

AIR EMISSION PERMIT NO. 05300002- 001

IS ISSUED TO

Hennepin County Public Works/Property Services Division
for
Hennepin County Energy Center
600 10th Avenue South
Minneapolis, Hennepin County, MN 55415

The emission units, control equipment and emission stacks at the stationary source authorized in this permit are as described in the following permit applications:

Application Type	Application Date
Total Facility Operating Permit	September 15, 1995
Major Amendment	April 24, 1996
Minor Amendment	August 1, 1997
Minor Amendment	January 14, 2000
Moderate Amendment	May 10, 2000

This permit authorizes the Permittee to operate the stationary source at the address listed above unless otherwise noted in Table A. The Permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit are as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Permit Type: Federal; Part 70; PSD/NSR

Issue Date: November 13, 2001

Expiration: November 13, 2006

All Title I Conditions do not expire.

Ann Foss, Manager
Majors Air and Construction Section
Majors and Remediation Division

for Karen A. Studders
Commissioner
Minnesota Pollution Control Agency

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NOTICE TO THE PERMITTEE:

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area	(651) 296-6300
Outside Metro Area	1-800-657-3864
TTY	(651) 282-5332

The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

PERMIT SHIELD:

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition.

Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

FACILITY DESCRIPTION:

Hennepin County Energy Center is a fossil-fuel-fired boiler plant that provides steam and chilled water to customers located in the downtown Minneapolis area. The sources discharging to the atmosphere include six boilers, designated as Boilers 1, 2, 3, 4, 5, and 6, and one emergency backup generator.

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/13/01

Facility Name: Hennepin County Energy Center

Permit Number: 05300002 - 001

Table A contains limits and other requirements with which your facility must comply. The limits are located in the first column of the table (What To do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. Appendices included as conditions of your permit are listed in Table A under total facility requirements.

Subject Item: Total Facility

What to do	Why to do it
FACILITY SPECIFIC REQUIREMENTS	hdr
Parameters Used in Modeling: The stack heights, stack diameters, air flow rates, and exhaust gas temperatures used in the modeling performed to demonstrate compliance with ambient air quality standards are listed in Appendix B of this permit. The Permittee must submit to the Agency for approval any revisions of these parameters that are caused by a physical change or change in the method of operation of the facility and must wait for written approval before making such changes. The information submitted must include, at a minimum, the locations, heights and diameters of the stacks, locations and dimensions of nearby buildings, the velocity and temperature of the gases emitted, and the SO ₂ emission rates. The plume dispersion characteristics after the proposed revisions must be equivalent to or better than the dispersion characteristics used in the model submitted in the permit application dated January 14, 2000. The Permittee shall demonstrate this equivalency in the proposal.	Minn. R. 7009.0200 (emissions modeled to demonstrate compliance with 1-hour, 3-hour, 24-hour, and annual SO ₂ ambient standards). This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.
If the information submitted does not demonstrate equivalent or better dispersion characteristics, or if a conclusion cannot readily be made about the dispersion characteristics, the Permittee must remodel.	Minn. R. 7009.0200, requirement continued from above
For changes that do not involve any increase in SO ₂ emission rate or any emissions from a new emission point, or changes that do involve an increase in SO ₂ emission rate or emissions from a new emission point and that require a minor amendment, this proposal must be submitted as soon as practicable, but no less than 60 days before beginning actual construction of the modification, stack, or associated emission unit(s).	
For changes involving increases in emission rates or emissions from a new emission point and that require a permit amendment other than a minor amendment, the proposal and/or required modeling analysis must be submitted with the permit application.	
GENERAL REQUIREMENTS	hdr
Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment. At a minimum, the O & M plan shall identify all air pollution control equipment and shall include a preventative maintenance program for that equipment, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment, and the records kept to demonstrate plan implementation.	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A, B, and/or C.	Minn. R. ch. 7017
Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as specified by Minn. R. 7017.2025 following formal review of a subsequent performance test on the same unit.	Minn. R. 7017.2025
Monitoring Equipment: Install or make needed repairs to monitoring equipment within 60 days of issuance of the permit if monitoring equipment is not installed and operational on the date the permit is issued.	Minn. R. 7007.0800, subp. 4(D)
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).	Minn. R. 7007.0800, subp. 4(D)
Operation of Monitoring Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.	Minn. R. 7007.0800, subp. 4(D)
Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.	Minn. R. 7011.0020

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/13/01

Facility Name: Hennepin County Energy Center

Permit Number: 05300002 - 001

Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.	Minn. R. 7019.1000, subp. 2
Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1
Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7019.1000, subp. 1
Operation Changes: In any shutdown, breakdown, or deviation the Permittee shall immediately take all practical steps to modify operations to reduce the emission of any regulated air pollutant. The Commissioner may require feasible and practical modifications in the operation to reduce emissions of air pollutants. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment shall be permitted to operate.	Minn. R. 7019.1000, subp. 4
Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.	Minn. R. 7011.0150
Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.	Minn. R. 7007.1150 through Minn. R. 7007.1500
Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H).	Minn. R. 7007.1400, subp. 1(H)
Recordkeeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007.1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350 subp. 2), including records of the emissions resulting from those changes.	Minn. R. 7007.0800, subp. 5(B)
Recordkeeping: Retain all records at the stationary source for a period of five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).	Minn. R. 7007.0800, subp. 5(C)
Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7030.0010 - 7030.0080

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/13/01

Facility Name: Hennepin County Energy Center

Permit Number: 05300002 - 001

The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A).	Minn. R. 7007.0800, subp. 9(A)
Emission Inventory Report: due 91 days after end of each calendar year following permit issuance (April 1). To be submitted on a form approved by the Commissioner.	Minn. R. 7019.3000 through Minn. R. 7019.3010
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 through Minn. R. 7002.0095

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/13/01

Facility Name: Hennepin County Energy Center

Permit Number: 05300002 - 001

Subject Item: GP 001 Boilers Subject to Group Synthetic Minor NOX Limit**Associated Items:** EU 001 Boiler 1

