February 20, 2008

Mr. Steve Mills
Designated Representative
Xcel Energy
4653 Table Mountain Drive
Golden, Colorado 80403

Re: Petition for Use of Alternative Data Substitution for Unit 4 at the Cherokee Station (Facility ID (ORISPL) 469)

Dear Mr. Mills:

The United States Environmental Protection Agency (EPA) has reviewed the October 8, 2007 petition under §75.66 in which the Public Service Company of Colorado (PSCo) requested relief from using standard missing data substitution for Unit 4 at the Cherokee Station, in order to resolve an issue concerning the quality of Unit 4's second and third quarter 2007 emissions data. EPA approves the petition in part, with conditions, as discussed below.

Background

Cherokee Station Unit 4 is a coal-fired 3,520 mmBtu/hr tangentially-fired boiler located in Adams County, Colorado. Sulfur dioxide (SO_2) emissions from Unit 4 are controlled with a dry lime flue gas desulfurization (FGD) system. Nitrogen oxides (NO_x) emissions from the unit are controlled using low-NO_x burner technology with close-coupled and separated over-fire air, and particulate matter (PM) emissions are controlled using a baghouse. Unit 4 is subject to the Acid Rain Program. Therefore, PSCo is required to continuously monitor and report Unit 4's SO_2, NO_x, and carbon dioxide (CO_2) emissions and heat input in accordance with 40 CFR Part 75. To meet the SO_2, NO_x, and CO_2 monitoring requirements of Part 75, PSCo has installed and certified dry extractive continuous emission monitoring systems (CEMS) on Unit 4.

In the October 8, 2007 petition, PSCo states that on June 21, 2007, a leaky sample dryer tube was unknowingly installed, causing the samples of all measured gases to be diluted until the leak was identified and repaired on July 26, 2007. The leak was not detected more quickly because the SO_2, NO_x, and CO_2 CEMS continued to pass daily calibration error tests and quarterly linearity checks.

PSCo first suspected a problem in July 2007, while preparing the second quarter electronic data report (EDR) for Unit 4. A review of the second quarter CO_2 data showed that the CO_2 readings recorded in the last days of the quarter (11 to 12% CO_2) were less

than would be expected under normal plant operation (i.e., 13 to 14% CO_2). Further investigation revealed that the unusually low CO_2 readings could not be correlated with boiler operation and that they were, in fact, due to a leak in the sample dryer tubing. PSCo also learned through this investigation that the only way to identify a leak in the dryer tubing is through a drop in the reading of a vacuum gage in the sample-conditioning box. In light of this discovery, PSCo has added provisions to its quality control and quality-assurance (QA/QC) manual to require routine documentation of the reading from the vacuum gage on the sample-conditioning box. PSCo has also added to the manual a requirement to verify whether observed decreases in CO_2 concentration are attributable to unit operation or are indicative of a leak in the sampling system.

PSCo evaluated Unit 4's emissions data prior to and during the sample leak event and concluded that the leak lowered the concentrations of all three of the measured gases (SO_2, NO_x, and CO_2) by an average of 11.6%. The 11.6% decrease in the gas concentrations was determined by comparing the CO_2 mass emissions on a tons-per-megawatt (ton/MW) basis before and during the leak. Prior to the leak, the average ton/MW value for 1,505 hours of operation from April 1, 2007 to June 21, 2007 was 1.0065. The average ton/MW value was 0.8895 during the 35-day leak period extending from June 21, 2007 to July 26, 2007.

Under Part 75, the SO_2, NO_x, and CO_2 data recorded during the leak period should be declared invalid and replaced with substitute data based on the standard Part 75 missing data procedures. However, §75.66 allows sources to submit petitions for alternatives to the monitoring provisions of Part 75. Therefore, believing that the Part 75 standard missing data procedures would grossly overstate Unit 4's emissions during the time period in question, PSCo submitted a petition to EPA on October 8, 2007, requesting approval of an alternative substitute data methodology for Unit 4.

In the October 8, 2007 petition, PSCo requested permission to apply an upward adjustment factor of 11.6% (based on the results of the CO_2 ton/MW analysis described above) to the SO_2, NO_x, and CO_2 emissions data recorded during the leak period, in lieu of invalidating the data and using the standard Part 75 missing data routines. To further justify the use of a constant 11.6% adjustment factor, PSCo provided supporting data, documenting that the leak rate varied very little during the 35-day leak period. The data show that the sample flow rate during the leak period was consistently between 27 and 29 liters/hour.

At EPA's request, PSCo provided supplemental data on December 17, 2007 comparing its estimates of the "actual" SO_2, NO_x, and CO_2 emissions during the leak period (based on the 11.6% adjustment factor) to the emissions that would be reported by applying the standard Part 75 missing data routines under the "block approach", where a single algorithm is applied to the entire missing data period based on the percent monitor data availability (PMA) at the end of the period. The data show that using these standard missing data procedures would result in SO_2 emissions that are substantially higher (by 806 tons or 207%) than PSCo's estimate of actual emissions.

