

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF COLORADO**

Docket No. 10M-245E

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IN THE MATTER OF COMMISSION CONSIDERATION OF PUBLIC SERVICE  
COMPANY OF COLORADO PLAN IN COMPLIANCE WITH HOUSE BILL 10-1365,  
“CLEAN AIR-CLEAN JOBS ACT.”

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**STATEMENT OF POSITION**

**OF**

**LESLIE GLUSTROM**

**NOVEMBER 29, 2010**

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## I. INTRODUCTION

Ms. Leslie Glustrom, an Xcel rate payer and a party in this Docket, files this Statement of Position in the above captioned docket related to Commission Consideration of Public Service Company of Colorado (“PSCo” or “Xcel”) Plan in Compliance with House Bill 10-1365, “Clean Air-Clean Jobs” Act (C.R.S. § 40-3.2-201 *et seq.*) One of the goals of the “Clean Air Clean Jobs” Act was to achieve at least a 70-80% reduction in emissions of oxides of nitrogen (NOx) as called for in Colorado Revised Statutes (“C.R.S.”) § 40-3.2-205 (1) (a).

Xcel’s proposed plan under the “Clean Air Clean Jobs” Act was filed on August 13, 2010, and revised on August 25, 2010. One of the important technologies for controlling NOx is called Selective Catalytic Reduction (“SCR”)<sup>1</sup> and Xcel’s plan considered various permutations of either adding SCR or retiring many of its Colorado coal plants. After several rounds of testimony were filed by the parties, hearings were held from October 22-November 2, 2010 and again on November 18-20, 2010. Statements of Position are due by 2 pm on Monday November 29, 2010.

While there are numerous details to consider with respect to Xcel’s Colorado coal plants under consideration in this docket, arguably, the most fundamental consideration is whether the coal plants in question will have a supply of reasonably-priced coal to match the expected lives of any coal plants that are retrofitted with expensive pollution control equipment.

There is abundant evidence in the record to challenge the oft-made assumption that the United States has an abundant supply of cheap coal. Recent coal cost escalations and supply disruptions as well as a review of the status of existing mines and the constraints facing future

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<sup>1</sup> Selective Catalytic Reduction is a chemical process typically using ammonia (“NH<sub>3</sub>”) to reduce the oxides of nitrogen (NOx) to elemental nitrogen (“N<sub>2</sub>”). The efficiency of the reduction process is improved through the use of a catalyst. Further information is found in Xcel’s Emissions Reduction Report filed August 13, 2010 (See Hearing Exhibit 2, e.g. pages 29-31.)

coal mine expansion call into serious question the prudence of retrofitting Colorado coal plants with expensive pollution control devices.

In short, given what Xcel either knows or should know at this point in time, it would **not** be prudent to spend large amounts of money on pollution control for its Colorado coal plants unless it can provide credible evidence, based on publicly-available information, that indicates the retrofitted coal plants will have a supply of reasonably-priced coal to match the expected lives of the coal plants after being retrofitted with additional pollution control such as SCR. To summarize:

**XCEL SHOULD EXPECT PRUDENCE CHALLENGES  
OF ANY SIGNIFICANT<sup>2</sup> EXPENDITURES ON  
POLLUTION CONTROL AT COLORADO COAL PLANTS  
UNTIL THEY HAVE COMPLETED A CREDIBLE STUDY OF FUTURE COAL  
SUPPLY AND COST.  
GIVEN WHAT XCEL KNOWS (OR SHOULD KNOW) AT THIS POINT ABOUT  
COAL COSTS AND SUPPLY, POLLUTION CONTROL EXPENDITURES  
COULD EASILY BECOME STRANDED ASSETS.  
XCEL SHOULD NOT EXPECT RATEPAYERS TO  
PAY FOR THESE IMPRUDENT EXPENDITURES.**

The information in the Hearing Record documenting the serious coal supply constraints that have already been experienced and which will likely be experienced in the

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<sup>2</sup> “Significant” expenditures on pollution control would be in excess of say \$10 million. The proposed SNCR on Cherokee 4 should cost less than \$10 million and should not have a significant impact on customer rates. Even if an expenditure of \$10 million were collected in one year it would have less than a 1% impact on rates as Xcel’s revenues in Colorado exceed \$2 billion so \$10 million is less than 0.5% of annual revenues. In practice capital expenditures are amortized over the life of the investment, so the impact of less than \$10 million on rates should be extremely small.

coming decades, along with the data on rising coal costs is summarized in this Statement of Position. First, the Commission is provided with a summary of recommendations with respect to the treatment of the various coal plants, the replacement portfolio chosen as well as other matters that the Commission should consider and a summary of key recommendations related to the approvals requested by Xcel. A detailed list of recommendations on the approvals sought by Xcel in this docket is near the end of the Statement.

## **II. SUMMARY**

Rather than choosing a scenario proposed to date, the Commission should craft its own scenario based on the full breadth of the testimony and that allows the Commission to best protect the present and future interests of rate payers and to achieve the goals of HB 10-1365, the “Clean Air Clean Jobs” statute.<sup>3</sup> The components of such a modified plan are described below.

Importantly, the Commission should consider the following with respect to probable future coal costs and coal supply issues:

### **A. Key Issues Related to Future Coal Costs and Coal Supply**

- The Clean Air Clean Jobs statute requires the Commission to use “reasonable projections of future coal and natural gas costs.” (C.R.S. § 40-3.2-206 (3) (b)).
- Xcel has used coal costs that escalate at less than 2% per year even though Xcel’s average coal costs in Colorado have been increasing at over 10% per year since 2005.
- An analysis of the geology and status of the mines supporting Xcel’s Colorado coal plants raises serious questions about future coal costs and the reliability of coal supply.
- Using coal cost escalation rates of 5% or 10% makes a very significant impact on the relative cost of various scenarios. Rate payers pay the full cost of coal—not modeled

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<sup>3</sup> The Commission’s authority to modify Xcel’s proposed plan is found in C.R.S. § 40-3.2-205 (2).

costs. Xcel has been wrong on coal costs since 2004 and their coal cost projections are not reasonable.

- Colorado has already experienced significant coal supply constraints. The life span of the major mines that support Xcel's Colorado coal plants is typically less than 10 years and future coal costs and supply are uncertain.
- No commitment should be made to expensive pollution controls for Xcel's Colorado coal plants until a credible analysis has been done of coal costs and future supply issues using publicly available data and allowing for review by interested parties.

## **B. Summary of Positions on Coal Plants**

### **1. Arapahoe Plants—Retire Arap 3 in 2013, Fuel Switch Arap 4 in 2013**

Xcel has proposed retiring Arapahoe 3 and fuel switching Arapahoe 4 to natural gas in 2013. These are reasonable proposals and should be accepted.

### **2. Valmont Plant—Fuel Switch Immediately, Study Optimal Retirement**

The Valmont coal plant in Boulder should be fuel switched to natural gas immediately and then used for economic dispatch pending further analysis of the optimal time for retirement. Xcel has between 290 and 800 MW of excess capacity on its system for the years 2010-2013 (even considering the proposed coal plant retirements of "Clean Air Clean Jobs.) This is on top of planning for the peak hour of the year and adding a 16.3% reserve margin. This excess capacity is shown in LWG-40 attached to Ms. Glustrom's Supplemental Answer Testimony, Hearing Exhibit 216.<sup>4</sup> Xcel has acknowledged that the Valmont coal plant is not needed for transmission reliability, saying:

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<sup>4</sup> If additional capacity is needed in the years after 2013, Xcel can consider that as part of the upcoming 2011 Resource Plan. Clearly, there are many Independent Power Producers who stand ready to deliver economical clean electrical generation either from natural gas or renewable energy. See for example Xcel's analysis of the

From a transmission reliability perspective, the Valmont 5 facility can be retired so long as the Valmont 6 facility and the 90 MVAR of shunt capacitors at the Valmont site remain in service.” (Hearing Exhibit 136).<sup>5</sup>

It is not just and reasonable for rate payers to pay for hundreds of MW of excess capacity and the fuel and the operating & maintenance costs associated with this excess capacity. By fuel switching the 186 MW Valmont 5 power plant from coal to natural gas, Xcel can maintain the capacity of the plant and use it as needed for economic dispatch for the next several years while taking additional time to study the optimal retirement date between now and 2017 for the plant.<sup>6</sup>

**3. Cherokee Plant—Retire All Units Before 2017; Add SNCR to Cher 4**

**a. Cherokee 1 and 2**—Xcel has proposed retiring Cherokee Units 1 and 2 in 2011. This is a reasonable proposal and should be accepted.

