditions is met:
 - (A) for sources which are subject to Chapter 101, Subchapter H, Division 3 of this title, a deduction in allowances equal to the increase in NO_x emissions at the non-ESAD unit is made as specified in §101.354 of this title (relating to Allowance Deductions); or
 - (B) for sources which are not subject to Chapter 101, Subchapter H, Division 3 of this title, emission credits equal to the increase in NO_x emissions at the non-ESAD unit are obtained and used in accordance with §117.570 of this title (relating to Use of Emissions Credits for Compliance).

b. For equipment with an annual capacity factor of 0.0383 or less

§117.475(c)(6) —As an alternative to the emission specifications in §117.475(c)(1) - (5) for units with an annual capacity factor of 0.0383 or less, 0.060 lb/MMBtu heat input. For units placed into service on or

before January 1, 1997, the 1997 - 1999 average annual capacity factor shall be used to determine whether the unit is eligible for the emission specification of this paragraph. For units placed into service after January 1, 1997, the annual capacity factor shall be calculated from two consecutive years in the first five years of operation to determine whether the unit is eligible for the emission specification of this paragraph, using the same two consecutive years chosen for the activity level baseline. The five-year period begins at the end of the adjustment period as defined in §101.350 of this title (relating to Definitions).

§117.475 (h) —The availability under subsection (c)(6) of this section of an emission specification for units with an annual capacity factor of 0.0383 or less is based on the unit's status on December 31, 2000. Reduced operation after December 31, 2000 cannot be used to qualify for a more lenient emission specification under subsection (c)(6) of this section than would otherwise apply to the unit.

Appendix D

Record-keeping Requirements for Minor Sources in the Houston/Galveston/Brazoria Nonattainment Area

- This appendix contains a variety of logs that can be used to keep the required records. None of the logs are mandated. You may keep the records in any way that meets the requirements of the rule. The logs in this appendix are suggestions only. The record-keeping requirements differ depending on the type of equipment and whether or not it is exempt from some portion of the rule.
- Because most of the records will apply to a specific piece of equipment, we suggest that a set of file folders or a notebook be maintained for each piece of equipment. Below is an example of an organizational scheme for the data for file folders or for a notebook.
- You may wish to include the name of the equipment and the year on the notebook cover and spine.
- All records must be kept for at least five years and be available for inspection upon request to any representative of the TCEQ, the EPA, or any local air pollution control agency having jurisdiction.

Example Notebook Tabs and File Folders

| <i>Generic Folder Title or Notebook Tab</i> | <i>Example Folder Title or Notebook Tab</i> | <i>Folder Contents or Information Stored Behind the Tab</i> |
|--|---|---|
| [Unit Identification] General Information | Boiler #1: General Info | Manufacturer's Information, Guarantees, Maintenance Contracts, etc. |
| [Unit Identification] Year-Testing, Maintenance, Etc. | Boiler #1: 2006-Testing, Maintenance, etc. | All records of testing, maintenance, repairs, calibrations etc. performed during the specified year |
| [Unit Identification] Year-Operations Logs | Boiler #1: 2006-Operations Logs | All the logs completed in a given year |

Refer to the following table and list of log forms to determine which of the logs is applicable to your specific equipment:

List of Log Forms

1. Emergency Engine Operation
2. Diesel or Dual-fuel Engine Testing and Maintenance Operations
3. Daily Engine Operations
4. Annual Fuel Usage
5. "Exempt" School Boiler Monthly Operations
6. Total Monthly Fuel Usage for Site
7. Engine Emissions
8. Daily Emissions-Non-exempt Equipment with a NO_x CEMS or PEMS-30-day Rolling Average
9. Daily Emissions-Non-exempt Equipment with a NO_x CEMS or PEMS-Block One-hour Average
10. 30-Day Rolling Averages (See page 39 for guidance on calculating a 30-day rolling average)