EU 004 Boiler 5

EU 005 Boiler 6

EU 008 Boiler 4

What to do	Why to do it
EMISSION LIMITS	hdr
Nitrogen Oxides: less than or equal to 17.8 lbs/hour using 365-day Rolling Average for all 4 boilers combined	Title I Condition: To avoid classification of a previous modification as major under 40 CFR Section 52.21
TESTING REQUIREMENTS	hdr
Performance Test: due before end of each calendar year following Permit Issuance to measure the NOX emission factor in lb/MMBtu heat input for both natural gas and distillate fuel oil at EU001. Time between tests shall not exceed 13 months.	Title I Condition: Testing for emission factors to avoid classification of a previous modification as major under 40 CFR Section 52.21; Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar year following Permit Issuance to measure the NOX emission factor in lb/MMBtu heat input for both natural gas and distillate fuel oil at EU004. Time between tests shall not exceed 13 months.	Title I Condition: Testing for emission factors to avoid classification of a previous modification as major under 40 CFR Section 52.21; Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar year following Permit Issuance to measure the NOX emission factor in lb/MMBtu heat input for both natural gas and distillate fuel oil at EU005. Time between tests shall not exceed 13 months.	Title I Condition: Testing for emission factors to avoid classification of a previous modification as major under 40 CFR Section 52.21; Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar year following Permit Issuance to measure the NOX emission factor in lb/MMBtu heat input for both natural gas and distillate fuel oil at EU008. Time between tests shall not exceed 13 months.	Title I Condition: Testing for emission factors to avoid classification of a previous modification as major under 40 CFR Section 52.21; Minn. R. 7017.2020, subp. 1
Performance Test Notifications and Submittals: Performance Tests are due as outlined in Tables A and B of the permit. See Table B for additional testing requirements. Performance Test Notification (written): due 30 days before each Performance Test Performance Test Plan: due 30 days before each Performance Test Performance Test Pre-test Meeting: due 7 days before each Performance Test Performance Test Report: due 45 days after each Performance Test Performance Test Report - Microfiche Copy: due 105 days after each Performance Test	Minn. R. 7017.2030, subp. 1-4 and Minn. R. 7017.2035, subp. 1-2
RECORDKEEPING REQUIREMENTS	hdr
Recordkeeping: Fuel Usage: Maintain a record of the quantity and type of fuel burned in each boiler listed in GP001, on an hourly basis. (Record should show the type and quantity of fuel burned in each boiler, for any given hour.)	Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping - NOX Emissions Each day, calculate the previous calendar day's (midnight to midnight) average NOX emission rate using the equations in Appendix C, Section 1. Each day, calculate the 365-day rolling average by summing the average NOX emission rates for the previous 365 days and dividing by 365.	Minn. R. 7007.0800, subp. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/13/01

Facility Name: Hennepin County Energy Center

Permit Number: 05300002 - 001

Subject Item: GP 002 Boilers Subject to Identical NSPS Requirements**Associated Items:** EU 001 Boiler 1

EU 008 Boiler 4

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity using 6-minute Average except for one 6-minute period per hour of not more than 27 percent opacity	40 CFR Section 60.43c(s); Minn. R. 7011.0570
Sulfur Content of Fuel: less than or equal to 0.5 percent by weight for fuel oil. The sulfur content is further limited to 0.05 percent by weight through a Title I Condition of GP004.	40 CFR Section 60.42c(d); Minn. R. 7011.0570
Compliance with the fuel oil sulfur content limit may be determined based on a certification from the fuel oil supplier, as described under 40 CFR Section 60.48c(f)(1).	40 CFR Section 60.42c(h); Minn. R. 7011.0570
Quarterly Reports - For each unit (listed in GP002), submit a quarterly report to the Administrator, postmarked by the 30th day following the reporting period. Each report shall contain: - The calendar dates covered in the reporting period; - Records of fuel oil supplier certification including the name of the fuel oil supplier and a statement from the oil supplier that the oil complies with the definition of distillate oil in 40 CFR Section 60.41c; - A certified statement signed by the owner or operator that the records of fuel oil supplier certifications submitted represent all of the fuel oil combusted during the reporting period.	40 CFR Section 60.48c(d), (e), and (f); Minn. R. 7011.0570
Recordkeeping - For each boiler (listed in GP002), maintain records of the amounts of each fuel combusted each day.	40 CFR Section 60.48c(g); Minn. R. 7011.0570

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/13/01

Facility Name: Hennepin County Energy Center

Permit Number: 05300002 - 001

Subject Item: GP 003 Boilers Subject to Identical Minn Standards**Associated Items:** EU 002 Boiler 2

EU 003 Boiler 3

What to do	Why to do it
Sulfur Dioxide: less than or equal to 1.6 lbs/million Btu heat input while burning fuel oil.	Minn. R. 7011.0510, subp. 1
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0510, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/13/01

Facility Name: Hennepin County Energy Center

Permit Number: 05300002 - 001

Subject Item: GP 004 Boilers Subject to Group SO2 Limits

Associated Items: EU 001 Boiler 1
 EU 002 Boiler 2
 EU 003 Boiler 3
 EU 004 Boiler 5
 EU 005 Boiler 6
 EU 008 Boiler 4

