BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

Docket No. 10M-245E

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."

SUPPLEMENTAL ANSWER TESTIMONY

OF

LESLIE GLUSTROM

NOVEMBER 9, 2010

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LIST OF EXHIBITS

(NOTE: There were 36 Attachments to Ms. Glustrom's Answer and Cross Answer Testimonies in this 10M-245E Docket, so numbering for the Cross Answer Testimony will begin with Exhibit LWG-37.)

Exhibit LWG-37
Table 2 Energy Information Administration 2010 Q2 Coal Production By State
Available from http://www.eia.doe.gov/fuelcoal.html

Exhibit LWG-38
Discovery Response RUC 2-10, 2005-2007 Coal Supply Constraints in Colorado
Docket 06S-234EG Colorado Public Utilities Commission
Available from https://www.dora.state.co.us/pls/efi/EFI_Search_UI.Search

Exhibit LWG-39
Table 4.1, Xcel Loads and Resources November 1, 2010
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Table 4.2, Xcel Loads and Resources November 1, 2010
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Exhibit LWG-41
Xcel 2010 Q1 Earnings Report
Available from www.xcelenergy.com

Exhibit LWG-42
Xcel 2010 Q2 Earnings Report
Available from www.xcelenergy.com

Exhibit LWG-43
Xcel 2010 Q3 Earnings Report
Available from www.xcelenergy.com

Exhibit LWG-44
Discovery Response LWG 1-4, Historic and Projected Coal Costs
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Available from https://www.dora.state.co.us/pls/efi/EFI_Search_UI.Search

I. INTRODUCTION

Q: PLEASE STATE YOUR NAME, ADDRESS AND CONTACT INFORMATION

A: My name is Leslie Glustrom. I live at 4492 Burr Place, Boulder, Colorado. My phone number is 303-245-8637 and my e-mail address is lglustrom(at)gmail.com.

Q: DID YOU SUBMIT ANSWER AND CROSS ANSWER TESTIMONY IN THIS DOCKET?

A: Yes.

Q: PLEASE PUT YOUR PRIMARY CONCERN IN A TEXT BOX SINCE THE COMMISSION AND MANY OTHER PARTIES HAVE NOT YET APPEARED TO GRASP THE NEW REALITY OF COAL SUPPLY AND COSTS

IT IS ABSURD TO MAKE ANY DECISIONS ABOUT RELATIVE COSTS OF VARIOUS SCENARIOS USING XCEL'S COST MODELING BECAUSE XCEL IS ASSUMING THAT COAL COSTS ARE ESCALATING AT LESS THAN 2% PER YEAR WHEN ACTUAL COAL COSTS ARE ESCALATING AT MORE THAN 10% PER YEAR AND AN EXAMINATION OF THE RATE AT WHICH COLORADO AND WYOMING COAL MINES ARE PLAYING OUT INDICATES THAT

FUTURE COAL SUPPLIES ARE LIKELY TO BE BOTH COSTLY AND UNCERTAIN.

In short, while Xcel has worked very hard to generate numerous modeled costs, Xcel's modeling in this 10M-245E Docket is a case of

"Garbage In, Garbage Out"

with respect to future coal costs—

and future coal costs are key to every decision in this docket—

and to the very real rates

that future Colorado ratepayers will pay.

Q: WE KNOW YOU AND OTHERS HAVE SUBMITTED DETAILED STUDIES ON COAL SUPPLIES AND COAL COST TO THE COLORADO PUC IN SEVERAL PREVIOUS DOCKETS GOING BACK TO THE 06S-234EG XCEL RATE CASE DOCKET , BUT CAN YOU TRY TO WALK US THROUGH THIS AGAIN SLOWLY?

A: I'll try—but as a tax payer, rate payer, scientist and parent, my patience is worn very thin. It is long past time that Xcel and the Colorado PUC paid attention to the real and very substantial data that has been submitted repeatedly in various dockets since 2006 demonstrating that what was seemingly true about coal in the last century (i.e. that it was "cheap, abundant and reliable"—putting aside the not-so-small matter of environmental and health costs) is not true at all in this new 21st century. The easily accessible US coal has now been turned into carbon dioxide that resides in the atmosphere and oceans, and this country's coal production is becoming increasingly constrained and coal costs are mounting accordingly.