Table D-1. Record-keeping Logs for Equipment

✓ = Required

| Equipment | Logs | | | | | | | | | | Additional Records | |
|---|------|---|----------|---|---|---|---|----------|----------|----------|--------------------|--|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | |
| Engines | | | | | | | | | | | | |
| Gas or dual-fuel engines operated <u>only</u> in emergency situations. | ✓ | ✓ | | | | | | | | | | |
| Diesel engines meeting ALL of the following conditions: 1. Operated <u>only</u> in emergency situations; 2. Placed into service before October 1, 2001; and 3. Not modified after October 1, 2001. | ✓ | ✓ | | | | | | | | | | |
| Diesel engines meeting ALL of the following conditions: 1. Placed into service before October 1, 2001 2. Operated <100 hr/yr (based on a rolling 12-month average) 3. Not modified, reconstructed, or relocated on or after October 1, 2001 | | ✓ | ✓ (1) | | | | | | | | | |
| Diesel engines meeting ALL of the following conditions: 1. Placed into service on or after October 1, 2001 2. New, modified, reconstructed, or relocated stationary engine 3. Operated <100 hr/yr in non-emergency situations, based on a rolling 12-month average 4. Meets emission standards for non-road engines in effect at the time of installation, modification, reconstruction, or relocation. | | ✓ | ✓ (1) | | | | | | | | | |
| Non-exempt engines with a NO _x CEMS or PEMS | | | ✓ (2) | ✓ | | | ✓ | ✓ (3) | ✓ (3) | ✓ (4) | | <ul style="list-style-type: none"> ■ Catalytic converter, air-fuel ratio controller, or other emissions-related maintenance, including the date and nature of corrective actions taken ■ Results of initial certification testing, evaluations, calibrations, checks, adjustments, and maintenance of CEMS, PEMS, steam-to-fuel, or water-to-fuel ratio monitoring systems ■ Results of performance testing |
| Non-exempt engines without a NO _x CEMS or PEMS | | | ✓ (2) | ✓ | | | ✓ | | | | | <ul style="list-style-type: none"> ■ Catalytic converter, air-fuel ratio controller, or other emissions-related maintenance, including the date and nature of corrective actions taken ■ Results of initial certification testing, evaluations, calibrations, checks, adjustments, and maintenance of CEMS, PEMS, steam-to-fuel, or water-to-fuel ratio monitoring systems ■ Results of performance testing |
| Boilers | | | | | | | | | | | | |
| Exempt boiler located at an independent school district property | | | | ✓ | ✓ | ✓ | | | | | | |
| Exempt boiler with a NO_x CEMS or PEMS NOT located at an independent school district property | | | | ✓ | | | | ✓ (3) | ✓ (3) | ✓ (4) | | <ul style="list-style-type: none"> ■ Results of initial certification testing, evaluations, calibrations, checks, adjustments, and maintenance of CEMS, PEMS, steam-to-fuel, or water-to-fuel ratio monitoring systems ■ Results of performance testing |
| Exempt boiler without a NO_x CEMS or PEMS NOT located at an independent school district property | | | | ✓ | | | | | | | | <ul style="list-style-type: none"> ■ Results of initial certification testing, evaluations, calibrations, checks, adjustments, and maintenance of CEMS, PEMS, steam-to-fuel, or water-to-fuel ratio monitoring systems ■ Results of performance testing |
| Non-exempt boiler with a NO_x CEMS or PEMS | | | | ✓ | | | | ✓ (3) | ✓ (3) | ✓ (4) | | <ul style="list-style-type: none"> ■ Results of initial certification testing, evaluations, calibrations, checks, adjustments, and maintenance of CEMS, PEMS, steam-to-fuel, or water-to-fuel ratio monitoring systems ■ Results of performance testing |
| Non-exempt boiler without a NO_x CEMS or PEMS Turbines | | | | ✓ | | | | | | | | <ul style="list-style-type: none"> ■ Results of initial certification testing, evaluations, calibrations, checks, adjustments, and maintenance of CEMS, PEMS, steam-to-fuel, or water-to-fuel ratio monitoring systems ■ Results of performance testing |
| Turbines | | | | | | | | | | | | |
| Non-exempt turbine with a NO_x CEMS or PEMS | | | | ✓ | | | | ✓ (3) | ✓ (3) | ✓ (4) | | <ul style="list-style-type: none"> ■ Results of initial certification testing, evaluations, calibrations, checks, adjustments, and maintenance of CEMS, PEMS, steam-to-fuel, or water-to-fuel ratio monitoring systems ■ Results of performance testing |
| Non-exempt turbine without a NO_x CEMS or PEMS | | | | ✓ | | | | | | | | <ul style="list-style-type: none"> ■ Results of initial certification testing, evaluations, calibrations, checks, adjustments, and maintenance of CEMS, PEMS, steam-to-fuel, or water-to-fuel ratio monitoring systems ■ Results of performance testing |

(1) Must be recorded with an elapsed run time meter
 (2) Required for diesel or dual-fuel engines only; must be recorded with an elapsed run time meter

(3) Use Log 9 or Logs 8 and 10 depending on the averaging period required
 (4) See Calculating a 30-day Rolling Average p. 39

Emergency Engine Operation

(Log 1)

| | | | |
|-------------------------------|--|-------------------------------|--|
| Date Emergency Started | | Time Emergency Started | |
| Date Emergency Ended | | Time Emergency Ended | |
| Type of Emergency | | | |

Hours Operated During Emergency

| Date | Hours Operated | Operator Initials | Data Entry Source (e.g. monitor) |
|--------------|----------------|-------------------|----------------------------------|
| | | | |
| | | | |
| | | | |
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| | | | |
| Total | | | |

This log must be kept for at least five years from the ending date of the emergency and be available for inspection upon request to any representative of the TCEQ, EPA, or local air pollution control agency having jurisdiction.