What to do	Why to do it
EMISSION LIMITS	hdr
Sulfur Dioxide: less than or equal to 214 lbs/hour using 1-Hour Average , 3-Hour Block Average, and 24-Hour Block Average, for all 6 boilers combined. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020 (emission rate modeled to demonstrate compliance with 1-hour, 3-hour, and 24-hour SO2 ambient standards)
Sulfur Dioxide: less than or equal to 0.47 lbs/million Btu heat input using 1-Hour Average , 3-Hour Block Average, and 24-Hour Block Average, for all 6 boilers combined. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020 (emission rate modeled to demonstrate compliance with 1-hour, 3-hour, and 24-hour SO2 ambient standards)
Sulfur Dioxide: less than or equal to 18.5 lbs/hour using 365-day Rolling Average for all 6 boilers combined. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020 (emissions modeled to demonstrate compliance with annual SO2 ambient standards)
Sulfur Dioxide: less than or equal to 0.041 lbs/million Btu heat input using 365-day Rolling Average , for all 6 boilers combined. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020 (emission rate modeled to demonstrate compliance with annual SO2 ambient standards)
OPERATING REQUIREMENTS	hdr
Fuel Usage: limited to natural gas and distillate oil in EU001, EU004, EU005, and EU008. Limited to natural gas, distillate oil, and residual oil in EU002 and EU003.	Title I Condition: To avoid classification of a previous modification as a major source under 40 CFR Section 52.21
Sulfur Content of Fuel: less than or equal to 0.05 percent by weight for distillate oil	Title I Condition: To avoid classification of a previous modification as a major source under 40 CFR Section 52.21
Sulfur Content of Fuel: less than or equal to 1.5 percent by weight for residual oil	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2
RECORDKEEPING REQUIREMENTS	hdr
Recordkeeping - Fuel Oil Analyses For each shipment of fuel received, the Permittee shall obtain vendor analyses or independent laboratory analyses of the fuel oil. The analyses shall include sulfur content on a percent by weight basis, specific gravity, and heating value.	Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping - Fuel Usage: Maintain a record of the quantity and type of fuel burned in each boiler on an hourly basis. (Record should show the type and quantity of fuel burned in each boiler, for any given hour.)	Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping - Sulfur Content Following each fuel oil delivery, calculate the new total sulfur mass in the tank receiving the oil, using the equations in Appendix C, Section 2.1.	Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping - SO2 Hourly Emissions Once each day, calculate the 24 hourly SO2 emission rates, in pounds per hour and pounds per million Btu heat input, for the previous calendar day (midnight to midnight) using the appropriate equations in Appendix C, Section 2.2.	Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping - SO2 Annual Average Emissions Each day, calculate the average SO2 emission rate for the previous 365-day period by 1. Calculating the average SO2 emission rate for the previous calendar day, and 2. Summing the 365 previous daily SO2 emission rates and dividing by 365, for both the mass emission rate (lb/hr), and the heat-input based rate (lb/MMBtu).	Minn. R. 7007.0800, subp. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/13/01

Facility Name: Hennepin County Energy Center

Permit Number: 05300002 - 001

Subject Item: EU 004 Boiler 5**Associated Items:** GP 001 Boilers Subject to Group Synthetic Minor NOX Limit

GP 004 Boilers Subject to Group SO2 Limits

SV 004 Boiler 5

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input	Minn. R. 7011.0515, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0515, subp. 2
Sulfur Dioxide: less than or equal to 4.46 lbs/hour using 1-Hour Average , 3-Hour Average, 24-Hour Average, and 365-Day Rolling Average. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020 (emission rate modeled to demonstrate compliance with 1-hour, 3-hour, 24-hour, and annual SO2 ambient standards)
Sulfur Dioxide: less than or equal to 0.051 lbs/million Btu heat input using 1-Hour Average , 3-Hour Average, 24-Hour Average, and 365-Day Rolling Average. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020 (emission rate modeled to demonstrate compliance with 1-hour, 3-hour, 24-hour, and annual SO2 ambient standards)
Sulfur Dioxide: less than or equal to 1.6 lbs/million Btu heat input	Minn. R. 7011.0515, subp. 1
OPERATING REQUIREMENTS	hdr
Fuel Usage: limited to natural gas and distillate oil	Title I Condition: To avoid classification of a previous modification as a major source under 40 CFR Section 52.21
Sulfur Content of Fuel: less than or equal to 0.05 percent by weight for distillate oil	Title I Condition: To avoid classification of a previous modification as a major source under 40 CFR Section 52.21
RECORDKEEPING REQUIREMENTS	hdr
Recordkeeping - Fuel Oil Analyses For each shipment of fuel received, the Permittee shall obtain vendor analyses or independent laboratory analyses of the fuel oil. The analyses shall include sulfur content on a percent by weight basis, specific gravity, and heating value.	Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping - Fuel Usage: Maintain a record of the quantity and type of fuel burned in the boiler, on an hourly basis. (Record should show the type and quantity of fuel burned in the boiler for any given hour.)	Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping - Sulfur Content Following each fuel oil delivery, calculate the new total sulfur mass in the tank receiving the oil, using the equations in Appendix C, Section 2.1.	Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping - SO2 Hourly Emissions Once each day, calculate the 24 hourly SO2 emission rates, in pounds per hour and pounds per million Btu heat input, for the previous calendar day (midnight to midnight) using the appropriate equations in Appendix C, Section 2.2.	Minn. R. 7007.0800, subp. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/13/01

Facility Name: Hennepin County Energy Center

Permit Number: 05300002 - 001

Subject Item: EU 005 Boiler 6**Associated Items:** GP 001 Boilers Subject to Group Synthetic Minor NOX Limit