**b. Cherokee 3**—Xcel has proposed retiring Cherokee Unit 3 between 2015 and 2017. This is a reasonable proposal and should be accepted. The details on timing can be worked out in a future filing made by Xcel at a date determined by the Commission.

**c. Cherokee 4**—Cherokee Unit 4 should be retired before the end of 2017. Expensive pollution control (e.g. an SCR) should not be added to Cherokee 4 due to concerns about coal cost and supply as well as the need for flexibility to accommodate increasing amounts of renewable energy in the coming decades. Due to the modest expense,

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over 15,000 MW of clean energy bids received in response to the April 2009 RFP in LWG-32 attached to hearing Exhibit 121 (e.g. Table 2, page 10).

<sup>5</sup> The statements in Hearing Exhibit 136 about the Company being short on capacity (meaning to meet the peak hour and preserve the 16.3% reserve margin) in the years 2015-2017 are superseded by the excess capacity numbers found in LWG 40 attached to Hearing Exhibit 216. In addition, there will be ample opportunity between 2010 and 2015 to assess any capacity needs and to meet them with clean resources including efficiency and renewable energy as envisioned by the “Clean Air Clean Jobs” Act. See e.g. C.R.S. § 40-3.2-206 (1) (a).

<sup>6</sup> As part of the filings in this docket, Xcel only studied the retirement of Valmont 5 in 2017. (See e.g. page 44 in Xcel’s Emissions Reduction Plan filed August 13, 2010, Hearing Exhibit 2.). Xcel did not present any modeling results that considered the possibility of retiring Valmont earlier than 2017.



Cherokee 4 should be outfitted with an SNCR<sup>7</sup> as soon as possible and no later than 2012. The details on timing for the retirement of Cherokee 4 can be worked out in a future filing made by Xcel at a date determined by the Commission.

#### **4. Pawnee Plant—No Pollution Control Until Credible Coal Cost and Supply Study Completed**

Expensive pollution control (e.g. an SCR and Lime Spray Dryer, projected to cost about \$236 million) should not be added to the Pawnee plant until a credible study has been completed that shows a reasonably-priced supply of coal will likely be available for the expected life of the plant to 2041 after addition of the SCR and Lime Spray Dryer.

#### **5. Hayden Plant—No Pollution Control Until Credible Coal Cost and Supply Study Completed**

Expensive pollution control (e.g. SCRs) should not be added to the Hayden plants until a credible study has been completed that shows a reasonably-priced supply of coal will likely be available for the expected life of the plant after addition of the SCR.

### **C. Summary of Position on the Replacement Portfolio**

Ms. Glustrom supports the addition of a 2 x 1 combined cycle natural gas plant at the Cherokee site to replace the Cherokee units but she recommends that the “third source” that Xcel is stating is needed at the Cherokee site should be determined only after a request for bids on various generating technologies. Then the technology and size of the “third source” can be optimized after a careful consideration of all appropriate options. These could include biomass gasification or other dispatchable forms of generation other than natural gas turbines.

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<sup>7</sup> An “SNCR” is a Selective Non-Catalytic Reduction control mechanism for NOx. According to the Direct Testimony of Xcel witness Greg Ford, an SNCR system for Cherokee 4 would likely achieve about a 20% reduction in NOx and cost about \$5.6 million and could be installed in less than 1 year. See Exhibit 10, page 10, lines 9-12 and page 11, lines 13 -15.

#### **D. Summary of Other Positions**

There are a number of other recommendations that arose out of the testimony and hearings in this docket, including:

- The need for a credible analysis of future coal costs and supply issues
- The need for transition planning for coal-dependent workers and communities
- The need to provide support for communities affected by increased natural gas drilling and the hazards of “hydrofracking.”<sup>8</sup>
- The need to study Power Factor issues on the customer side of the meter before asking all rate payers to pay for MVAR and voltage support on the Company’s side of the meter.<sup>9</sup>

#### **E. Recommendations on Approvals Sought by Xcel**

Ms. Glustrom’s recommendations on the approvals sought by Xcel are presented in a Table near the end of this Statement. The most important recommendations for protecting rate payers are in a text box below.

- Do not approve Scenario 5B or any other scenario that involves putting pollution control on Xcel’s coal plants until a credible study of future coal costs and supplies has been completed.
- Do not approve the “Emissions Reduction Adjustment” as Xcel has not demonstrated **actual** lag in cost recovery or failure to earn its authorized rate of return.
- Require that the third source at the Cherokee 4 site not be decided upon until an RFP has been issued and bids have been reviewed for optimal size and technology.

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<sup>8</sup> For the need to support communities that are experiencing increased natural gas drilling and hydrofracking see the letter from the San Juan Citizens Alliance sent to the PUC as part of this docket.

<sup>9</sup> For the issues related to Power Factor and MVAR (megavar) support, see the Answer Testimony of Ms. Glustrom and Exhibits LWG-16 through LWG-18 included with her Answer Testimony, Hearing Exhibit 121.

### III. STATUTES TO CONSIDER

In making its decision in this 10M-245E docket, the Commission should consider the following provisions of Colorado Statutes:

- **C.R.S. § 40-3-101** Utility rates are to be “just and reasonable.” For example, it is not “just and reasonable” to pay for SCR’s on power plants that don’t have a long-term coal supply.
- **C.R.S. § 40-3-102** The Commission is authorized to “do all things...which are necessary or convenient in the exercise of such power...” It is eminently “necessary” that the Commission require Xcel to undertake a credible study of coal costs and supply using publicly available data and providing for public review.
- **C.R.S. § 40-2-123 (1)** “The Commission shall give the fullest possible consideration to the cost-effective implementation of new clean energy and energy efficient technologies in its consideration of generation acquisitions for electric utilities...” When in doubt, the Commission should err on the side of cleaner generation in order to comply with the mandate of Colorado law.
- **C.R.S. § 40-3.2-201 et seq** Clean Air Clean Jobs establishes that:
  - The Commission is to ensure that Xcel used “reasonable projections of future coal and natural gas costs” C.R.S. § 40-3.2-206 (3) (b).
  - To “expeditiously accelerate coal plant retirements” it is “in the public interest for utilities to give primary consideration to replacing or repowering their coal generation with natural gas generation....” (C.R.S. § 40-3.2-2065 (1) (a)).

The Colorado legislature has made it clear that the PUC should give “the fullest possible consideration to clean energy and energy efficient technologies” (C.R.S. § 40-2-123 (1)) and that in order to “expeditiously accelerate coal plant retirements,” the Legislature finds that “it is in the public interest for utilities to give primary consideration to replacing or repowering their coal generation with natural gas generation....” (C.R.S. § 40-3.2-206 (1) (a)). The Legislature has repeatedly given clear direction to the PUC on the direction the Legislature would like to move—and that is toward the cleanest possible generation with reasonable rate impacts.

As detailed below, the PUC can fulfill the mandate of the “Clean Air Clean Jobs” Act and protect rate payers by minimizing future reliance on coal. Rising coal costs mean that economic and environmental considerations are becoming increasingly aligned, easing the need for the Commission to choose between a cleaner environment and reasonable rates. As we move forward, cleaner generation will also likely help protect rate payers from the rate impacts of rising coal costs and possible coal supply constraints. As Xcel demonstrated in Phase II of the 07A-447E docket, adding new renewable energy to its system is likely to reduce system costs—not increase them. See for example the modeling in Xcel’s “120 Day Report” in the 07A-447E docket found in LWG 32, attached to Hearing Exhibit 122 (see e.g. pages 65-66 showing cost savings from adding additional renewable energy).

#### **IV. COAL COST ISSUES**

##### **A. The Commission is to Use “Reasonable Projections” of Future Coal Costs**

The Clean Air Clean Jobs Act requires the Commission to use “reasonable projections” of future coal and natural gas costs (C.R.S. § 40-3.2-206 (3) (b)). As discussed below, Xcel’s actual coal costs have been increasing at a rate above 10% per year and it is not reasonable to use coal cost escalation rates that are lower than 2% per year as Xcel did in its modeling for this docket. The Commission is bound by the Clean Air Clean Jobs statute not to accept modeling that does not use reasonable fuel cost projections and should reject Xcel’s modeling based on coal cost escalation rates of under 2% per year.