Q: BEFORE GOING ON, PLEASE EXPLAIN THE CONCLUSIONS YOU COME TO WITH RESPECT TO THE VARIOUS SCENARIOS PRESENTLY BEFORE THE COLORADO PUC IN THIS 10M-245E DOCKET.

A: A sober consideration of the very probable increases in future coal costs and the very serious constraints on future coal supply strongly indicates that putting pollution control on any of Xcel's coal plants could easily lead to the following highly undesirable outcomes:

- Very serious rate impacts for Xcel ratepayers who will have to pay for both the pollution control and the increased coal costs for many years to come;
- A reduction in flexibility in designing Xcel's Colorado system as the costs of renewable energy decline and Xcel is locked into continued reliance on aging coal plants that do not cycle easily to accommodate the increased levels of renewable energy that will likely be **both cleaner and cheaper** in the coming decades;

- The very real risk that Xcel will have increasing amounts of stranded assets on their books as coal plants become increasingly less useful and significantly more expensive to operate;
- Prudence challenges from rate payers of any Xcel expenditures to put pollution control on Xcel's Colorado coal plants without conducting serious assessments of future coal supplies and costs for those coal plants. Given what Xcel either knows or should know at this point about future coal costs and coal supply,[1] it is imprudent to proceed with large capital expenditures for pollution control for Xcel's Colorado coal plants.

In short, the Commission should not approve the expenditure of capital needed to add pollution control to Xcel's Colorado coal plants (including adding an SCR to the Cherokee 4 coal plant) until a serious analysis has been done of future coal supplies and likely increased coal costs and all alternatives have been seriously considered in light of that analysis.

II. BACKGROUND AND OVERVIEW

Q: PLEASE EXPLAIN WHY YOU ARE SUBMITTING SUPPLEMENTAL ANSWER TESTIMONY.

A: The purpose of this Supplemental Answer testimony is to provide the Commission with the information and recommendations summarized below which are responsive to Xcel's Supplemental Direct Testimony of October 25, 2010. Xcel's Supplemental Direct Testimony outlined several scenarios for further consideration, 5B, 6.2J, 6E FS and 6.1E FS.

[1] Detailed explanations of coal cost and coal supply information can be found in Ms. Glustrom's Answer and Cross-Answer Testimony (including 36 Exhibits) in this 10M-245E Docket. Additional information will be provided in this Supplemental Answer Testimony from Ms. Glustrom.

The scenarios discussed in Xcel's Supplemental Direct Testimony[2] are summarized briefly below. All of the scenarios below would retire Cherokee Units 1-3 and Valmont 5 before the end of 2017 and put Selective Catalytic Reduction ("SCR") controls for emissions of nitrogen oxides ("NOx") on Pawnee and Hayden 1 and 2. Pawnee would also receive a Lime Spray Dryer ("LSD") to control emissions of sulfur dioxide ("SO2"). These actions were the subject of hearings held in late October and early November 2010 and are not being considered at this point in the 10M-245E docket.

The scenarios that are being considered at this point in the 10M-245E docket are summarized below. (Key distinguishing characteristics are included in parentheses with each scenario.)

Scenario 5B (SCR on Cherokee 4; Retire Cherokee 4 in 2031 or 2032)— Scenario 5B was outlined in Table 5.5 on page 44 of Xcel's Emission Reduction Plan submitted on August 13, 2010 (and revised on August 25, 2010).[3] This scenario involves putting SCR controls for emissions of nitrogen oxides NO on Cherokee 4 and then continuing the operation of Cherokee 4 as a coal plant for approximately 15 years until either 2031 or 2032.

Scenario 6.2J (Retire Cherokee 3 and 4 in 2017; Add Both 2 x 1 and 1 x 1 Combined Cycle Gas Plants)—Scenario 6.2J was proposed by Xcel on October 25, 2010.[4] This scenario involves adding both a 2 x 1 and a 1 x 1 combined cycle natural gas plant at the Cherokee site and retiring both Cherokee 3 and Cherokee 4 in 2017

[2] For summaries of the scenarios discussed in Xcel's Supplemental Direct Testimony submitted on October 25, 2010, see for example pages 5-6 of Karen Hyde's Supplemental Direct. In addition, several Independent Power Producer (" IPP") scenarios were added as part of Hearing Exhibit 181 .