GP 004 Boilers Subject to Group SO2 Limits

SV 005 Boiler 6

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input	Minn. R. 7011.0515, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0515, subp. 2
Sulfur Dioxide: less than or equal to 4.46 lbs/hour using 1-Hour Average , 3-Hour Average, 24-Hour Average, and 365-Day Rolling Average. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020 (emission rate modeled to demonstrate compliance with 1-hour, 3-hour, 24-hour, and annual SO2 ambient standards)
Sulfur Dioxide: less than or equal to 0.051 lbs/million Btu heat input using 1-Hour Average , 3-Hour Average, 24-Hour Average, and 365-Day Rolling Average. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020 (emission rate modeled to demonstrate compliance with 1-hour, 3-hour, 24-hour, and annual SO2 ambient standards)
Sulfur Dioxide: less than or equal to 1.6 lbs/million Btu heat input	Minn. R. 7011.0515, subp. 1
OPERATING REQUIREMENTS	hdr
Fuel Usage: limited to natural gas and distillate oil	Title I Condition: To avoid classification of a previous modification as a major source under 40 CFR Section 52.21
Sulfur Content of Fuel: less than or equal to 0.05 percent by weight for distillate oil	Title I Condition: To avoid classification of a previous modification as a major source under 40 CFR Section 52.21
RECORDKEEPING REQUIREMENTS	hdr
Recordkeeping - Fuel Oil Analyses For each shipment of fuel received, the Permittee shall obtain vendor analyses or independent laboratory analyses of the fuel oil. The analyses shall include sulfur content on a percent by weight basis, specific gravity, and heating value.	Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping - Fuel Usage: Maintain a record of the quantity and type of fuel burned in the boiler, on an hourly basis. (Record should show the type and quantity of fuel burned in the boiler for any given hour.)	Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping - Sulfur Content Following each fuel oil delivery, calculate the new total sulfur mass in the tank receiving the oil, using the equations in Appendix C, Section 2.1.	Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping - SO2 Hourly Emissions Once each day, calculate the 24 hourly SO2 emission rates, in pounds per hour and pounds per million Btu heat input, for the previous calendar day (midnight to midnight) using the appropriate equations in Appendix C, Section 2.2.	Minn. R. 7007.0800, subp. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/13/01

Facility Name: Hennepin County Energy Center

Permit Number: 05300002 - 001

Subject Item: EU 009 Emergency Generator**Associated Items:** SV 006 Emergency Generator

What to do	Why to do it
EMISSION LIMITS	hdr
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input	Minn. R. 7011.2300, subp. 2
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained	Minn. R. 7011.2300, subp. 1
OPERATING CONDITIONS	hdr
Fuel Use: Limited to diesel fuel oil only	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2
Generator shall be operated only as an "emergency generator" which is described in the EPA memo titled "Calculating Potential To Emit (PTE) from Emergency Generators", dated September 6, 1995, as "a generator whose sole function is to provide back-up power when electric power from the local utility is interrupted." The generator shall not be operated as a peak shaving unit.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2
Operating Hours: less than or equal to 500 hours/year (Basis of potential to emit for an emergency generator, as described in the EPA Memo titled 'Calculating Potential To Emit (PTE) for Emergency Generators,' dated September 6, 1995.)	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2
RECORDKEEPING REQUIREMENTS	hdr
Recordkeeping - Hours of operation. The Permittee shall track the total hours that the generator is operated per year. Records may be written in a log, or may be tracked using an hour-meter on the generator.	Minn. R. 7007.0800, subp. 4 and 5

TABLE B: SUBMITTALS

11/13/01

Facility Name: Hennepin County Energy Center
Permit Number: 05300002 - 001

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

Send any application for a permit or permit amendment to:

Permit Technical Advisor
Permit Section
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Also, where required by an applicable rule or permit condition, send to the Permit Technical Advisor notices of:

- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Unless another person is identified in the applicable Table, send all other submittals to:

Supervisor
Compliance Determination Unit
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Mr. George Czerniak
Air and Radiation Branch
EPA Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency
Clean Air Markets Division
1200 Pennsylvania Avenue NW (6204N)
Washington, D.C. 20460

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

11/13/01

Facility Name: Hennepin County Energy Center

Permit Number: 05300002 - 001

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
Request for Information Response	due 1,096 days after Permit Issuance Submit NOX modeling data as specified in MPCA guidance for Modeling Information Requests. This modeling information is for data collection purposes, no modeling analysis is required at this time. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Total Facility

TABLE B: RECURRENT SUBMITTALS

11/13/01

Facility Name: Hennepin County Energy Center

Permit Number: 05300002 - 001

What to send	When to send	Portion of Facility Affected
Semiannual Deviations Report	due 30 days after end of each calendar half-year following Permit Issuance. The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. If no deviations have occurred, the Permittee shall submit the report stating no deviations.	Total Facility
Compliance Certification	due 30 days after end of each calendar year following Permit Issuance (for the previous calendar year). To be submitted on a form approved by the Commissioner, both to the Commissioner, and to the U.S. EPA regional office in Chicago. This report covers all deviations experienced during the calendar year.	Total Facility

APPENDIX B**Facility Name:** Hennepin County Energy Center**Permit Number:** 05300002-001

The following stack parameters were used in the model included in the permit application dated January 14, 2000. Revision of any of these parameters must result in plume dispersion characteristics equivalent to or better than the plume dispersion characteristics modeled and summarized in the January 14, 2000, model. Revision of any of these parameters may require a permit amendment.

Table B.1 – Modeled Parameters – 1-hr, 3-hr, & 24-hr averages

SV ID No.	Modeled Height (feet)	Modeled Diameter (feet)	Modeled Temperature (°F)	Modeled Air Flow (acfm)	Modeled SO₂ (lb/hr)
001	150.0	5.512	450	111552	205
004	70.67	3.675	450	35217	4.46*
005	70.67	3.675	450	35217	4.46*
001, 004, & 005 combined	Na				214*

* Permit limit

Table B.2 – Modeled Parameters – Annual averages

SV ID No.	Modeled Height (feet)	Modeled Diameter (feet)	Modeled Temperature (°F)	Scenario 1		Scenario 2	
				Modeled Air Flow (acfm)	Modeled SO₂ (lb/hr)	Modeled Air Flow (acfm)	Modeled SO₂ (lb/hr)
001	150.0	5.512	450	2500	9.58	6400	18.5
004	70.67	3.675	450	35217	4.46*	0	0
005	70.67	3.675	450	35217	4.46*	0	0
001, 004, & 005 combined	Na						18.5*