Also at EPA's request, PSCo provided additional data on January 21, 2008 comparing its estimates of the "actual" SO_2, NO_x, and CO_2 emissions during the leak period (based on the 11.6% adjustment factor) to the emissions that would be reported by applying the Part 75 missing data routines in a "stepwise" manner. That is, the missing data algorithms were applied based on the hour-by-hour values of the PMA. See Question 15.5 in the Part 75 Emissions Monitoring Policy Manual.

The data submitted on January 21, 2008 show that using the stepwise missing data approach would still result in reported SO_2 emissions that are substantially higher (by 521 tons, or 134%) than PSCo's estimates of Unit 4's actual emissions during the leak period. Using this missing data approach would also increase the CO_2 mass emissions during the leak period by 15.8% and would cause the year-to-date NO_x emission rate (lb/mmBtu) to increase by 1.8%.

EPA's Determination

EPA conditionally approves PSCo's petition to use an alternative substitute data methodology to adjust Cherokee Station Unit 4's reported SO_2 emissions data during the sample dryer tube leak period extending from June 21 through July 26, 2007. The basis for this approval and the conditions of approval are presented below. However, the Agency disapproves the use of the proposed alternative substitute data methodology for NO_x, and CO_2 because the use of the standard Part 75 missing data routines does not grossly overstate those emissions.

After reviewing PSCo's proposed substitute data methodology, EPA has concluded, on the one hand, that using standard substitute data would grossly overstate the unit's SO_2 emissions (by at least 521 tons or 134%). On the other hand, the 11.6% correction factor proposed by PSCo would only adjust the SO_2 emissions to a level that closely approximates the actual emissions during the leak period. This is inconsistent with the purposes of the Part 75 standard missing data substitution procedures, which are to ensure that emissions are not underreported and to provide strong incentive for owners and operators to ensure that monitoring systems are properly operated and maintained. Therefore, EPA believes that in order to achieve these objectives, the data adjustment factor must be significantly higher than the one proposed by PSCo.

In view of this, EPA approves an alternative substitute data value of 112.6 ppm SO_2 for each hour of the sample dryer tube leak period when the dry lime FGD control device was documented to be operating properly. This corresponds to the 90^{th} percentile SO_2 concentration during the lookback through the 720 hours of quality-assured data immediately preceding the missing data period. Further, consistent with §75.34(a)(1), PSCo must report the maximum potential concentration (MPC) of 500.0 ppm SO_2 for each hour of the sample dryer tube leak period that the FGD was not documented to be operating properly.

Applying the 90th percentile SO_2 concentration and the SO_2 MPC in this way results in 665 tons of SO_2 emissions for the dryer tube leak period. This is 276 tons (71%) above PSCo's estimate of the actual SO_2 emissions, but 245 tons (27%) below the SO_2 emissions that would result from application of Part 75 standard missing data substitution procedures in a stepwise manner, and 530 tons (44%) less than the SO_2 emissions that would be reported using the block missing data approach. EPA believes that this alternative missing data approach achieves the purposes of missing data substitution without unduly overstating Unit 4's emissions during the leak period.

The conditions of this approval are as follows:

(1) PSCo shall resubmit the second and third quarter 2007 electronic data reports (EDRs) for Cherokee Unit 4;

(2) For the time period extending from June 21 through July 26, 2007, PSCo shall report an alternative substitute data value of 112.6 ppm SO_2 for each hour of the sample dryer tube leak period when the dry lime FGD control device was documented to be operating properly. PSCo shall report the MPC of 500.0 ppm SO_2 for each hour of the sample dryer tube leak period that the FGD was not documented to be operating properly. PSCo shall report these corrected concentrations in the EDRs in record type (RT) 200, column 35;

(3) PSCo shall report a Method of Determination Code (MODC) of "12" for each hour of SO_2 MPC data, and an MODC of "55" for each hour of SO_2 90th percentile data during the leak period;

(4) PSCo shall include EDR record type 910 in each of the two resubmitted EDRs for Cherokee Unit 4. Each RT 910 shall indicate the period(s) of time for which the SO_2 emissions data have been adjusted in accordance with this approval;

(5) PSCo shall apply the applicable standard missing data routines from §75.33 and 75.35 for NO_x and CO_2, respectively, to each hour of unit operation during the dryer tube leak period extending from June 21 through July 26, 2007.

(6) PSCo shall coordinate resubmission of the EDRs with Mr. Robert L. Miller, who may be reached at (202) 343-9077, or by e-mail at miller.robertL@epa.gov.

EPA's determination relies on the accuracy and completeness of the information provided by PSCo in the October 8, 2007 petition and the supplementary data provided on December 17, 2007, and January 21, 2008, and is appealable under Part 78. If you have any questions or concerns about this determination, please contact John Schakenbach at (202) 343-9158. Thank you for your continued cooperation.

Sincerely,

/s/
Sam Napolitano, Director
Clean Air Markets Division

cc: Albion Carlson, EPA Region VIII
Bob Jorgenson, Colorado DPHE
John Schakenbach, CAMD
Robert Miller, CAMD