[3] Xcel's Emission Reduction Plan is also referred to as "KTH-2" which accompanied the Direct Testimony of Karen Hyde in this 10M-245E docket. The scenarios are described on pages 34-44 of the Emissions Reduction Plan.

[4] For a description of Scenario 6.2J, see page 5, lines 2-15 of the Supplemental Direct Testimony of Xcel witness Karen Hyde submitted on October 25, 2010.

Scenario 6E FS (Fuel Switch Cherokee 4 in 2017, Retire in 2018)—Scenario 6E FS is described in the October 25, 2010 Xcel filing[5] as being similar to the previously proposed Scenario 6E (which retired Cherokee 4 in 2018) but with a fuel switch to natural gas for Cherokee 4 at the end of 2017, before completing both the 2 x 1 (in 2015) and the 1 x 1 (in 2018) natural gas combined cycle plants at the Cherokee site and retiring Cherokee 4 in 2018.

Scenario 6.1E FS (Fuel Switch Cherokee 4 in 2017, Retire in 2022)— Scenario 6.1E FS is described in the October 25, 2010 Xcel filing[6] as being similar to the previously proposed Scenario 6.1E (which added the lower cost "SNCR" to Cherokee 4 in 2012 and retired Cherokee 4 in 2022) but with a fuel switch to natural gas for Cherokee 4 at the end of 2017, before completing the 2 x 1 (in 2015) and the 1 x 1 (in 2022) natural gas combined cycle plants at the Cherokee site and retiring Cherokee 4 in 2022.

Scenario 7E (Early conversion of Cherokee 3, Cherokee 4 and Valmont to Natural Gas)—Scenario 7E was part of Xcel's original filing[7] and involves the switching of Cherokee 3 to natural gas in 2014 (with shutdown in 2015), Cherokee 4 to natural gas in 2014 (with shutdown in 2018) and Valmont 5 to natural gas in 2013 (with shutdown in 2017.)

In addition to the five scenarios summarized above, there are a number of scenarios that have been introduced by the Independent Power Producers ("IPPs"). These scenarios involve extending IPP contracts for natural gas turbines at Valmont, Arapahoe, (owned by Southwest Generation), and Greeley (owned by Thermo Power) and the cogeneration

[5] For a description of Scenario 6E FS see page 5, lines 16-18 of the Supplemental Direct Testimony of Xcel witness Karen Hyde submitted on October 25, 2010.
[6] For a description of Scenario 6.1E FS see page 5, lines 18-20 of the Supplemental Direct Testimony of Xcel witness Karen Hyde submitted on October 25, 2010.
[7] For a description of Scenario 7E see page 36 and 44 in Xcel's Emission Reduction Plan submitted on August 13, 2010 and revised on August 25, 2010.

facility at University of Northern Colorado ("UNC") (owned by Thermo Power). These scenarios are described in Hearing Exhibit 181 as well as in the Supplemental Cross Answer Testimony of Southwest Generation witness Rhodes and CIEA[8] witness Lorne Wittle.[9] It is likely that the IPP intervenors will discuss all of these scenarios in further detail in upcoming testimony, but for example IPP 2 would involve renewing contracts with the following IPP facilities:

- Arapahoe (SW Generation) Recontracted in 2012
- Valmont (SW Generation) Recontracted in 2012
- University of Northern Colorado (Thermo Power) Recontracted in 2013

Q: WHAT IS YOUR PRIMARY CONCERN WITH RESPECT TO THE PROPOSED SCENARIOS?