##### **B. Xcel’s Models Use Coal Costs That Increase Less Than 2% Per Year**

On June 30, 2012, as part of Xcel’s “Fourth Production of Documents” in this 10M-245E Docket, Xcel filed “Supplemental Attachment J” which contained the coal and natural gas costs it intended to use in its Strategist modeling in this 10M-245E Docket. Supplemental

Attachment J shows Xcel's average coal costs going from \$1.77/MMBTU in 2010 to \$3.02 in 2046<sup>10</sup> or a compounded increase of about 1.5% per year.<sup>11</sup> Supplemental Attachment J can be seen in Exhibit LWG-4, included with Hearing Exhibit 121.

**C. Xcel's Colorado Coal Costs Have Been Increasing Over 10% Per Year Since 2005**

The record in this docket makes it clear that Xcel's coal costs in Colorado have been increasing at a rate above 10% per year on a per million British Thermal Unit ("MMBTU"<sup>12</sup>) basis since 2005.

<u>Year</u>	<u>Average Cost of Coal for Xcel's Colorado Coal Plants</u>
2005	\$0.96/MMBTU <sup>13</sup>
2009	\$1.52/MMBTU <sup>14</sup>

In 2005, Xcel paid an average of \$0.96/MMBTU. In 2009, Xcel's average cost of coal was \$1.52/MMBTU. This is a 58% increase in average coal cost in a four year period—or over a 10% increase per year. The increase cost of coal for Xcel's Colorado coal plants, broken down by coal plant can be seen in Table LWG SOP-1 below.

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<sup>10</sup> Xcel's modeled coal costs shown in Supplemental Attachment J fluctuate in apparently random fashion during the 2010-2046 time period. Xcel did not offer any explanation for this apparently random fluctuation.

<sup>11</sup> Compound interest rates can be calculated easily using an on line calculator such as the one at using the compound interest calculator at [http://www.moneychimp.com/calculator/compound\\_interest\\_calculator.htm](http://www.moneychimp.com/calculator/compound_interest_calculator.htm).

<sup>12</sup> "MMBTU" stands for Million BTU. A "BTU" is British Thermal Unit or the amount of energy needed to raise the temperature of 1 pound of water 1°F at 1 atmosphere of pressure. A BTU is about 252 "chemistry" calories. One "food" calorie is 1000 "chemistry" calories. See for example [http://www.engineeringtoolbox.com/heat-units-d\\_664.html](http://www.engineeringtoolbox.com/heat-units-d_664.html)

<sup>13</sup> Xcel's average cost of coal from 1998 to 2007 can be seen on page 2 of LWG-44 attached to the Supplemental Answer Testimony of Leslie Glustrom, submitted on November 9, 2010, Hearing Exhibit 216. Xcel's average cost of coal in Colorado in 2005, including freight, was \$0.96/MMBTU.

<sup>14</sup> The average cost of coal for Xcel's Colorado coal plants for 2007-2009 can be seen in Hearing Exhibit 133. Xcel's average cost of coal in Colorado for 2009 was \$1.52/MMBTU.

**Table LWG SOP<sup>15</sup>-1**  
**Xcel's Coal Cost Escalation for 10M-245E Coal Plants**  
**2005-2009 Average Cost Escalation**

(Using Data from Xcel found in Exhibits LWG 1-3, with Hearing Exhibit 121. <sup>16</sup>)

<b>Coal Plant</b>	<b>2005 Coal Cost (a)</b>	<b>2009 Coal Cost (b)</b>	<b>% Increase 2005-2009 (b-a)/a x 100 = I</b>	<b>Average Increase/Year 2005-2009 c/4 = (d)</b>
<b>Arapahoe</b>	\$1.01	\$1.47	45.54%	<b>11.39%</b>
<b>Cherokee</b>	\$1.06	\$1.86	75.47%	<b>18.86%</b>
<b>Hayden</b>	\$1.01	\$1.41	39.6%	<b>9.90%</b>
<b>Pawnee</b>	\$0.98	\$1.05	7.14%	<b>1.78%</b> <sup>17</sup>
<b>Valmont 5</b>	\$1.49	\$1.99	33.55%	<b>8.39%</b>

**Table LWG SOP-2**  
**Effect of Escalation Rate on Future Coal Costs**

(Coal costs are from the following sources: Supplemental Attachment J, submitted by Xcel on June 30, 2010, represents Xcel's Average Coal Cost Escalation used in the Company's Strategist Modeling. Supplemental Attachment J can be found in LWG-4 attached to Hearing Exhibit 121. 120% of Supplemental Attachment J was Xcel's "High" Coal Cost Escalation Rate as noted on page 47 in Xcel's Emission Reduction Plan submitted August 13, 2010, and Revised August 25, 2010, Hearing Exhibit 2. Coal costs escalated at 5% or 10% per year can be quickly calculated with an on line compound interest calculator, for example [http://www.moneychimp.com/calculator/compound\\_interest\\_calculator.htm](http://www.moneychimp.com/calculator/compound_interest_calculator.htm).)

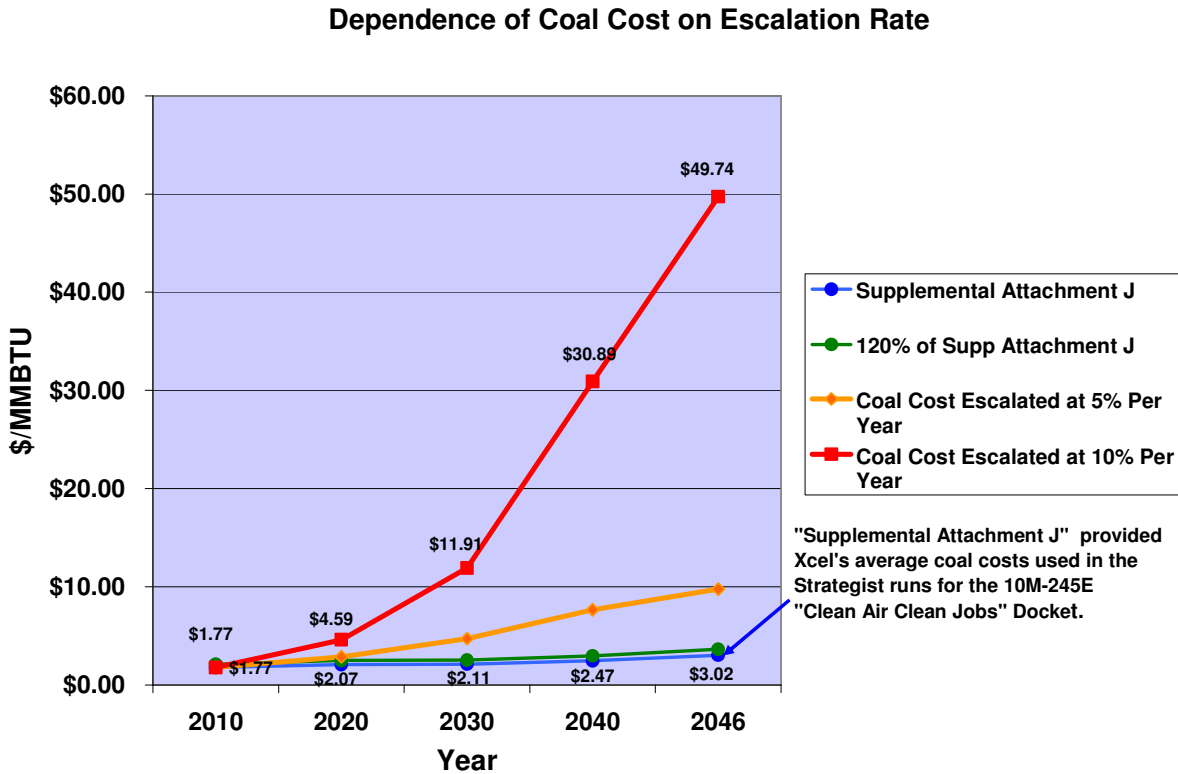
<b>Source of Coal Cost Assumption</b>	<b>2010</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2046</b>
<b>Xcel's Supplemental Attachment J</b>	\$1.77	\$2.07	\$2.11	\$2.47	\$3.02
<b>120% of Xcel's Supplemental Att J</b>	\$2.12	\$2.48	\$2.53	\$2.96	\$3.62
<b>Coal Cost Escalated 5% Per Year</b>	\$1.77	\$2.88	\$4.70	\$7.65	\$9.76
<b>Coal Cost Escalated 10% Per Year</b>	\$1.77	\$4.59	\$11.91	\$30.89	\$49.74
<b>Exhibit 244 for Cherokee 4</b>	\$2.07	\$2.21	\$2.32	Cherokee 4 Retired	Cherokee 4 Retired

<sup>15</sup> "SOP" stands for Statement of Position.