* Permit limit

APPENDIX C

Facility Name: Hennepin County Energy Center
Permit Number: 05300002-001

Calculation Methods

Section 1 Calculation of NO_x emissions for GP001

Calculate the daily average NO_x emission rates using the following equations:

$$M = N_{NG1} + N_{NG4} + N_{NG5} + N_{NG8} + N_{FO1} + N_{FO4} + N_{FO5} + N_{FO8}$$

$$N_{NGX} = (Q_{NGX} \times E_{NGX}) \div H_{NGX}$$

$$N_{FOX} = (Q_{FOX} \times E_{FOX}) \div H_{FOX}$$

Where:

M = the average mass emission rate (lb NO_x/hour) for the calendar day

N_{NGX} = the average emission rate from burning natural gas in EU001, EU004, EU005, or EU008 (lb NO_x/hour) for the calendar day

N_{FOX} = the average emission rate from burning fuel oil in EU001, EU004, EU005, or EU008 (lb NO_x/hour) for the calendar day

Q_{NGX} = the total heat input from burning natural gas in EU001, EU004, EU005, or EU008 (MMBtu)

Q_{FOX} = the total heat input from burning fuel oil in EU001, EU004, EU005, or EU008 (MMBtu)

E_{NGX} = the emission factor for burning natural gas in EU001, EU004, EU005 or EU008, as measured during the most recent stack test (lb NO_x/MMBtu heat input)

E_{FOX} = the emission factor for burning fuel oil in EU001, EU004, EU005, or EU008, as measured during the most recent stack test (lb NO_x/MMBtu heat input)

H_{NGX} = the total hours during which natural gas was burned in EU001, EU004, EU005, or EU008 during the calendar day (hours)

H_{FOX} = the total hours during which distillate oil was burned in EU001, EU004, EU005, or EU008 during the calendar day (hours)

Section 2 Calculation of SO₂ emissions for GP004, EU004, and EU005

2.1 Determination of Sulfur Content of Fuel

The sulfur content of the fuel as burned (the fuel in tank is likely a mixture of fuels from 2 or more shipments) is to be calculated following each fuel oil shipment receipt:

$$S = m_{s\text{-}new} \div V_{total}$$

$$m_{s\text{-}new} = m_{s\text{-}old} + [(S_{rec} \div 100) \times sg \times 8.32 \times V_{rec}]$$

where:

S = the average sulfur content of the fuel oil as burned (lb/gallon)

$m_{s\text{-new}}$ = the new mass of sulfur in the tank (after shipment receipt) (pounds)

V_{total} = the volume of fuel oil in the tank (after shipment receipt) (gallons)

$m_{s\text{-old}}$ = the previous mass of sulfur in the tank (prior to shipment receipt) (pounds)

S_{rec} = the weight percent of sulfur in the shipment of oil received (%)

sg = the specific gravity of the oil in the shipment received (dimensionless)

V_{rec} = the volume of oil received (gallons)

2.2 Calculation of Hourly SO₂ Emission Rates

$$M_{\text{M-GP004}} = 2.0 \times [(Q_1 \times S_1) + (Q_2 \times S_2) + (Q_3 \times S_3) + (Q_4 \times S_4) + (Q_5 \times S_5) + (Q_8 \times S_8)]$$

$$M_{\text{B-GP004}} = M_{\text{M-GP004}} \div [\text{BTU}_1 + \text{BTU}_2 + \text{BTU}_3 + \text{BTU}_4 + \text{BTU}_5 + \text{BTU}_8]$$

$$M_{\text{M-EU004}} = 2.0 \times Q_4 \times S_4$$

$$M_{\text{B-EU004}} = M_{\text{M-EU004}} \div \text{BTU}_4$$

$$M_{\text{M-EU005}} = 2.0 \times Q_5 \times S_5$$

$$M_{\text{B-EU005}} = M_{\text{M-EU005}} \div \text{BTU}_5$$

Where:

$M_{\text{M-GP004}}$, $M_{\text{M-EU004}}$, $M_{\text{M-EU005}}$ = the mass-based emission rate from GP004, EU004, and EU005, respectively (lb SO₂/hour)

$M_{\text{B-GP004}}$, $M_{\text{B-EU004}}$, $M_{\text{B-EU005}}$ = the BTU- based emission rate for GP004, EU004, and EU005, respectively (lb SO₂/MMBtu heat input)

Q_1 , Q_2 , Q_3 , Q_4 , Q_5 , Q_8 = the quantity of each type of fuel oil combusted during the hour in EU001, EU002, EU003, EU004, EU005, and EU008, respectively (gallons/hour)

S_1 , S_2 , S_3 , S_4 , S_5 , S_8 = the sulfur content of the particular fuel oil combusted during the hour in EU001, EU002, EU003, EU004, EU005, and EU008, respectively (lb/gallon)

BTU_1 , BTU_2 , BTU_3 , BTU_4 , BTU_5 , BTU_8 = the heat input during the particular hour for EU001, EU002, EU003, EU004, EU005, and EU008, respectively (million BTU)

APPENDIX D**Facility Name:** Hennepin County Energy Center**Permit Number:** 05300002-001**Insignificant Activities and Applicable Requirements**

Minn. R. 7007.1300, subpart	Rule Description of the Activity	Applicable Requirement
3(H)	<p>Miscellaneous:</p> <p>Total usage of less than 200 gallons of VOC (including hazardous air pollutant-containing VOC) combined in any consecutive 12 months period at a stationary source;</p> <ul style="list-style-type: none">• 23.5 gallons per year of VOC used per year (25 gallons of solvent @ 25% VOC content)	Minn. R. 7011.0710/0715
3(I)	<p>Individual emissions units at a stationary source, each of which have a potential to emit the following pollutants in amounts less than:</p> <ol style="list-style-type: none">1. 4,000 lbs/year of carbon monoxide; and2. 2,000 lbs/year each of nitrogen oxide, sulfur dioxide, particulate matter, particulate matter less than ten microns, volatile organic compounds (including hazardous air pollutant-containing VOC), and ozone. <ul style="list-style-type: none">• Three 50,000 gallon underground fuel oil storage tanks, each with PTE below the thresholds above.• One 200-gallon underground diesel fuel storage tank, with PTE below the thresholds above• One 300-gallon NaOCl solution storage tank (non VOC), PTE below the thresholds above.	Minn. R. 7011.0710/0715.

