June 5, 2001

Clarence Kadrmas
Hutchinson Utilities Director and
Designated Representative
Hutchinson Utilities Commission
225 Michigan Street
Hutchinson, MN 55350

Re: Petition for Alternative SO_2 and Bypass Stack Monitoring for
HUC's Plant No. 2, Unit 1

Dear Mr. Kadrmas

EPA has received your June 13, 2000 petition under 40 CFR 75.66(a) for alternative sulfur dioxide (SO_2) and bypass stack monitoring and reporting requirements for Hutchinson Utilities Commission's (HUC) Plant No. 2, Unit 1. As discussed below, EPA approves the petition with certain conditions.

Background

Unit 1 is a natural gas-fired, combined cycle unit with a combustion turbine, a heat recovery steam generator, and a steam turbine. According to HUC, the unit burns only pipeline natural gas. HUC has installed a flow rate monitoring system in the main stack along with a nitrogen oxides (NOx) and carbon dioxide (CO_2) continuous emissions monitoring system (CEMS). The by-pass stack is unmonitored and is used generally only during start-up and until the combustion turbine reaches operating temperature, which is usually within three hours after start-up. The unit has about twelve start-up periods per year, during which periods the combustion turbine can operate at only about 10% of its rated capacity.

HUC states in the petition that SO_2 emissions from Unit 1 are less than 1 ton annually. According to HUC, the gas burned at the unit qualifies for the 0.0006 lb/mmBtu default value for SO_2 for pipeline natural gas under Part 75, Appendix D, Section 2.3.1.1. As noted above, HUC has certified flow rate CEMS and NO_x and CO_2 CEMS (which includes a diluent monitor) at the main stack to account for the NO_x emission rate, CO_2 mass emissions, and heat input at Unit 1. HUC's petition requests to use the default SO_2 emission rate and the heat input values

determined from the flow rate CEMS and diluent monitor to calculate SO_2 mass emissions in accordance with Equation F-23 in Part 75, Appendix F, Section 7. This approach would be used in lieu of certifying an SO_2 CEMS at the main stack.

In addition to HUC's request not to have a certified SO_2 CEMS in the main stack, HUC requests not to be required to have any CEMS in the bypass stack. The petition requests to use maximum potential emission rates and maximum potential heat input rate for the bypass stack in lieu of CEMS.

EPA's Determination

Part 75 does not allow HUC's requested approach for monitoring SO_2 emissions at Unit 1's main stack. Under Part 75, a unit may monitor SO_2 emissions for hours of gas combustion by using: (1) an SO_2 CEMS and a flow rate CEMS; (2) a fuel flowmeter and procedures under Part 75, Appendix D; or (3) a flow rate CEMS, a diluent monitor, the appropriate default SO_2 emission rate from Section 2.3.1.1 or 2.3.2.1.1. of Appendix D, and Equation F-23 in Appendix F. See 40 CFR 75.11(e). The latter option of using Equation F-23 was meant to be used by units combusting both natural gas and another fuel (e.g., coal) for which they had to have SO_2 CEMS. Consequently, section 7 of Appendix F explicitly makes the use of Equation F-23 available only for a unit with an SO_2 CEMS. See 40 CFR part 75, appendix F, section 7. Units (like Unit 1) combusting only natural gas were expected to choose to utilize a fuel flowmeter and Appendix D to account for SO_2 emissions.

However, EPA agrees that it is unnecessarily burdensome to require that HUC operate and maintain an SO_2 CEMS in the main stack at Unit 1 in order to use Equation F-23 to determine SO_2 mass emissions. Unit 1 burns only pipeline natural gas, and Equation F-23 provides for the determination of SO_2 mass emissions using a default SO_2 emission rate for any hour of pipeline natural gas combustion. Using Equation F-23, Unit 1 will report the default SO_2 emission rate (rather than any monitored SO_2 value) for every unit operating hour, even if the unit were to install an SO_2 CEMS and the CEMS was not out-of-control. Under these circumstances, there is little or no purpose in requiring certification of an SO_2 CEMS at the main stack. Therefore, EPA approves the request in the petition to use a default SO_2 emission rate, the flow rate CEMS and diluent monitor, and Equation F-23 to calculate SO_2 mass emissions for every hour of pipeline-natural-gas combustion, in lieu of certifying an SO_2 CEMS at the main stack. Of course, HUC must continue to monitor NO_x and CO_2 emissions at the main stack in accordance with §§75.10(a)(2) and (3).