<sup>16</sup> Exhibits LWG1-3 are Xcel's Colorado coal costs as provided by Xcel. These are found as Attachments to the Answer Testimony of Leslie Glustrom submitted on September 17, 2010, Hearing Exhibit 121.

<sup>17</sup> The likelihood that costs for coal at the Pawnee coal plant will increase in future years is discussed at length in Ms. Glustrom's Answer Testimony submitted September 17, 2010, Hearing Exhibit 121 and is summarized in this Statement of Position.

**Figure LWG SOP-3**  
**Dependence of Coal Cost on Escalation Rate**  
 (Data from Table LWG SOP-2)



As can be seen from Table LWG SOP-1 and Figure LWG SOP-1 above, it can be easily seen that Xcel’s “high” coal cost projection is hardly any different than the baseline coal cost projection. Given that Xcel’s actual coal costs have been increasing at a rate above 10% per year, it is not reasonable to use coal cost escalation rates that are lower than 2% per year.<sup>18</sup> The Clean Air Clean Jobs Act requires the Commission to use “reasonable projections” of future coal and natural gas costs (C.R.S. § 40-3.2-206 (3) (b)). Xcel’s

<sup>18</sup> Supplemental Attachment J shows Xcel’s average coal costs going from \$1.77/MMBTU in 2010 to \$3.02 in 2046. This appears to be about a 1.5% per year increase using the compound interest calculator at [http://www.moneychimp.com/calculator/compound\\_interest\\_calculator.htm](http://www.moneychimp.com/calculator/compound_interest_calculator.htm).

modeling does not appear to have used reasonable coal costs and the Commission should not accept Xcel's results.

#### **D. Using Realistic Coal Cost Escalation Rates Adds Very Significant Costs to Coal Retrofitting Scenario Costs**

Using coal cost escalation rates between 5% and 15% per year would add very significant costs on to the modeled scenarios under consideration in this docket. Two examples of these increased costs are discussed below.

##### **1. Pawnee Costs Could be Increased by Several Billion**

Xcel is proposing to spend about \$236 million for an SCR and a Lime Spray Dryer for the Pawnee coal plant,<sup>19</sup> and then operating the Pawnee plant until 2041.<sup>20</sup> As discussed below, the mine that supports the Pawnee coal plant only has a remaining life of less than 10 years,<sup>21</sup> future expansions will require moving roads and clearing off significantly more overburden as well as reclaiming the existing pit which is only about one-fourth reclaimed at the present time.<sup>22</sup> All of this is likely to drive the cost of coal for the Pawnee coal plant up in the coming decades.

In 2009, the cost of coal for the 500 MW Pawnee coal plant in Brush, Colorado (northeast of Denver) was about \$23.5 million.<sup>23</sup> Using \$23.5 million as a starting point and coal cost escalation rates of 5% per year and 10% per year could add large amounts to the cost

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<sup>19</sup> For Xcel's recommendation to spend \$236 million for an SCR and a Lime Spray Dryer (to control SO<sub>x</sub>) at Pawnee, see the Answer Testimony of Xcel witness Greg Ford, Hearing Exhibit 10, page 14, line 5 through page 15, line 12.

<sup>20</sup> For Xcel's plans to operate the Pawnee coal plant until 2041 after adding an SCR and Lime Spray Dryer see LWG 5 attached to Ms. Glustrom's Answer Testimony submitted September 17, 2010, Hearing Exhibit 121.

<sup>21</sup> For the fact that the Eagle Butte mine has a remaining life span of less than 10 years, see page ES-9 in LWG-8 attached to Ms. Glustrom's Answer Testimony submitted September 17, 2010, Hearing Exhibit 121.

<sup>22</sup> To understand the surface constraints facing the Eagle Butte mine expansion see LWG-8 attached to Hearing Exhibit 121. For the fact that the Eagle Butte mine is only about ¼ reclaimed, see page 38 in LWG-11 attached to Hearing Exhibit 121.

<sup>23</sup> For the 2009 cost of coal for the Pawnee coal plant, see Exhibit LWG-3 attached to Ms. Glustrom's Answer Testimony submitted September 17, 2010, Hearing Exhibit 121.



of operating the Pawnee coal plant until 2041 as shown in Ms. Glustrom’s Answer Testimony (Hearing Exhibit 121, pages 10-11) and summarized in Table LWG SOP-4 below.

**Table LWG SOP-4**  
**Additional Coal Costs to Operate the Pawnee Coal Plant to 2041**  
**at 5% and 10% Annual Escalation Rates**

(All calculations shown in the Answer Testimony of Ms. Glustrom, Hearing Exhibit 121, pages 10-11.)

<b>Annual Coal Cost Escalation Rate</b>	<b>Additional Cost of Coal for the Pawnee Plant to Operate Until 2041</b>
5% Per Year	\$761 Million
10% Per Year	\$3.9 Billion

If Xcel proceeds with a \$236 million investment in pollution control for the Pawnee coal plant, then rate payers will either be locked into paying the cost of coal for the next three decades, no matter what it becomes, or the investment in pollution control at the Pawnee coal plant could become a stranded asset if the cost or availability of coal becomes uneconomical in the coming decades. As discussed further in the coal supply section below, there is good reason to believe that coal costs will be rising substantially in the coming years and Xcel should not proceed with the investment in pollution control for the Pawnee coal plant until it has completed a credible analysis of future coal costs and coal supply issues using publicly available information.

## 2. Scenario 5B (SCR on Cherokee) Could Add Millions or Billions in Coal Costs

Under Scenario 5B, Xcel would add an SCR to Cherokee Unit 4 and then operate the plant until about 2031 or 2032.<sup>24</sup> As shown in Table LWG SOP-1 above, the cost of coal for the Cherokee coal plant has been increasing at more than 18 % per year since 2005. As shown in Table LWG SOP-5 below, using coal costs escalation rates of between 5% and 15% per year, the increased costs of coal could add hundreds of millions or even billions to the cost of the 5B scenario.

### Table LWG SOP-5 Additional Coal Costs to Operate the Cherokee 4 Coal Plant to 2031 at 5%, 10% and 15% Annual Escalation Rates

(All calculations shown in the Supplemental Answer Testimony of Ms. Glustrom, Hearing Exhibit 216, pages 15-17. Results in the Supplemental Answer Testimony modified for the 2010-2030 period instead of the 2010-2031 period.)

<b>Coal Cost Escalation Rate</b>	<b>Increased Coal Costs for Cherokee 4 Under Scenario 5B 2010-2020</b>	<b>Increased Coal Costs for Cherokee 4 Under Scenario 5B 2010-2030</b>
<b>5% Per Year</b>	\$83 Million	\$323 Million
<b>10% Per Year</b>	\$254 Million	\$1,353 Million (\$1.35 Billion)
<b>15% Per Year</b>	\$492 Million	\$3,426 Million (\$3.4 Billion)

Once again, it is obvious that using coal cost escalation rates that mirror existing cost escalation rates will have a large impact on the costs felt by rate payers for scenarios that involve continued reliance on coal plants.

<sup>24</sup> For a description of Scenario 5B see page 44 in Hearing Exhibit 2 as well as the Supplemental Response testimony of Xcel witnesses Hyde and Ford submitted on October 25, 2010, Hearing Exhibits 155 and 158.