A: The primary concern I have about the proposed scenarios is the option of adding an SCR to the Cherokee 4 coal plant in North Denver as proposed in Scenario 5B and which Xcel "reluctantly" identified as its "recommended" plan on October 25, 2010. [10]

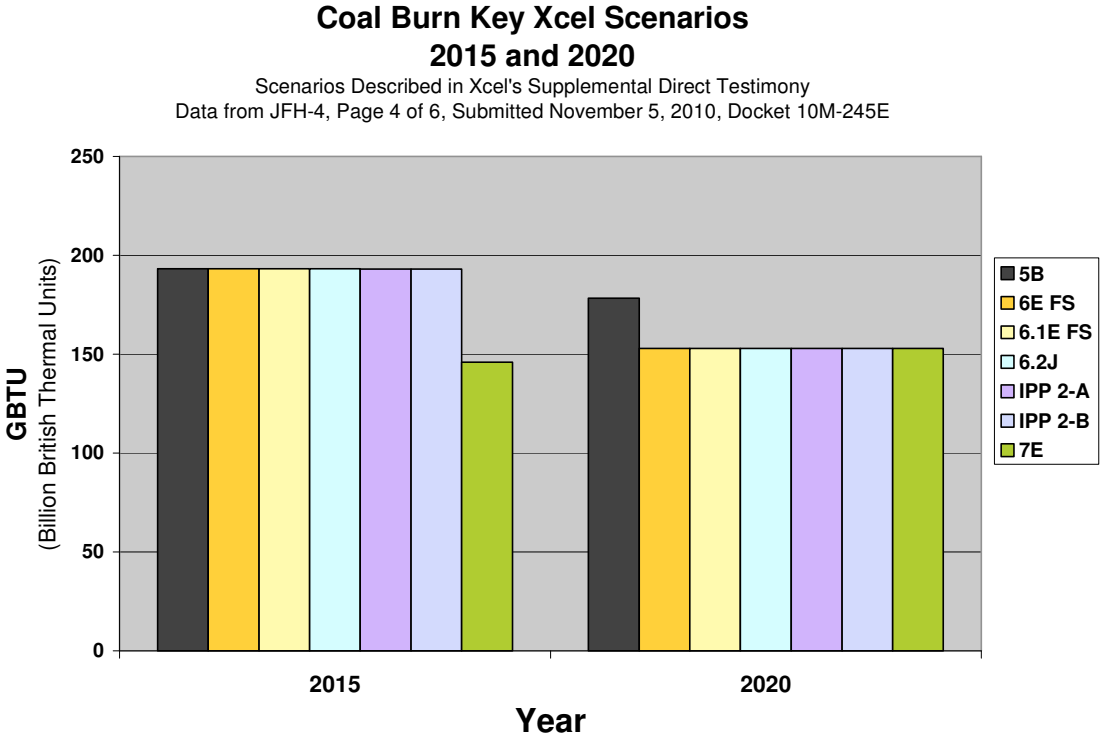
Adding a SCR to Cherokee 4 (at an expected cost of approximately $174 million[11]) would be a serious mistake that will likely lead to significant and unnecessary rate impacts and lock future Commissions and future ratepayers into large expenses related to supplying the plant with coal and meeting future environmental regulations—and reduce the ability of Xcel to build the flexible infrastructure that will be needed to power our state in the 21st century.

[8] CIEA is the Colorado Independent Energy Association.
[9] For a summary of the IPP scenarios see page 6 in the Supplemental Cross Answer Testimony of Southwest Generation witness David Rhodes, submitted on November 3, 2010.
[10] Xcel "reluctantly" recommended Scenario 5B on page 8, lines 12-15.
[11] See pages 6-15 of the Direct Testimony of Xcel witness Greg Ford for the estimated costs of adding pollution control to Xcel's Colorado coal plants. The estimated cost of $174.9 million for an SCR to be added to Cherokee 4 is found on page 11, line 7.

Under Xcel's "recommended" Scenario 5B, the utility would add an SCR to Cherokee and keep the plant functioning as a coal plant for approximately 15 years after adding the SCR. This would keep rate payers paying for the increased costs of coal and pollution control at Cherokee 4 until approximately 2031-2032.

Scenario 5B unnecessarily and unwisely locks Xcel and Xcel ratepayers into a higher than necessary reliance on coal and up front capital costs, removing the flexibility that will be needed to adjust to changing circumstances in the next 2 decades. This increased reliance on coal burning that would accompany Scenario 5B is shown in Figure LWG Supp-1 below.