Daily Engine Operations

(Log 3)

Engine ID: _____

Month: _____ Year: _____

| Day of the Month | Total Hours of Operation | Operator Initials | Time Entry Made <i>(check a.m. or p.m.)</i> | Entry Data Source <i>(e.g. monitor reading)</i> |
|--------------------|--------------------------|-------------------|---|--|
| 1 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 2 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 3 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 4 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 5 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 6 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 7 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 8 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 9 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 10 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 11 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 12 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 13 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 14 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 15 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 16 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 17 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 18 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 19 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 20 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 21 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 22 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 23 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 24 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 25 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 26 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 27 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 28 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 29 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 30 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| 31 | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| Total Hours | | | | |

This log must be kept for at least five years and be available for inspection upon request to any representative of the TCEQ, EPA, or local air pollution control agency having jurisdiction.

Annual Fuel Usage

(Log 4)

Your monthly fuel bills are a good source of this information.

Equipment ID: _____ Year: _____

| Month | Fuel Used by the Equipment | Operator Initials | Entry Data Source (e.g. fuel bill) |
|--------------|-------------------------------|----------------------|---------------------------------------|
| January | | | |
| February | | | |
| March | | | |
| April | | | |
| May | | | |
| June | | | |
| July | | | |
| August | | | |
| September | | | |
| October | | | |
| November | | | |
| December | | | |
| Total | | | |

This log must be kept for at least five years and be available for inspection upon request to any representative of the TCEQ, EPA, or local air pollution control agency having jurisdiction.

“Exempt” School Boiler Monthly Operations (Log 5)

Boiler ID: _____ Year: _____

| Month | Estimated Hours of Operation | Estimated Fuel Usage | Estimated Average Operating Rate | Estimator Initials |
|---------------|------------------------------|----------------------|----------------------------------|--------------------|
| January | | | | |
| February | | | | |
| March | | | | |
| April | | | | |
| May | | | | |
| June | | | | |
| July | | | | |
| August | | | | |
| September | | | | |
| October | | | | |
| November | | | | |
| December | | | | |
| Totals | | | | |

This log must be kept for at least five years and be available for inspection upon request to any representative of the TCEQ, EPA, or local air pollution control agency having jurisdiction.

Within 60 days of any written request from the TCEQ, you must submit for review and approval all methods, engineering calculations, and process information used to estimate the hours of operation, operating rates, and fuel usage for each unit.

Total Fuel Usage for Site Monthly Log (Log 6)

If your site is an independent school district property and you claim exemptions for boilers under 30 TAC §117.473(b), you must maintain monthly records of the total amount of fuel used at your site. This includes fuel used by your exempt boilers plus fuel used by non-exempt equipment. Your monthly fuel bills are a good source of this information.

Year: _____

| Month | Total Fuel Usage for the Entire Site | Operator Initials | Entry Date | Entry Time <i>(check a.m. or p.m.)</i> | Entry Data Source <i>(e.g. fuel bill)</i> |
|---------------|--------------------------------------|-------------------|------------|---|--|
| January | | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| February | | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| March | | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| April | | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| May | | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| June | | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| July | | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| August | | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| September | | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| October | | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| November | | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| December | | | | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | |
| Totals | | | | | |

This log must be kept for at least five years and be available for inspection upon request to any representative of the TCEQ, EPA, or local air pollution control agency having jurisdiction.

Daily Emissions Log

Non-exempt Equipment with a NO_x CEMS or PEMS

30-day Rolling Average

(Log 8)

Equipment ID: _____ Month: _____

| Day of the Month | Entry Time <i>(check a.m. or p.m.)</i> | NO _x Emissions | | Operator Initials | Entry Data Source <i>(e.g. monitor)</i> |
|------------------|---|---------------------------|-----------------|-------------------|--|
| | | lb/MMBtu | lbs or tons/day | | |
| 1 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 2 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 3 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 4 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 5 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 6 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 7 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 8 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 9 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 10 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 11 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 12 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 13 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 14 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 15 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 16 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 17 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 18 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 19 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 20 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 21 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 22 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 23 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 24 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 25 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 26 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 27 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 28 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 29 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 30 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |
| 31 | <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. | | | | |

This log must be kept for at least five years and be available for inspection upon request to any representative of the TCEQ, EPA, or local air pollution control agency having jurisdiction.