**E. Xcel’s Modeling Results Show Only Relatively Small Differences Between Scenarios.**

As discussed further below, Xcel’s modeling results only show relatively small differences between the various scenarios under consideration. Using realistic coal cost escalation rates would likely change the outcome of Xcel’s modeled Present Value Revenue Requirements (“PVRR”) <sup>25</sup> and the associated rate impacts of the modeled scenarios. As shown below, the additional costs represented by realistic coal cost escalation rates is typically greater than the difference between scenarios in Xcel’s Strategist runs.

Table LWG SOP-6 below shows the differences between modeled scenarios using the \$20/ton CO2 assumption and Table LWG SOP-7 shows the same differences using the \$0/ton CO2 assumption. <sup>26</sup>

**Table LWG SOP-6**  
**PVRR Differences Among Scenarios Using \$20/ton CO2**

(All PVRR Deltas are millions (M) of dollars compared to the Benchmark 1 Scenario and are taken from Updated Revised Exhibit JFH-3 (11/17/2010) page 1 of 2. The “Largest Delta” is the difference between the lowest cost and the highest cost scenarios for that decade relative to Benchmark 1.)

Scenario <sup>27</sup>	3B	5B	6E FS	6.1E FS	6.2J	IPP 2A	IPP 2B	7E	Largest Delta
2010-2020	-\$248M	-\$279M	-\$193M	-\$249M	-\$195M	-\$224M	-\$179M	-\$94M	<b>\$185 M<sup>28</sup></b>
2020-2030	-\$636M	-\$660M	-\$628M	-\$579M	-\$635M	-\$505M	-\$596M	-\$529M	<b>\$155 M<sup>29</sup></b>
2010-2046	-\$766M	-\$778M	-\$890M	-\$824M	-\$897M	-\$543M	-\$881M	-\$791M	<b>\$354 M<sup>30</sup></b>

<sup>25</sup> The PVRR or Present Value Revenue Requirement is the amount of money that the Strategist model calculated would be needed in today’s dollars from 2010-2046 for the given scenario.

<sup>26</sup> Xcel’s most current results for the modeling of the scenarios being considered at the end of hearings in this 10M-245E Docket was presented in “Updated Revised Exhibit No. JFH-3 (11/17/2010)” submitted by Xcel as an update to the Updated Supplemental Rebuttal Testimony of James F. Hill on November 17, 2010. (Hearing Exhibit 189).

<sup>27</sup> The various scenarios are described in Xcel’s Emission Reduction Plan (Hearing Exhibit 2) and in the Supplemental Answer Testimony submitted by Xcel on October 25, 2010.

<sup>28</sup> The difference between -\$279 million for Scenario 5B and -\$94 million for Scenario 7E is \$185 million.

<sup>29</sup> The difference between -\$660 million for Scenario 5B and -\$505 million for Scenario IPP2A is \$155 million.

<sup>30</sup> The difference between -\$897 million for Scenario 6.2J and -\$543 million for Scenario 3B is \$354 million.

## Table LWG SOP-7

### **PVRR Differences Among Scenarios Using \$0/ton CO2**

(All PVRR Deltas are millions (M) of dollars compared to the Benchmark 1 Scenario and are taken from Updated Revised Exhibit JFH-3 (11/17/2010) page 2 of 2. The “Largest Delta” is the difference between the lowest cost and the highest cost scenarios for that decade relative to Benchmark 1.)

Scenario	3B	5B	6E FS	6.1E FS	6.2 J	IPP 2A	IPP 2B	7E	<b>Largest Delta</b>
2010-2020	-\$49 M	-\$74 M	+\$79 M	+\$3 M	+\$71 M	+\$37 M	+\$82 M	+\$264 M	<b>\$338 M<sup>31</sup></b>
2020-2030	-\$239 M	-\$149 M	+\$173 M	+\$193 M	+\$160 M	+\$273 M	+\$199 M	+\$359 M	<b>\$598 M<sup>32</sup></b>
2010-2046	-\$345 M	-\$243 M	-\$51 M	- \$15 M	-\$65 M	+\$277 M	-\$21 M	+\$135 M	<b>\$622 M<sup>33</sup></b>

One important thing to recognize about the differences between the PVRRs for the scenarios is that while \$622 million (e.g. the “Largest Delta” for the 2010-2046 period at \$0/ton CO2) seems like a lot of money to any household or small business, in the world of a utility it is not all that large. For example, Xcel’s annual revenues in Colorado exceed \$2,000,000,000 (or \$2 billion).<sup>34</sup> Over the 35 year period being modeled by Xcel in this docket and under its present business model, Xcel’s annual revenues would likely greatly exceed \$70 billion. In that case, \$622 million is less than 1% of the 35 year revenue stream for Xcel in Colorado. In the case of Xcel’s modeled scenarios, the total PVRR under the \$0/ton CO2 assumption for the 2010-2046 period is \$66-\$67 billion.<sup>35</sup> \$622 million is also less than 1% of that amount. Indeed, all of the “Largest Deltas” in Tables LWG SOP-6 and 7 are less than 2% of the full PVRR for the corresponding period.<sup>36</sup> Most (but not all) of the “deltas” between the scenarios shown in Tables LWG SOP-6 and LWG SOP-7 are less than 1% of the total PVRR for the scenarios.

<sup>31</sup> The difference between -\$74 million for Scenario 5B and +\$264 million for Scenario 7E is \$338 million.

<sup>32</sup> The difference between -\$239 million for Scenario 3B and +\$359 million for Scenario 7E is \$598 million.

<sup>33</sup> The difference between -\$345 million for Scenario 3B and +\$277 million for Scenario IPP 2A is \$622 million.

<sup>34</sup> For Xcel’s electric revenues in Colorado, see for example pages 11 or 24 in PSCo’s 10-K for 2009 filed on March 1, 2010 available from [www.xcelenergy.com](http://www.xcelenergy.com).

<sup>35</sup> For the full PVRR of the \$0/ton CO2 scenarios, see Updated Revised Exhibit JFH-3 (11/17/2010).

<sup>36</sup> For the full PVRR of the scenarios, see Updated Revised Exhibit JFH-3 (11/17/2010), Hearing Exhibit 189.

It is also important to recognize that even the “Largest Deltas” in Tables LWG SOP-6 and LWG SOP-7 are generally smaller than the increased costs that will be seen by rate payers if coal costs increase at rates between 5% and 15% per year as they have since 2005 and as summarized in Tables LWG SOP-4 and LWG SOP-5 above.

It is often stated that, “All models are wrong. Some models are informative.” Xcel’s models can give some sense of how various outcomes can be affected by key assumptions—provided a reasonable set of sensitivities for key variables are used. Unfortunately, Xcel decided to run all the models in this docket without a reasonable set of sensitivities for one of the essential variables—coal costs.<sup>37</sup>

#### **F. Impact of Likely Coal Cost Increases on the 5B v 6.2 J Comparison**

While Ms. Glustrom urges the Commission to craft its own Clean Air Clean Jobs Plan (and not to accept either Scenario 5B or 6.2 J), much of the dispute during the extended hearings on November 18-20, 2010 in this docket centered around the choice between Scenario 5B (SCR on Cherokee and operate until 2031-2032) or Scenario 6.2 J (retire Cherokee 4 by the end of 2017). Xcel has “reluctantly” recommended Scenario 5B because Xcel’s models indicated it is less expensive than other scenarios including Scenario 6.2J.<sup>38</sup>

Importantly, as shown in Table LWG SOP-8 below and depicted in Figure LWG SOP-9, the likely increased coal costs at Cherokee 4 under Scenario 5B using coal cost escalation rates of 5% to 10% per year are much larger than the PVRR differences between Scenario 5B and 6.2 J. In addition to the many reasons to move away from continued reliance on coal, the

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<sup>37</sup> Xcel failed to run reasonable coal cost sensitivities despite two separate Commission decisions directing it to do so. By Decision C10-0808 and Decision C10-0853, the Commission stated that Xcel should run a “sufficiently wide swath” of scenarios to illustrate the impacts of a reasonable range of projected fuel costs that cover the parties position on the assumptions used. When Xcel failed to run a wide swath of fuel cost projections, the Commission declined (in Decision C10-0963) to enforce their earlier decisions.

<sup>38</sup> For Xcel’s discussion of the choice between Scenario 5B and 6.2 J, see for example the Supplemental Direct Testimony of Xcel witness Karen Hyde submitted on October 25, 2010, pages 8-9, Hearing Exhibit 155.

likely rate payer cost impacts of paying for increasingly expensive coal under Scenario 5B are yet another reason.