Figure LWG Supp-1



The dark black bar on the left of the series shows that Scenario 5B will lead to higher reliance on coal than all the other scenarios. This will likely lead to:

- Unnecessary rate impacts from construction of the SCR on Cherokee 4

- Increased liability for carbon dioxide charges and legal liability
- Increased costs for coal above the costs modeled by Xcel
- Potential coal supply constraints
- Potential stranded costs as technology advances and coal costs rise
- Challenges to the prudence of Xcel's investments in Cherokee 4

III. SUMMARY

Q: PLEASE SUMMARIZE YOUR SUPPLEMENTAL ANSWER TESTIMONY.

A: The purpose of my testimony is to provide the Commission with the following information and recommendations related to the Supplemental Direct Testimony provided by Xcel on October 25, 2010.

- **Coal Costs:** The cost of coal at the Cherokee plant has been increasing at over 18% per year since 2005. It is ludicrous to run models that have coal costs increasing at less than 2 % per year when making decisions about the Cherokee plants in this 10M-245E docket.
- **Coal Supply:** The Cherokee coal plants are supplied in significant part by the Peabody Twentymile (or "Foidel Creek") mine outside of Steamboat Springs in Routt County, Colorado. It is very likely that Peabody will be closing the Twentymile mine in the next several years. The source of coal for the Cherokee coal plants after that is uncertain and likely to come from mines that are even higher priced than the Twentymile mine has been.
- **Reduced Flexibility to Respond to Changing Technology:** Adding an SCR to the Cherokee 4 coal plant will reduce Xcel's flexibility for

adapting to emerging technologies in the next two decades and will keep Xcel rate payers "locked in" to paying for the fuel and upkeep on an aging coal plant that will not complement renewable energy well.

- **Carbon and Other Environmental Risk:** Adding an SCR to the Cherokee 4 coal plant will keep Xcel vulnerable to litigation related to carbon dioxide and other environmental pollutants, including mercury. Xcel will earn the profits from the SCR investment, but rate payers will have to pay any legal costs associated with defending Xcel in lawsuits filed against Xcel for its emissions of carbon dioxide and other environmental pollutants.
- **Real v Modeled Rate Impacts:** Rate payers pay **real** rate impacts—not modeled rate impacts. By modeling coal costs at unrealistically low annual escalation rates, Xcel's models in this 10M-245E docket very likely understate the future rate impact of keeping the Cherokee 4 coal plant operating as a coal plant until the 2031-2032 time frame. If coal costs continue to escalate in the 10%-15% per year for the Cherokee plant, then rate payers could see increased coal costs of from $1 to $4 billion (above what Xcel has modeled) between now and 2031.

For all of these reasons, the Commission should not approve the addition of an SCR to Cherokee 4.

IV. FUTURE COAL COSTS ARE LIKELY TO GREATLY INCREASE RATEPAYER COSTS

Q: PLEASE SUMMARIZE WHAT IS KNOWN ABOUT COAL COSTS FOR THE CHEROKEE PLANT

A: Xcel's Colorado coal costs are increasing approximately 10% per year.[12] At the Cherokee plant, coal costs have been rising more than 18% per year since 2005. This trend will likely lead to **real** and serious rate impacts if Xcel attempts to run the Cherokee 4 coal plant until 2031 or 2032 after installing an SCR for NOx control. Xcel's models are completely missing this possibility by assuming coal costs will increase at less than 2% per year—and then discounting fuel costs by over 7% per year.

A. Coal Costs at Cherokee Have Been Increasing Faster Than 18% Per Year Since 2005

Table LWG Supp-2 below makes it clear that the cost of coal at the Cherokee plants has been increasing at over 18% a year since 2005. The data used to create Table LWG Supp-2 were received from Xcel and are found in Exhibits LWG 1-3 attached to Ms. Glustrom's Answer Testimony in this 10M-245E Docket.

Table LWG Supp-1
Xcel's Coal Cost Escalation for Coal Plants
in the 10M-245E Docket
2005-2009 Average Cost Escalation
(Using Data from Exhibits LWG 1-3 [13])

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

[12] Xcel's historic and previously projected coal costs are seen in Exhibit LWG-44 .
[13] Exhibits LWG1-3 are found as Attachments to the Answer Testimony of Leslie Glustrom submitted on September 17, 2010.