TECHNICAL SUPPORT DOCUMENT
For
AIR EMISSION PERMIT NO. 05300002-001

This technical support document is intended for all parties interested in the permit. The purpose of this document is to set forth the legal and factual basis for the permit conditions, including references to the applicable statutory or regulatory provisions.

1. General Information

1.1. Applicant and Stationary Source Location:

Owner and Operator Address and Phone Number		Facility Address (SIC Code: 4961)
Owner:	Hennepin County Public Works/Property Services Division A-2208 Government Center Minneapolis, MN 55487	Hennepin County Energy Center 600 Tenth Avenue South Minneapolis, Hennepin County, MN 55415
Operator:	NRG Energy Incorporated 1221 Nicollet Mall, Suite 700 Minneapolis, MN 55403	
Contact:	Roy R. Earl Sr. Mechanical Engineer (612)348-7758	

1.2. Description of the facility

Hennepin County Energy Center (HCEC) is a fossil-fuel fired boiler plant that provides steam and chilled water to customers located in the downtown Minneapolis area. The sources discharging emissions to the air are six boilers, designated as Boiler Nos. 1, 2, 3, 4, 5, and 6, and an emergency-only diesel generator. Boilers 1, 2, 3, and 4 vent to a common stack. Boilers 5 and 6 each vent to individual stacks.

1.3 Description of any changes allowed with this permit issuance

This permit does not authorize any additional physical alterations of the facility. Previous modifications (construction of 2 additional stacks) are permitted through this action. This permit action does change the sulfur dioxide (SO₂) modeling limits for all six boilers. See description under Section 3. Technical Information.

1.4 Description of all amendments issued since the issuance of the last total facility permit and to be included in the Part 70 Permit.

Application date	Permit Number and Issuance Date	Action Authorized
Unknown	1756-91-OT-2 August 2, 1991	Last total facility permit issued (FESOP)
Unknown	Amendment 1 December 14, 1992	Change in ownership from Metropolitan-Mount Sinai Medical Center to Hennepin County
Unknown	Amendment 2 May 11, 1993	Change to fuel oil sampling and analysis requirements
April 24, 1996 (major amendment)	Amendment 3 (05300002-007) September 5, 1996	Replace burner on Boiler 1. Install Boiler 4. Debottleneck Boilers 5 and 6 by installing larger forced draft fans. Set SO ₂ limits based on modeling, NO _x limits to avoid PSD.
September 16, 1997 (administrative amendment)	05200002-008 (Amendment 4) December 4, 1997	Added testing frequency for Boiler 1 to permit.
August 1, 1997 (minor amendment)	Not issued; rolled into this permit action	Construction of 2 temporary stacks for Boilers 5 and 6 to facilitate construction of a totally new stack intended to serve all 6 boilers, in turn facilitating the debottlenecking of Boilers 5 and 6 authorized in Amendment 3.
January 18, 2000 (minor amendment)	Not issued; rolled into this permit action	Make temporary stacks permanent. New dispersion modeling done to revise SO ₂ limits.
May 18, 2000 (moderate amendment)	Not issued; rolled into this permit action	Replace 2 emergency generators with one larger generator.

1.5. Changes Made Since Public Notice

One comment letter was received during the public notice period. No changes to the permit were made. The comment letter and the MPCA's response are included as Attachment 4 to this document. No changes were made to the draft permit as a result of these comments.

An error in the calculation of the hourly synthetic minor NO_x limit was discovered. There was no resulting change in the annual emissions. The hourly limit was corrected in the draft permit. Since the correction made the limit more restrictive than was public noticed (the limit has been lowered), the public notice was not repeated. See section 3.2 of this document for further explanation.

1.6. Facility Emissions:

Table 1. Total Facility Potential to Emit Summary:

	PM tpy	PM ₁₀ tpy	SO ₂ tpy	NO _x tpy	CO tpy	VOC tpy	Pb tpy	All HAPs tpy
Total Facility Limited Potential Emissions*	17.4	13.5	81.7	182.7	97.6	6.5	0.011	0.72
Total Facility Actual Emissions*	2.66	2.44	11.83	48.51	20.91	1.42	0.00	NR**

* 1998 Emission Inventory

** NR = Not Reported (HAPs are not reported in the annual emission inventory)

Table 2. Facility and Permit Classification

Classification	Major/Affected Source	*Synthetic Minor	*Minor
PSD	Yes (NO _x)		
Part 70 Permit Program	Yes (NO _x)		

* Refers to potential emissions that are less than those specified as major by 40 CFR 52.21, 40 CFR pt. 51 Appendix S, and 40 CFR pt. 70.

2. Regulatory and/or Statutory Basis

Regulatory Overview of Facility

Part 70 Permit Program – The facility is a major source under 40 CFR 70.2.

New Source Review (NSR) – The facility is a major source under 40 CFR 52.21 (one of the 28 source categories). Air dispersion modeling has been performed to demonstrate compliance with ambient air quality standards, and as a result, portions of the facility are subject to sulfur dioxide emission limits developed to be protective of the ambient standards.

New Source Performance Standards (NSPS) – Portions of the facility are subject to 40 CFR 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. Specifically, EU001 (Boiler 1) was modified, resulting in an increased hourly production rate, in 1996/1997, and EU008 (Boiler 4) was installed in 1999. Both have a rated heat input between 10 and 100 MMBtu/hr.

National Emission Standards for Hazardous Air Pollutants (NESHAP) – The facility is not subject to any promulgated NESHAPs, and no changes in HAPs (increase or decrease) are authorized in this permit action.