**Table LWG SOP-8**  
**Differences Between Scenarios 5B and 62.J**  
**Under \$0/Ton and \$20/Ton CO<sub>2</sub>**  
**Compared to Coal Cost Increases for the Same Period**

(5B v 6.2J Deltas from Tables LWG SOP-6 and LWG SOP-7.

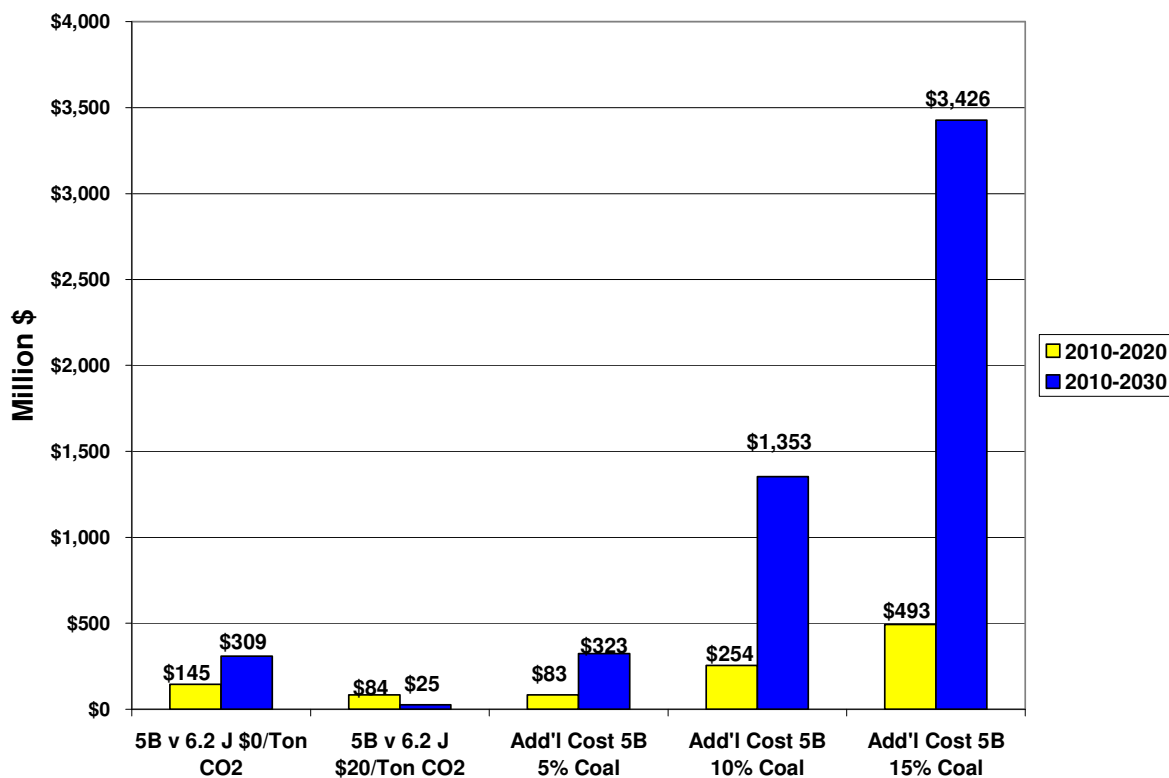
Increased cost of 5B with increased coal cost escalation rates from Table LWG SOP-5. )

Time Period	5B v 62.J \$0/Ton CO <sub>2</sub>	5B v 62.J \$20/Ton CO <sub>2</sub>	Increased Cost of 5B at a Coal Cost Escalation of 5% Per Year	Increased Cost of 5B at a Coal Cost Escalation of 10% Per Year	Increased Cost of 5B at a Coal Cost Escalation of 15% Per Year
2010- 2020	\$145 million	\$84 million	\$83 million	\$254 million	\$493 million
2010- 2030	\$309 million	\$25 million	\$323 million	\$1,353 million (\$1.35 billion)	\$3,426 million (\$3.4 billion)

Table LWG SOP-8 shows clearly that coal cost escalations at 5% or more per year are likely to make 5B more expensive than Scenario 6.2 J. In addition, of course there are many health and environmental reasons to reduce future reliance on coal. Also, future use of natural gas can likely be avoided with increased investments in energy efficiency and renewable energy—but increased coal costs can not be easily avoided due to the difficulties of cycling coal plants to follow load. These factors also support the Commission choosing to err on the side of increased reliance on coal plant retirements rather than retrofitting the plants.

The impact of increased coal cost escalations on the differences between Scenario 5B and 6.2 J are shown visually in Figure LWG SOP-9 below.

**Figure LWG SOP-9**  
**Scenario 5B v 6.2 J Impact of Increased Coal Cost Escalators**  
 (Data from Tables LWG SOP-8 )



As shown in Figure LWG SOP-9 above and in Table LWG SOP-10 below, Scenario 5B is only less costly than Scenario 6.2 J when there are no carbon cost and coal costs are escalating at less than 5% per year. This is a highly unlikely possibility given that coal cost for the Cherokee plant has been escalating at over 18% per year since 2005 and likely future constraints on Colorado coal supplies as discussed below. Importantly, Cherokee 4 is dependent on more expensive Colorado coal and it is not clear that it could successfully burn the less expensive Wyoming Powder River Basin coal.<sup>39</sup>

<sup>39</sup> PRB coal typically has a lower heat content and higher moisture that is not easily accommodated by boilers that are designed to use the higher quality Colorado coal.

The likelihood that Scenario 5B will quickly become more costly than Scenario 6.2 J under real world (as opposed to modeling) conditions is shown graphically in Table LWG SOP-10 below.

**Table LWG SOP-10**  
**5B v 6.2 J at Various CO2 and Coal Cost Assumptions**

(The scenario in each cell is the lower cost scenario at that set of assumptions. Tables LWG SOP-6 and LWG SOP-7 provide the differences between the 5B and 6.2 J Scenarios under the two CO2 assumptions. Coal cost deltas shown in Tables LWG SOP-5 were added to each Scenario as appropriate to create the table below.)

<b>Coal Cost Assumption</b>	<b>\$0/Ton CO2</b>	<b>\$20/Ton CO2</b>
<b>Xcel's Modeled Coal Cost</b>	<b>5B/5B*</b>	<b>5B/5B</b>
<b>Escalate 5 %/year</b>	<b>5B/ 6.2 J</b>	<b>6.2 J= 5B/6.2 J</b>
<b>Escalate 10%/Year</b>	<b>6.2 J/ 6.2 J</b>	<b>6.2 J/6.2 J</b>
<b>Escalate 15%/Year</b>	<b>6.2 J/6.2 J</b>	<b>6.2 J/ 6.2 J</b>
<b>Escalate &gt;15%/Year</b>	<b>6.2 J/6.2 J</b>	<b>6.2 J/6.2 J</b>

\*The two entries in each cell refer to the first two time periods shown in Xcel's modeling results-- 2010-2020 and 2010-2030. Since Cherokee 4 would be retired in 2031 or 2032 under Scenario 5B, only the two time periods up to 2030 are shown.

Table LWG SOP-10 above makes it clear that rate payers will likely be best protected by avoiding future reliance on coal as there is good reason to believe that coal costs will be escalating at a rate greater than 5% per year and scenarios that reduce reliance on coal such as Scenario 6.2 J are less expensive (regardless of whether there is a CO2 cost) when coal costs escalate above 5% per year. In addition, as discussed further below, reducing future reliance on coal has significant environmental and health benefits and helps protect from environmental litigation risk. In addition, natural gas provides flexibility to add more renewable energy and to avoid future natural gas costs as the renewable energy replaces



electricity produced by the natural gas turbines. Xcel chose not to model these future potential savings from displacing natural gas generation with efficiency and renewable energy but these cost savings are very likely to materialize in the coming decades. In contrast, it is much more difficult to offset increased coal costs with efficiency or renewable energy due to the difficulties of cycling coal plants.<sup>40</sup>

In addition to the economic, health and environmental benefits that accompany reduced reliance on coal generation, the PUC should follow the direction established by the Colorado legislature directing the PUC to “give the fullest possible consideration to clean energy and energy efficient technologies” (C.R.S. § 40-2-123 (1)). In addition, the Legislature has stated that it is interested in “expeditiously accelerating coal plant retirements” and that “it is in the public interest for utilities to give primary consideration to replacing or repowering their coal generation with natural gas generation....” (C.R.S. § 40-3.2-2065 (1) (a)).