B. Xcel's Models in This 10M-245E Docket Are Likely Grossly Underestimating Future Coal Costs

Xcel is apparently modeling coal costs in this docket in accordance with the assumptions shown in Supplemental Attachment J submitted to the Commission on June 30, 2010. Xcel's Supplemental Attachment J shows coal costs escalating at less than 2% per year through the planning period of this 10M-245E docket. Putting an SCR on Cherokee 4 and operating this unit as a coal plant for 15 years after installing the SCR would require rate payers to pay coal costs until approximately 2031-2032. The large difference between Xcel's modeled coal costs (including the "high" coal cost sensitivity of 120%) and those likely to be experienced at coal costs escalations of 5% or 10% a year are shown below in Table LWG Supp-1 for the period up to 2030.

Table LWG Supp-2

Summarized Coal Costs* from Supplemental Attachment J,[14] Plus 20% "High" Coal Costs Compared to 5% and 10% Per Year Escalation Costs [15]

Year	(A) Coal Cost From Supplemental Attachment J	(B) 120% of The Coal Cost in (A)	I Coal Cost Escalated at 5% Per Year	(D) Coal Cost Escalated at 10% Per Year
2010	**$1.77**	**$2.12**	**$1.77**	**$1.77**
2020	**$2.07**	**$2.48**	**$2.88**	**$4.59**
2030	**$2.11**	**$2.53**	**$4.70**	**$11.91**

[14] Supplemental Attachment J was submitted by Xcel in this 10M-245E Docket on June 30, 2010 as part of the "Fourth Production of Documents."

[15] Coal costs escalated at 5% or 10% per year can be quickly calculated using an online compound interest calculator such as http://www.moneychimp.com/calculator/compound_interest_calculator.htm .

C. Actual Coal Costs at Cherokee 4 Could Add Hundreds of Millions and Even Billions of Dollars to Ratepayer Costs

Tables LWG Supp-3 and Supp-4 below show that using coal cost escalation rates between 5% and 15% per year would add between $83 million (5% per year for the first decade) and $4 billion (15% per year from 2010 to 2031) to the costs of Scenario 5B. While no one can predict future fossil fuel costs, the Commission should give very sober consideration to the possibility that **actual** (not modeled) coal costs could add hundreds of millions of dollars (or possibly even a billion dollars or more) to the costs associated with operating the Cherokee 4 coal plant until 2031 or 2032 after adding an SCR.

Table LWG Supp-3

Cherokee Increased Coal Costs
2010-2020
Assuming 5%, 10% and 15% Annual Increases in Coal Costs
All values in Millions

	1.8%/Yr	5%/Yr	10%/Yr	15%/Yr
2009	31.3	31.3	31.3	31.3
2010	31.8634	32.865	34.43	35.995
2011	32.43694	34.50825	37.873	41.39425
2012	33.02081	36.23366	41.6603	47.60339
2013	33.61518	38.04535	45.82633	54.7439
2014	34.22025	39.94761	50.40896	62.95548
2015	34.83622	41.94499	55.44986	72.3988
2016	35.46327	44.04224	60.99485	83.25862
2017	36.10161	46.24436	67.09433	95.74742
2018	36.75144	48.55657	73.80376	110.1095
2019	37.41296	50.9844	81.18414	126.626
2020	38.0864	53.53362	89.30255	145.6199
Total*	383.8085	466.9061	638.0281	876.4522
Delta	0	83.09758	254.2196	492.6437

The highlighted "Deltas" in the Table LWG Supp-3 above are in units of millions of dollars and indicate that in the first decade alone (i.e. 2010-2020) **real** coal costs at the Cherokee 4 coal plant could add from $83 million to $492 million (or more if coal costs increase at a rate greater than 15% per year) to rate payer bills.

Importantly, fuel costs are presently passed straight through to rate payers under the Electric Commodity Adjustment clause and Xcel bears no risk under the current system if they have misestimated future coal costs. Xcel can, however, expect to earn their Weighted Average Cost of Capital ("WACC") on the $174 million investment in an SCR because regulated utilities, unlike any other business, increase earnings by spending more money with PUC approval thereby gaining the possibility of earning their WACC on those expenditures. In short, Xcel bears almost no risk but reaps all the gains of making the investment in an SCR for Cherokee 4—if the Commission allows them to do so.

