

August 21, 2006

Mr. Dean Metcalf
Alternate Designated Representative
Xcel Energy
4653 Table Mountain Drive
Golden, Colorado 80403

Re: Petition to Use Source-Specific Default Moisture Values for Twelve Units Owned and Operated by the Public Service Company of Colorado (Xcel Energy)

Dear Mr. Metcalf:

The United States Environmental Protection Agency (EPA) has reviewed the June 29, 2006 petition under §75.66 submitted by the Public Service Company of Colorado (PSCo), in which PSCo requested permission to use source-specific default moisture values in lieu of the generic default moisture values in §75.11(b)(1), for twelve units burning bituminous or sub-bituminous coal. EPA approves the petition, in part, as discussed below.

Background

PSCo owns and operates the twelve electric utility boilers, located in Colorado, that fire either bituminous or sub-bituminous coal. The units are subject to the Acid Rain Program. Therefore, PSCo is required to continuously monitor and report sulfur dioxide (SO₂), nitrogen oxides (NO_x), and carbon dioxide (CO₂) emissions and heat input for these units.

To measure the NO_x emission rate (in lb/mmBtu) for each of the units, PSCo uses a NO_x-diluent monitoring system consisting of a dry-basis NO_x concentration monitor and a dry-basis CO₂ monitor. Because both NO_x and CO₂ are measured on a dry basis, a correction for the stack gas moisture content is unnecessary. Equation F-6 in Section 3.2 of Appendix F to Part 75 is used to determine the NO_x emission rate.

However, when PSCo determines the hourly SO₂ mass emissions, CO₂ mass emissions, and heat input rate for these units, moisture corrections are required, because the SO₂ and CO₂ monitors measure on a dry basis, while the stack flow monitor measures on a wet basis. Equation F-2 from Section 2.2 of Appendix F to Part 75 is used to calculate the hourly SO₂ and CO₂ mass emissions and Equation F-16 from Section 5.2.2 of Appendix F is used to determine the hourly heat input rate.

Part 75 provides two options for determining the stack gas moisture content when moisture corrections are required. The owner or operator may either report the appropriate fuel-specific default moisture value provided in §75.11(b) or §75.12(b), or, if this option is not viable, a continuous moisture monitoring system must be installed, certified, maintained and operated.

The fuel-specific default moisture values in §75.11(b) for bituminous coal and sub-bituminous coal are 6.0% H₂O and 8.0% H₂O, respectively. These are the default values that apply to the twelve PSCo units.

In its June 29, 2006 petition, PSCo states that the coal burned at each of the twelve units has a higher average moisture content than the corresponding fuel-specific default moisture value allowed in §75.11(b). To support this claim, PSCo analyzed stack gas moisture data from a series of EPA Method 4 tests performed over a period of three or more consecutive years at each of the twelve units. For each unit, PSCo calculated the lower confidence limit of the data set, at a 95% confidence level, using a single-tailed t-test. This means it is 95% certain that the mean stack gas moisture value for each unit is greater than or equal to the lower confidence limit value. In other words, the lower confidence limit represents a conservatively low estimate of the stack gas moisture content.

Based on these results, PSCo requested to use the source-specific lower confidence limit moisture value for each of the twelve units to calculate the hourly SO₂, and CO₂ mass emissions and heat input rates, instead of using the generic, fuel-specific default moisture value from §75.11(b). According to PSCo, using the lower confidence limit of stack gas moisture would improve the accuracy of the emissions data.

Finally, PSCo proposed to update each default moisture value every year, using the results of EPA Method 4 test runs conducted during the annual Part 75 relative accuracy test audit (RATA), in order to ensure that each source-specific default moisture value continues to be an accurate representation of actual stack conditions. Each year, the results of the latest Method 4 test runs would be added to a historical database, and a new source-specific default moisture value would be determined, based on the three most recent years of Method 4 data from the RATAs. The updated source-specific default moisture value would then be used for Part 75 reporting, beginning at the completion date of the latest series of Method 4 tests, and continuing until the next Method 4 test series is completed.

EPA's Determination

EPA approves PSCo's request to use source-specific default moisture values for each of the twelve units identified in the June 29, 2006 petition and the procedure to update these values, in lieu of using the fuel-specific default moisture values in §75.11(b) or installing continuous moisture monitoring systems. The Agency agrees that the default moisture percentages specified in §75.11(b) are too low for these units.

However, the default moisture values approved for the units are based on EPA's analysis of the Method 4 data provided with the June 29, 2006 petition, rather than the data analyses performed by PSCo. For each unit, EPA has selected the 10th percentile value from the Method 4 data set as the approved initial default moisture value. This is consistent with the manner in which EPA determined the fuel-specific default moisture values for coal and wood combustion in §75.11(b)(1) as part of the May 26, 1999 revisions to Part 75.¹ The 10th percentile value was selected because in Equations F-2 and F-16, as the percent moisture decreases, the SO₂ mass

¹ See 64 FR 28568 (May 26, 1999)

emissions, CO₂ mass emissions, and heat input rate all increase. Therefore, using a conservatively low default moisture value in these equations greatly reduces the possibility of underestimating SO₂ and CO₂ emissions and heat input.

EPA approves PSCo’s proposed procedure for making annual updates to the default moisture values, except that the updated default value for each unit shall be the source-specific 10th percentile value derived from the three years of Method 4 moisture data under consideration. The approved initial source-specific default moisture values for the twelve PSCo units are shown in the Table below:

Facility Name	ORISPL	Unit ID	Approved Initial Moisture Default Value** (% H₂O)
Arapahoe	000465	3	8.9
Arapahoe	000465	4	9.6
Cherokee	000469	1	6.8
Cherokee	000469	2	7.0
Cherokee	000469	3	10.1
Cherokee	000469	4	9.3
Comanche	000470	1	9.9
Comanche	000470	2	8.7
Hayden	000525	1	10.0
Hayden	000525	2	13.1
Pawnee	006248	1	9.7
Valmont	000477	5	8.5

** 10th percentile value of the data set submitted by PSCo

PSCo may apply the default moisture values in the Table above, beginning on the date of this approval. To implement each approved value, PSCo shall close out the default moisture value currently in use, by adding the appropriate inactivation date and hour to column 55 and 63 of EDR record type (RT) 531. Then, a new RT 531 shall be created, showing the approved default moisture value and the activation date and hour.

EPA's determination relies on the accuracy and completeness of the information provided by PSCo in the June 29, 2006 petition and is appealable under Part 78. If you have any questions regarding this determination, please contact John Schakenbach at (202) 343-9158.

Sincerely,

/s/

Sam Napolitano, Director
Clean Air Markets Division

cc: Albion Carlson, USEPA, Region 8
Kirsten King, Colorado DOH
John Schakenbach, USEPA, CAMD