Given that coal costs are likely to increase at a rate greater than 5% per year, modernizing Xcel’s system with natural gas plants that complement renewable energy generation more easily follows the direction established by the laws of Colorado and will also likely protect rate payers from unavoidable rate increases (or paying for stranded assets) by reducing future reliance on coal generation.

**G. Xcel Was Flat Wrong on Coal Costs in 2004 and 2007; Rate Payers Pay for Xcel’s Erroneous Projections**

In 2004, Xcel predicted that coal costs beyond 2008 would escalate at 1.5% per year. (See Hearing Exhibit 131.) In 2008, Xcel projected that coal costs would escalate at a rate less than 2.33%. (See Hearing Exhibit 132.). In reality, Xcel’s coal costs have been escalating at a

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<sup>40</sup> For an example of a study of the costs of cycling coal plants to match variable resources such as wind and solar, see LWG-33 attached to Ms. Glustrom’s Cross Answer Testimony submitted October 9, 2010, Hearing Exhibit 122.

rate greater than 10% per year since 2005 as discussed above. Xcel pays no penalty for having so clearly failed to properly project future coal costs as all fuel costs are presently passed straight through to rate payers under the Electric Commodity Adjustment (“ECA”)—regardless of how wrong Xcel was. Under such a system, Xcel has no incentive what so ever to get their fuel cost projections correct.

### **H. Xcel’s Coal Witness Has Not Presented a Credible Analysis of Coal Costs or Supply**

Like the weatherman who insists it is sunny outside despite the rain drops on the windows and all the wet umbrellas and boots being deposited by the door, Xcel’s coal witness, Mr. Francis Roberts, seems wedded to a 1990’s view of coal costs and coal supply—never mind what the data actually say. Examples of the problems with Mr. Roberts’ testimony and projections include:

#### **1. Mr. Roberts’ Projections for Future Coal Costs at Cherokee Are Highly Questionable**

Hearing Exhibit 244 shows (on the back side) that the coal cost projections for the Cherokee 4 coal plant assume that coal costs will increase less than 1% per year from 2010 to 2031. This is highly unlikely given that coal costs at the Cherokee plant have been increasing faster than 18% per year since 2005 and that the primary mine supplying the Cherokee coal plants (The Twentymile/ Foidel Creek mine in Routt County) is expected to close in the next several years. Other Colorado mines supplying the Cherokee coal plant typically provide higher priced coal than the Twentymile mine. (See Hearing Exhibits 165 and 166.)

#### **2. Mr. Roberts’ Claims About New Mines to Replace Declining Production in Colorado are Not Supported by the Data**

Mr. Roberts implies in his testimony that new mines will open to replace depleted coal mines.<sup>41</sup> The reality is that Colorado coal production has declined over 11 million tons since 2004 and new mines have not opened to replace that production.<sup>42</sup>

### **3. Mr. Roberts Erroneously Claimed That There Were Over 100 Billion Tons of Coal Reserves in the Powder River Basin.**

Mr. Roberts erroneously claimed that there were over “100 billion short tons of recoverable reserves” in the Powder River Basin, but on cross examination he acknowledged that this number contained “both economic, subeconomic and marginally economic coal.”<sup>43</sup> As the United States Geologic Survey has repeatedly pointed out, the distinction between reserves and resources<sup>44</sup> is critical and often less than 20% of “resources” are economically recoverable and rightly called “reserves.”<sup>45</sup>

Mr. Roberts’ conclusions are most definitely **not** supported by large amounts of evidence that is available publicly. It is past time that the Colorado PUC required that Xcel rely on the large amounts of publicly available data (including its own coal contract prices)<sup>46</sup> to produce a credible analysis of future coal costs and supplies and to provide for public review of Xcel’s analysis.

#### **I. No Other Party Has Submitted Credible Coal Cost or Supply Evidence**

No other party provided an analysis of coal supplies for the record in this docket—not Peabody, not PUC Staff, not the Office of Consumer Counsel or any other party. Before deciding to invest large amounts of money in Xcel’s Colorado coal plants, the Commission

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<sup>41</sup> See the Rebuttal Testimony of Mr. Roberts, Hearing Exhibit 29, page 9, lines 4-7.

<sup>42</sup> For the decline in Colorado coal production since 2004 see Exhibits LWG-13 and LWG-15 (Table 2, page 9) with Hearing Exhibit 121 and LWG-37 with Hearing Exhibit 216 plus Hearing Exhibits 167 and 168.

<sup>43</sup> See the Hearing Transcript, Tuesday October 26, 2010, page 359, lines 2-14.

<sup>44</sup> A mnemonic device to remember the difference between “resources” and “reserves” is to note that “resources” has an “o” in it and resources refers to coal that is ot there but is not necessarily economically recoverable. “Reserves” has a “v” in it and refers to coal that has value economically.

<sup>45</sup> For the USGS discussion of “resources” versus “reserves” see LWG-24 attached to Hearing Exhibit 122.

<sup>46</sup> For a list of Xcel’s recent coal contracts and prices, see Hearing Exhibits 165 and 166.

should carefully review the information on coal supply that is contained in the Hearing Record for this docket and summarized below and require that Xcel undertake a credible study of future coal costs and supply using publicly available information.

**J. Coal Does Not “Fall Out of the Sky” Into Coal Trains**

Clearly, coal will not just continue to “fall out of the sky” into the mile-long coal trains that support Colorado coal plants under consideration in this docket. Indeed, Colorado has already experienced significant coal supply constraints,<sup>47</sup> and these coal supply constraints are likely to become increasingly serious in the coming decades. The Commission should ensure that rate payers are not left to pay for increasingly expensive coal supplies to support Xcel’s coal plants or are left to pay for pollution control that was imprudently invested in and which becomes a stranded asset long before the investment is depreciated.

**V. COAL SUPPLY ISSUES**

The issue of coal supply constraints was thoroughly briefed in Ms. Glustrom’s Answer, Cross Answer and Supplemental Answer testimonies and the accompanying exhibits (Hearing Exhibits 121, 122 and 216). Given the page limits on Statements of Position, Ms. Glustrom will summarize the information on coal supply constraints for the Hayden, Cherokee and Pawnee coal plants in bullet points below.

**A. Cherokee and Hayden Coal Supply Constraint Issues**

- Both Cherokee and Hayden depend on Colorado coal mines including the Twentymile (“Foidel Creek”), West Elk, Elk and Bowie coal mines which are playing out and likely have less than 10 years of life. (See Hearing Exhibit 139 and LWG-12 with Hearing Exhibit 121.)

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<sup>47</sup> For descriptions of the coal supply constraints already experienced by Colorado, see Hearing Exhibit 134 as well as LWG-14 with Hearing Exhibit 121 and LWG-44 with Hearing Exhibit 38 with Hearing Exhibit 216.

- The Twentymile (“Foidel Creek”) mine, Colorado’s largest coal mine, is likely to be closed by Peabody in the next several years. (See the cross examination of Xcel’s coal witness Mr.Roberts by Ms.Glustrom on Tuesday October 26, 2010.)
- Colorado coal production peaked in 2004 (at 39.8 million tons) and has been dropping steadily ever since. 2009 production of about 28.3 million tons was about 11% below 2008 levels and as of June 2010, 2010 production was about 11% below 2009 levels. (See Exhibits LWG-13 and LWG-15 (Table 2, page 9) with Hearing Exhibit 121 and LWG-37 with Hearing Exhibit 216 plus Hearing Exhibits 167 and 168.) Colorado has lost over 11 million tons of coal production since 2004 or approximately three times the 3-4 million ton loss in coal production that could result from the implementation of the “Clean Air Clean Jobs” Act.<sup>48</sup>
- In 2008 and 2009, four Colorado coal mines including the Twentymile, West Elk and Bowie mines that serve the Cherokee and Hayden coal plants declared *force majeure* events disrupting coal deliveries to the Cherokee, Hayden and Valmont coal plants. (See Hearing Exhibit 134 and LWG-14 with Hearing Exhibit 121.)
- Publicly declared reserves at most Colorado coal mines indicate that unless expansions are approved and financed, many Colorado coal mines will likely close in the next 10 years and Colorado coal production will continue to decline. (See LWG-12 with Hearing Exhibit 121.)