Minnesota Standards of Performance – EU002 (Boiler 2) and EU003 (Boiler 3) are subject to Minn. R. 7011.0510, Standards of Performance for Existing Indirect Heating Equipment, since they were constructed prior to and have not been modified since January 31, 1977. EU004 (Boiler 5) and EU005 (Boiler 6) are subject to Minn. R. 7011.0515, Standards of Performance for New Indirect Heating Equipment, since they have been modified since January 31, 1977 (both were modified as part of the 1996 synthetic minor modification, but did not experience an

increase in potential hourly emissions and therefore did not become subject to NSPS Subpart Dc). EU009 is subject to Minn. R. 7011.2300, Standards of Performance for Stationary Internal Combustion Engines.

Table 3. Summary of Applicable Regulations

Affected portion of facility	Applicable Regulations	Comments
EU002, EU003	Minn. R. 7011.0510	Standards of Performance for Existing Indirect Heating Equipment
EU004, EU005	Minn. R. 7011.0515	Standards of Performance for New Indirect Heating Equipment
EU001, EU008	40 CFR 60, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
EU009	Minn. R. 7011.2300	Standards of Performance for Stationary Internal Combustion Engines
GP001	40 CFR 52.21	Synthetic minor limit on NO _x emissions to maintain PTE of a previous modification below the significance levels. PTE of all criteria pollutants was maintained below significance levels due to the resulting fuel usage constraints.
GP004, EU004, EU005	Minn. R. 7009.0020	Limits for SO ₂ emissions set for the boilers. Limits were derived from computer dispersion modeling.
	40 CFR 52.21	Synthetic minor limit on sulfur content of fuel oil to maintain PTE of a previous modification below the significance levels.

3. Technical Information

3.1 Modeling and Modeling-Based Emission Limits

The facility performed computer dispersion modeling to demonstrate compliance with the ambient air quality standards for SO₂. The results of the modeling and a summary of the modeled findings can be found in Attachment 3 to this document. The permit contains emission limits and stack parameter requirements. The emission limits have been changed from the previously permitted values to reflect the additional stacks and associated parameters, and the true potential emissions of the boilers.

Included in Attachment 1 is a summary of the boiler loads and corresponding air flow rates. If the boiler load (MMBtu/hr) is decreased, a corresponding decrease in air flow occurs. If the SO₂ mass emission rate (lb/hr) is allowed to remain constant, this would result in an increase in concentration over what was modeled (constant lb/hr divided by decreased cubic feet of air flow). While in practice, the SO₂ mass emission rate may also decrease with the decrease in heat input, such a decrease must be made enforceable by limiting the total lb/MMBtu.

The previous permits stated modeled SO₂ limits only in terms of pounds per hour (lb/hr). This limits the total amount emitted to what was modeled. However, it is also necessary to ensure that the concentration of SO₂ does not exceed what was modeled, in terms of mass per volume of air flow.

3.2 NSR Applicability and Explanation of Synthetic Minor NO_x Limit

The synthetic minor limit for NO_x was originally set in the permit issued in September 1996. The limit was set at 18.61 pounds/hour (lb/hr) for EU001, EU004, EU005, and EU008 combined; this corresponds to 81.5 tons per year (tpy). [The technical support document incorrectly stated the limit as 9.13 lb/hr, which corresponds to 40 tpy.] The facility was an existing major source.

The intent of the limit was to limit the NO_x increase due to the proposed modification to less than the significance level of 40 tons per year. The modification as proposed was to replace the burner on EU001 with a larger burner, increasing the capacity of the boiler; to install EU008; and to replace the forced draft fans on EU004 and EU005 to enable them to operate at capacity (i.e., debottleneck EU004 and EU005). To avoid PSD review and the requirement to install Best Available Control Technology (BACT), the NO_x emissions due to the new, modified, and debottlenecked units may not be more than 40 tpy more than the actual emissions during the 2-year period preceding the change. Thus, the allowable emissions from the 4 units combined are as follows:

$$AE \leq AA_{001} + AA_{004} + AA_{005} + AA_{008} + 40$$

Where:

AE = allowable emissions after the modification

AA₀₀₁ = the average actual emissions of EU001 during the 2-year period preceding the change

AA₀₀₄ = the average actual emissions of EU004 during the 2-year period preceding the change

AA₀₀₅ = the average actual emissions of EU005 during the 2-year period preceding the change.

AA₀₀₈ = the average actual emissions of EU008 during the 2-year period preceding the change.

Using the information Hennepin County Energy Center submitted for the September 1996 permit,

$$AA_{001} = 5.9 \text{ tpy}$$

$$AA_{004} = 20.74 \text{ tpy} \quad AA_{001} + AA_{004} + AA_{005} + AA_{008} = 41.5 \text{ tpy}$$

$$AA_{005} = 14.85 \text{ tpy}$$

$$AA_{008} = 0 \text{ (equipment did not exist)}$$

$$AE \leq 41.5 \text{ tpy} + 40 \text{ tpy} = 81.5 \text{ tpy} = 18.61 \text{ lb/hr}$$

Since it is not good practice to set the increase exactly equal to 40 tpy, the limit is being modified slightly to reflect an allowed increase of only 39 tpy over the past actual emission rates. The corrected NO_x limit is 18.4 lb/hr, calculated as follows:

$$41.5 \text{ tpy} + 39 \text{ tpy} = 80.5 \text{ tpy}$$

$$80.5 \frac{\text{ton}}{\text{year}} \times 2000 \frac{\text{pound}}{\text{ton}} \times \frac{1 \text{ year}}{8760 \text{ hours}} = 18.4 \frac{\text{pound}}{\text{hour}}$$

As it turns out, the facility elected to install new stacks, one for EU004 and one for EU005, rather than install the new forced draft fans. The end result was identical – to allow EU004 and EU005 to operate at capacity when they couldn't before (debottlenecked EU004 and EU005).