Table LWG Supp-4

Cherokee Increased Coal Costs 2010-2031
Assuming 5%, 10% and 15% Annual Increases in Coal Costs

	1.8%/Yr	5%/Yr	10%/Yr	15%/Yr
2009	31.3	31.3	31.3	31.3
2010	31.8634	32.865	34.43	35.995
2011	32.43694	34.50825	37.873	41.39425
2012	33.02081	36.23366	41.6603	47.60339
2013	33.61518	38.04535	45.82633	54.7439
2014	34.22025	39.94761	50.40896	62.95548
2015	34.83622	41.94499	55.44986	72.3988
2016	35.46327	44.04224	60.99485	83.25862
2017	36.10161	46.24436	67.09433	95.74742
2018	36.75144	48.55657	73.80376	110.1095
2019	37.41296	50.9844	81.18414	126.626
2020	38.0864	53.53362	89.30255	145.6199

2021	38.77195	56.2103	98.23281	167.4628
2022	39.46985	59.02082	108.0561	192.5823
2023	40.18031	61.97186	118.8617	221.4696
2024	40.90355	65.07045	130.7479	254.69
2025	41.63981	68.32397	143.8227	292.8935
2026	42.38933	71.74017	158.2049	336.8276
2027	43.15234	75.32718	174.0254	387.3517
2028	43.92908	79.09354	191.428	445.4545
2029	44.7198	83.04822	210.5707	512.2726
2030	45.52476	87.20063	231.6278	589.1135
2031	46.34421	91.56066	254.7906	677.4805
Total*	850.8335	1265.474	2458.397	4954.051
Delta	0	414.6404	1607.563	4103.217

The "deltas" in Table LWG Supp-4 above show that if coal costs increase at between 5% and 15% per year from 2010 until 2031, then choosing Scenario 5B (adding an SCR to Cherokee 4 and operating it until 2031) could add between $414 million and $4.1 billion to the cost of that scenario. If coal costs escalate at this rate then future Commissions are likely to call for the retirement of Cherokee 4 before 2031, leaving Xcel rate payers to pay for the stranded cost of the SCR.

V. THE LONG TERM COAL SUPPLY FOR CHEROKEE 4 IS HIGHLY UNCERTAIN

Q: PLEASE EXPLAIN YOUR CONCERN ABOUT LONG TERM COAL SUPPLY FOR CHEROKEE 4

A: The Cherokee coal plants are supplied in significant part by the Peabody Twentymile (or "Foidel Creek") mine outside of Steamboat Springs in Routt County, Colorado. It is very likely that Peabody will be closing the Twentymile mine in the next several years.[16] The source of coal for the Cherokee coal plants after the future closure of the Twentymile mine is uncertain. It is likely, however that coal for Cherokee 4 will come from mines that

[16] The likelihood that Peabody will be closing the Twentymile (Foidel Creek) mine in the next several years was discussed openly by Xcel witness Francis Roberts on Tuesday October 26, 2010 during cross examination by Ms. Glustrom and by Routt County Commissioner Douglas Monger on Friday October 29, 2010 during cross examination by Ms. Glustrom.

are even higher priced than the Twentymile mine has been. For example, the Cherokee coal plants also receive coal from the West Elk mine in Colorado. Hearing Exhibits 165 and 166 show that coal from the West Elk mine is consistently delivered to the Cherokee plants at a higher price than the coal that has come from the Twentymile (Foidel Creek) mine. In 2009, several shipments of coal from West Elk were delivered to Cherokee at a price that exceeded $4/MMBTU. [17]

If an SCR is put onto Cherokee 4 it is not clear where the coal for Cherokee 4 would come from until the 2031-2032 time frame and how much more expensive it might be. Cherokee 4 was designed to use Colorado bituminous coal and it is not clear that it could successfully burn the lower priced Wyoming Powder River Basin subbituminous coal.

Given what is known about coal supply constraints that have already occurred in Colorado[18] and the likely constraints that will occur after the Twentymile (Foidel Creek) mine closes, it would be imprudent for Xcel to invest $174 million to put an SCR on Cherokee 4 without assuring that a reasonably priced supply of coal will be available for the next two decades for the plant.