Given the already serious constraints on Colorado coal supply, it would not be prudent to spend significant amounts of money adding pollution controls to the Cherokee or Hayden plants until a credible study of future coal costs and supply using publicly available information is completed and subjected to public review to ensure a reasonably

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<sup>48</sup> Coal production that would likely be lost as a result of the Clean Air Clean Jobs Act is likely between 3 and 4 million tons according to the testimony of Xcel witnesses Roberts. (Hearing Exhibit 29, page 6, lines 11-16).

priced supply of coal for the life span of Hayden and Cherokee after the addition of pollution controls.

### **B. Pawnee Coal Supply Constraint Issues**

- The 500 MW Pawnee coal plant in Brush is supplied by the Eagle Butte coal mine north of Gillette in the Powder River Basin of northeast Wyoming. (See Hearing Exhibit 139.)
- The record contains abundant information detailing the reduced production at the Eagle Butte mine, the short life span of the mine, the increasing production costs, the large losses from the Eagle Butte and Belle Ayr (which supports the “Comanche” plants in Pueblo) mines in 2009 by the mines’ owner (Alpha Natural Resources), the serious constraints facing expansion of the Eagle Butte mine, the large amounts of reclamation needed at the existing pit and the increasing overburden in the expansion tracts for the mine. (See Hearing Exhibits 121, 122 and 216 with attached Exhibits LWG-6,7,8,9, 10 and 11.)
- Xcel has already experienced coal supply constraints resulting from railroad disruptions out of the Powder River Basin (See Hearing Exhibit 134 and LWG-27 and 38 with Hearing Exhibits 122 and 216, respectively.)
- All the major coal mines in Wyoming are facing significant geologic, economic, legal and transportation constraints to future expansions and most of the major mines have less than a 10-year life span. (See for example LWG-6 with Hearing Exhibit 121 and LWG-34 with Hearing Exhibit 122.)

Given the likelihood of future constraints on coal supply and increasing coal costs for Powder River Basin coal, it would not be prudent to spend significant amounts of money

adding pollution controls to the Pawnee plant<sup>49</sup> until a credible study of future coal costs and supply using publicly available information is completed and subjected to public review to ensure a reasonably priced supply of coal for the life span of the Pawnee plant after the addition of pollution controls.

## VI. APPROVALS SOUGHT BY XCEL

In a list submitted on Tuesday November 22, 2010, Xcel provided a list of approvals it was seeking in this docket. Summarized in table format below are Ms. Glustrom's positions on these approvals. Many of the economic and cost recovery issues are complex and Ms. Glustrom will wait until she has read the Statements of Position of other parties before taking a final position on many of these issues.

### Response to List of Approvals Sought Submitted by Xcel November 22, 2010 Docket 10M-245E

Number of Approval	Short Description of Approval Sought	Position of Ms. Glustrom	Comments
1	Approve Scenario 5B	No	Don't approve pollution controls for coal plants until there has been a thorough and credible review of long term coal supplies and costs.
2	Findings that actions are needed and in the public interest	No	Don't approve pollution controls for coal plants until there has been a thorough and credible review of long term coal supplies and costs.
3	Flexibility to install SCR at Cherokee 4 until the end of 2017	No	Don't approve pollution controls for coal plants until there has been a thorough and credible review of long term coal supplies and costs.
4	Approval of fuel switching at Arapahoe 4	Yes	This will provide support to Xcel's transmission system in the Denver area.
5	Approval of the Anadarko Gas Contract	Yes	This support is conditioned on reading other Statements of Position.

<sup>49</sup> Xcel witness Greg Ford estimated that to add an SCR and a Lime Spray Dryer to the Pawnee coal plant in Brush would cost approximately \$236 million. See the Direct Testimony of Mr. Ford, Hearing Exhibit 10, page 15, line 8.

<b>6</b>	Replacement gas costs recoverable given prudent contract management	No	Ms. Glustrom is concerned about the breadth of this provision and would like to see it more narrowly defined.
<b>7</b>	Gas pipeline for 2 x 1 at Cherokee will go into gas rate base and charged to electric customers	Conditional Support	Support conditioned on reading other Statements of Position
<b>7a</b>	Other gas use at Cherokee will also need gas infrastructure included in gas rate base and charged to electric customers	Conditional Support	Support conditioned on reading other Statements of Position
<b>8</b>	Require CPCN for 2 x 1 at Cherokee; issue findings of need in this docket	Yes	Given the present transmission system, providing generation capacity at the Cherokee site is important for transmission stability.
<b>8a</b>	Finding of need for either a 1 x 1 or gas peaker at Cherokee	Conditional	Require that the “third source” at Cherokee only be selected after issuance of an RFP and optimization for appropriate size and technology.
<b>9</b>	Finding that no CPCN needed for emissions controls at Pawnee, Hayden and Cherokee 4	<b>Strongly oppose</b>	Don’t approve pollution controls for coal plants until there has been a thorough and credible review of long term coal supplies and costs.
<b>10</b>	Finding that no CPCN needed to retire units ahead of their useful lives	Uncertain	Ms. Glustrom will reserve judgment on this issue until after reading other Statements of Position.
<b>10a</b>	Approval of the early retirement of all units affected by plan scenarios	Yes	Early retirement of coal units was directed by the Clean Air Clean Jobs Act.
<b>11</b> (All Parts)	Approval of the Emissions Reduction Adjustment (“ERA”) or Alternatives	Oppose ERA; Will Review Alternatives	Ms. Glustrom will review the Statements of Position of other parties before making a final decision on the alternatives to the ERA.
<b>12</b>	Finding that plan satisfies “early conversion or closure” (e.g. by January 1, 2015) of C.R.S. § 40-3.2-207 (4)	Early closure-yes; lag in recovery demonstrated-no.	Ms. Glustrom does not believe Xcel has demonstrated an <b>actual</b> lag in recovery or an <b>actual</b> earning of less than the authorized return on equity.
<b>13</b>	Finding that lag in recovery is leading to earning less than its authorized return on equity...” (C.R.S. § 40-3.2-207 (4))	No	Ms. Glustrom does not believe Xcel has demonstrated an <b>actual</b> lag in recovery or an <b>actual</b> earning of less than the authorized return on equity.
<b>14</b>	Use jurisdictional allocator as it changes over time to	Conditional support	Conditional support is subject to change after reading other Statements



	seek recovery from wholesale customers		of Position
<b>15</b>	For IPP Portfolios		
<b>15a</b>	Approve a combustion turbine (“CT”) at Cherokee	No	“Third” source at Cherokee should be subject to an RFP with size and technology determined after obtaining bids; CT may not be best long-term technology choice (e.g. consider biomass or other dispatchable alternatives.)
<b>15b</b>	“Third” source at Cherokee site subject to competitive acquisition	Yes	“Third” source at Cherokee should be subject to an RFP with size and technology determined after obtaining bids; CT may not be best long-term technology choice (e.g. consider biomass or other dispatchable alternatives.)
<b>16</b>	Provisions for selection of IPP bid	Uncertain	Ms. Glustrom will read the Statements of other parties before determining her position on this approval.

## VII. CONCLUSION

In summary, Ms. Glustrom offers the following conclusions:

- Coal costs are increasing at about 10% per year; Xcel’s models run at coal cost escalations of less than 2% per year should not be accepted as “the truth.”
- Scenario 5B (and any other scenario that calls for extending the life of Xcel’s Colorado coal plants) is likely to cost significantly more than Xcel’s models have predicted due to future increases in coal costs above those modeled by Xcel.
- It would be imprudent to add pollution controls to Xcel’s Colorado coal plants until a credible long term study has been done of future coal costs and supply issues and the study has been reviewed by interested parties
- Continuing reliance on coal has many environmental and social costs and increased litigation risk and should be avoided
- Natural gas is much better at supporting increased levels of renewable energy than coal plants which do not cycle easily.
- Natural gas costs can be avoided through adding cost-effective efficiency and renewable energy; coal costs are not easily avoided.