Correction made since public notice

It was discovered that the actual emissions calculations submitted by the permittee and used for the above calculations for the 1996 permit were incorrect. Research into the actual NO_x emissions from EU001, EU004, and EU005 as documented in the MPCA's emission inventory records show the following 2-year average NO_x emissions for 1994 and 1995 (the two years preceding the permit to modify):

$$AE_{1994} = 41.3 \text{ tpy}$$

$$AE_{1995} = 36.25 \text{ tpy}$$

Where

AE_{1994} = the actual NO_x emissions from EU001, EU004, and EU005 during 1994

AE_{1995} = the actual NO_x emissions from EU001, EU004, and EU005 during 1995

$$\text{2-year average annual emissions} = (41.3 \text{ tpy} + 36.25 \text{ tpy}) \div 2 = 38.78 \text{ tpy}$$

Following the same method outlined above, the limit is set by allowing an increase of 39 tpy over the past actual emission rates. The corrected NO_x limit is 17.8 lb/hr, calculated as follows:

$$38.78 \text{ tpy} + 39 \text{ tpy} = 77.78 \text{ tpy}$$

$$77.78 \frac{\text{ton}}{\text{year}} \times 2000 \frac{\text{pound}}{\text{ton}} \times \frac{1 \text{ year}}{8760 \text{ hours}} = 17.8 \frac{\text{pound}}{\text{hour}}$$

3.3 Emission Calculations

Detailed emission calculations are included in Attachment 1 to this document. In summary, hourly emission rates of each of the six boilers and of the generator are calculated using the maximum hourly equipment capacity, emission factors published in AP-42, any fuel restrictions listed in the permit (1.5% sulfur for boilers 2 and 3, 0.05% sulfur for remaining four boilers), and any hourly emission limits set in the permit (synthetic minor NO_x limit, SO₂ limit based on dispersion modeling). Unrestricted emissions were calculated on a per-unit basis using the maximum capacity of the equipment, the AP-42 emission factors, and not considering any fuel type or usage limitations.

Limited emissions for the emergency generator were calculated by taking the maximum hourly emission rate, calculated as described above, multiplied by 500 hours per year, per the September 6, 1995 U.S. EPA memo Calculating Potential to Emit (PTE) for Emergency Generators.

Limited emissions for the six boilers were calculated considering all fuel usage restrictions resulting from the annual SO₂ emission rate limits. The annual SO₂ limit on GP004 inherently limits the fuel usage in all six boilers combined. (The calculations are detailed in Attachment 1.)

HAPs - Hourly, unrestricted, and limited HAP emissions are calculated as described above for criteria pollutants.

3.4 Periodic Monitoring

In accordance with the Clean Air Act, it is the responsibility of the owner or operator of a facility to have sufficiency knowledge of the facility to certify that the facility is in compliance with all applicable requirements. To achieve this objective, the U.S. EPA requires periodic monitoring for permitted sources.

In evaluating the monitoring included in the permit, the MPCA considered the following:

- The likelihood of violating the applicable requirement;
- Whether add-on controls are necessary to meet an emission limit;
- The variability of emissions over time;
- The type of monitoring, process, maintenance, or control equipment data already available for the emission unit.

Table 4 summarizes the periodic monitoring requirements for those emission units for which the monitoring required by the applicable requirement is nonexistent or inadequate.

Table 4. Emission Units Subject to Periodic Monitoring

EU/GP/CE	Emission limit (basis)	Additional Monitoring	Discussion
GP001 (EU001, EU004, EU005, EU008)	NO _x : 18.4 lb/hr for all 4 boilers combined (Title I limit to avoid PSD applicability to a previous modification)	Annual stack testing to determine site specific emission factor for each fuel for each boiler Daily calculations and recordkeeping	Continuation of the limit and testing and recordkeeping requirements set in 1996
GP002 (EU001, EU008)	Opacity, sulfur content of fuel (NSPS Subpart Dc)	None	NSPS-required monitoring is adequate. Notifications and initial performance tests have been completed. Fuel sulfur content is addressed under GP004.

EU/GP/CE	Emission limit (basis)	Additional Monitoring	Discussion
GP003 (EU002, EU003)	SO ₂ , opacity, and PM limits (Minn. R. 7011.0510)	None	State SO ₂ limit is less restrictive than the limits set under GP004, which includes EU002 and EU003. PM PTE is approximately 27% of the applicable limit.
EU004, EU005	SO ₂ , opacity and PM limits (Minn. R. 7011.0515)	None	State SO ₂ limit is less restrictive than the limits set under GP004, which includes EU004 and EU005. PM PTE is approximately 3% of the applicable limit.
GP004 (EU001, EU002, EU003, EU004, EU005, EU008)	SO ₂ limits (Minn. R. 7009.0020) Fuel oil sulfur content (Title I to avoid PSD applicability of previous mod)	Calculation of fuel oil tanks sulfur content, following each receipt of fuel oil. Calculation and Recordkeeping of hourly and 365 day rolling average SO ₂ emission rates.	Pound/hour limits were changed from those set in the 1996 permit, to reflect revised modeling due to changed stack configurations. Compliance with the 1-hour average implies compliance with the equivalent 3-hour and 24-hour averages.
EU009	SO ₂ and opacity limits (Minn. R. 7011.2300)	None	PTE of SO ₂ is less than what is allowed by the rule.

3.5 Insignificant Activities

Insignificant activities at the facility include four underground fuel storage tanks, a tank storing a water and NaOCl solution, and solvent usage less than 25 gallons per year.

4. Conclusion

Based on the information provided by the Hennepin County Energy Center, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 05300002-001 and this technical support document, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on Permit Team: Toni Volkmeier, Rhonda Land

Attachment: 1. Emission Calculations
 2. Facility Description and CD-01 Forms
 3. Modeling results
 4. Public Comment and Response