30-day Rolling Average Calculation

(Log 11)

If your emission limit is enforced on a 30-day rolling average, **you must calculate your average every day**, using the emissions for that day plus the previous 29 days.

Equipment ID: _____

Name of person doing calculation: _____

Date calculation is for: _____

| Day | Date | Ib/MMBtu | Ibs/day or tons/day |
|---------------------|------|----------|---------------------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| 17 | | | |
| 18 | | | |
| 19 | | | |
| 20 | | | |
| 21 | | | |
| 22 | | | |
| 23 | | | |
| 24 | | | |
| 25 | | | |
| 26 | | | |
| 27 | | | |
| 28 | | | |
| 29 | | | |
| 30 | | | |
| Totals | | | |
| Averages (Total/30) | | | |

Example: 30-day Rolling Average Calculation

If your emission limit is enforced on a 30-day rolling average, you must calculate your average every day, using the emissions for that day plus the previous 29 days. **You may download an Excel spreadsheet from www.sblga.info to calculate and track your 30-day rolling averages.** Otherwise, use the equations from Appendix A for Calculating Potential Emissions to calculate the emissions for your equipment.

Example: The date is January 15, 2006. The equipment is a boiler rated at 20 MMBtu/hr with an emission factor of 0.14 lbs NO_x/MMBtu. The number of hours the boiler operates each day is variable.

Equipment ID: Boiler #1

Name of person doing calculation: John Doe

Date calculation is for: 1/15/2006

| Day | Date | lb/MMBtu | lbs/day or tons/day |
|---------------------|------------|----------|---------------------|
| 1 | 1/15/2006 | 0.14 | 67.2 lbs/day |
| 2 | 1/14/2006 | 0.14 | 67.2 lbs/day |
| 3 | 1/13/2006 | 0.14 | 36.4 lbs/day |
| 4 | 1/12/2006 | 0.14 | 67.2 lbs/day |
| 5 | 1/11/2006 | 0.14 | 67.2 lbs/day |
| 6 | 1/10/2006 | 0.14 | 67.2 lbs/day |
| 7 | 1/9/2006 | 0.14 | 36.4 lbs/day |
| 8 | 1/8/2006 | 0.14 | 28.0 lbs/day |
| 9 | 1/7/2006 | 0.14 | 67.2 lbs/day |
| 10 | 1/6/2006 | 0.14 | 67.2 lbs/day |
| 11 | 1/5/2006 | 0.14 | 28.0 lbs/day |
| 12 | 1/4/2006 | 0.14 | 67.2 lbs/day |
| 13 | 1/3/2006 | 0.14 | 67.2 lbs/day |
| 14 | 1/2/2006 | 0.14 | 67.2 lbs/day |
| 15 | 1/1/2006 | 0.14 | 28.0 lbs/day |
| 16 | 12/31/2005 | 0.14 | 28.0 lbs/day |
| 17 | 12/30/2005 | 0.14 | 28.0 lbs/day |
| 18 | 12/29/2005 | 0.14 | 28.0 lbs/day |
| 19 | 12/28/2005 | 0.14 | 28.0 lbs/day |
| 20 | 12/27/2005 | 0.14 | 28.0 lbs/day |
| 21 | 12/26/2005 | 0.14 | 36.4 lbs/day |
| 22 | 12/25/2005 | 0.14 | 28.0 lbs/day |
| 23 | 12/24/2005 | 0.14 | 28.0 lbs/day |
| 24 | 12/23/2005 | 0.14 | 36.4 lbs/day |
| 25 | 12/22/2005 | 0.14 | 28.0 lbs/day |
| 26 | 12/21/2005 | 0.14 | 28.0 lbs/day |
| 27 | 12/20/2005 | 0.14 | 36.4 lbs/day |
| 28 | 12/19/2005 | 0.14 | 36.4 lbs/day |
| 29 | 12/18/2005 | 0.14 | 36.4 lbs/day |
| 30 | 12/17/2005 | 0.14 | 36.4 lbs/day |
| Totals | | 4.2 | 1,229.2 |
| Averages (Total/30) | | 0.14 | 43.30667 |

Step 1.
Determine your emissions for January 15, 2006.

Step 2.
Add together your emissions for January 15, 2006 plus the previous 29 days.

Step 3.
Enter the averages in your Log.

Step 4.
Repeat this calculation on January 16, 2006 using the dates from December 18, 2006 to January 16, 2006.



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