Further, EPA agrees with HUC's request to determine SO_2, NOx, CO_2, and heat input at Unit 1's bypass stack without certified SO_2, NOx and CO_2, and flow CEMS, provided that certain conditions are met. EPA notes that, with regard to SO_2 emissions, Part 75 already provides an alternative to installing a CEMS (or using reference method monitoring) at a bypass stack. Specifically, §75.16(c)(3) allows the option of reporting maximum potential concentration for emissions through the bypass stack (instead of a monitored emission rate) if, by regulation or permit, use of the bypass stack is prohibited or is limited to emergency situations. In allowing this option, EPA balanced the cost of certifying a monitor and the emissions resulting from

certification tests against the need for accurate accounting of emissions. See Technical Support Document for Revisions to 40 CFR Parts 72 and 75 at P-48 through P-50 (April 6, 1995) (Docket No. A-94-16). However, Part 75 does not currently include a similar alternative to installing a NOx CEMS at a bypass stack.

EPA maintains that the factors that were relevant in EPA's decision to allow reporting of maximum potential concentration for SO_2 emissions through a bypass stack are similar to those that are relevant in considering this type of option with regard to NOx emissions through a bypass stack. Although Unit 1's use of the bypasss stack is not limited to emergencies, the bypass stack is used infrequently, i.e., during the unit's limited start-up periods. The bypass stack is otherwise not used during normal operation of the unit. Consequently, reporting of maximum potential concentration for those hours when the bypass stack is used will allow HUC to avoid the cost of installing CEMS at the bypass stack without significantly reducing the accuracy of emissions monitoring. Further, any inaccuracy due to the use of maximum potential concentration will result in over-reporting, not under-reporting, of emissions. In addition, this approach will simplify reporting for the source and for EPA by avoiding the need to report multiple stacks. Under these circumstances, EPA maintains that this is a reasonable approach for reporting SO_2, NOx, CO_2, and heat input for the bypass stack for any hour when that stack is used at Unit 1.

EPA notes that allowing reporting of maximum potential concentration (and the resulting maximum potential emission rate) for NOx at a bypass stack in this case is consistent with guidance recently issued by EPA. In Acid Rain Program Policy Manual Question 17.6 at 23-24 (revised December 15, 2000), EPA stated that maximum potential NOx emission rate can be reported for a bypass stack at a combustion turbine, instead of monitoring the bypass stack.

Under this alternative approach to using CEMS at the unit's bypass stack, HUC will report SO_2, NOx, CO_2, and heat input for each hour that flue gas exhausts through the bypass stack at the unit, calculated as follows. For SO_2, HUC will report a maximum hourly emission value calculated using: Equation F-23; the default value for SO_2 for pipeline natural gas under Part 75, Appendix D, Section 2.3.1.1; and the maximum hourly heat input value. For NOx, HUC will report maximum potential emission rate (MER) calculated using: Equation F-6 in Appendix F; maximum potential concentration (MPC) for NOx of 200 ppm for existing combustion turbines in Table 2-1 in Appendix A; and 1% CO_2. The NOx MER for Unit 1, determined in accordance with Appendix A, Sections 2.1.2.1(b) and 2.1.2.2., is 2.441 lb/mmBtu. For CO_2, HUC will report a maximum hourly mass emission value calculated using: Equation F-11; maximum potential flowrate; and MPC for CO_2. MPC for CO_2 is determined in accordance with Appendix A, Section 2.1.3.1, under which the MPC is 6% or a value determined from 720 quality-assured hours of historical data. Finally, for heat input, HUC will report a maximum hourly heat input value calculated using: Equation F-15; maximum potential flowrate; and MPC for CO_2.

Finally, EPA notes that its review, for the purposes of this petition, of the monitoring plan and the 2001 first quarter electronic data report (EDR) for Unit 1 indicates that HUC is not calculating the MPC for CO_2 in accordance with Appendix A, Section, 2.1.3. Appendix A,

Section 2.1.3 requires the MPC for CO_2 for turbines to be 6.0% or a value determined from historical data. However, HUC appears to use two different values for MPC for CO_2. HUC's monitoring plan lists the MPC for CO_2 as 16%. In contrast, in the EDR, HUC is substituting 1% for the CO_2 concentration in hours where quality-assured data is missing and the monitor availability is less than 80%. The substitute value for CO_2 in that case is supposed to be the MPC. Because all quality-assured, historical CO_2 concentration data for Unit 1 appear to be greater than 1% and significantly below 16%, both MPC values reflected in the monitoring plan and in the EDR substitute data appear to be incorrect. HUC must correct the MPC for CO_2 in the monitoring plan and in the missing data substitution software.

EPA's determinations in this letter rely on the accuracy and completeness of HUC's submissions on June 13, 2000 and are appealable under part 78. If you have any questions about these matters, please contact Louis Nichols of my staff, at (202) 564-0161 or Nichols.Louis @epa.gov. Thank you for your continued cooperation.

Sincerely,

/s/
Brian J. McLean, Director
Clean Air Markets Division

cc: Constantine Blathras, EPA Region 5
Steven Sommer, MPCA