VI. ADDING AN SCR TO CHEROKEE 4 WILL REDUCE SYSTEM FLEXIBILITY AND LOCK RATEPAYERS INTO HIGH FUEL AND EMISSIONS CONTROL COSTS

Q: PLEASE EXPLAIN YOUR CONCERN ABOUT RELIANCE ON COAL REDUCING SYSTEM FLEXIBILITY AND LOCKING RATE PAYERS INTO INCREASED FUEL AND EMISSIONS CONTROL COSTS.

[17] "MMBTU" stands for Million British Thermal Units. A BTU is the amount of heat it would take to raise the temperature of a pound of water 1º Fahrenheit at one atmosphere of pressure.

[18] The coal supply constraints experienced in the 2005 to 2007 time frame by Xcel in Colorado are described in Exhibit LWG-38. The coal supply constraints experienced by Xcel in Colorado in 2008 and 2009 are described in Exhibit LWG-14 (with Ms. Glustrom's Answer Testimony) and Hearing Exhibit 134 in this 10M-245E docket.

A: If the Commission approves an SCR for the Cherokee coal plant, Xcel and its rate payers will be "locked in" to burning coal (or paying for stranded costs) until the 2031-2032 time frame. Ratepayers will need to pay the increased costs of fuel and pollution control that are likely to arise in the next two decades. Some of these costs are likely to arise as a result of new regulations and other increased costs will result from the increased costs of chemical used in pollution control and disposal of the wastes that come from taking air pollutants and turning them into solid waste. In addition, by locking into coal-fired generation from Cherokee 4, Xcel's system will be less able to respond to the new advances in renewable energy technology that are likely to emerge in the next 20 years.

Colorado rate payers would be better served by investing the $174 million that would be needed to add an SCR onto Cherokee 4 to make adjustments to Xcel's transmission system so that it is capable of routing the large amounts of excess capacity that have already been built in Colorado in the last decade and also to accommodate more distributed generation that will take advantage of Colorado's abundant wind, solar and other renewable energy potential.

VII. MAINTAINING RELIANCE ON COAL INCREASES CARBON DIOXIDE AND ENVIRONMENTAL LITIGATION RISK

Q: PLEASE EXPLAIN YOUR CONCERN ABOUT RELIANCE ON COAL AND INCREASED CARBON DIOXIDE AND ENVIRONMENTAL LITIGATION RISK

A: Below, in outline format is a summary of the lawsuits that have already been filed against Xcel (and other utilities and oil companies) related to their carbon dioxide emissions.

- ***Connecticut v AEP* (and 4 Others Including Xcel)**

- State Attorneys General from 8 States Sued Five Coal Utilities Over CO2 Emissions as a Nuisance Under State and Federal Law
- Sept 2009—2nd Circuit Court Allows Suit to Proceed—Appeals pending

- ***Comer v Xcel Energy*** ***(and 45 others)***
  - Hurricane Katrina victims sue CO2 emitters
  - October 2009—5th Circuit Court Allows Suit to Proceed-Appeals pending
- ***Kivalina v Xcel Energy*** **(and 23 other utilities)**
  - Alaska village threatened by sea level rise sues CO2 emitters
  - Appeals pending in 9th Circuit Court

(Information from Xcel Energy 10-K 2009 Annual Report, pages 141-142)

The more coal plants that Xcel leaves on its system, the more likely it will be sued for carbon dioxide and other environmental damages in the future. As the science on the neurological damage caused by mercury continues to mount, this will likely add another legal liability to those that are paying for the Xcel system.

Presently, Xcel has been able to pass on all of its legal costs to rate payers in recent rate cases, so while Xcel makes decisions about maintaining risky investments in coal plants, rate payers are left paying the bills for defending this risky behavior. In the present case, the Commission should not allow Xcel to make a large investment in pollution control for the Cherokee 4 coal plant because it will increase the vulnerability of the Xcel system—and the rate payers who pay the legal bills—to increased litigation related to carbon dioxide and other environmental pollution.

VIII. THE COMMISSION SHOULD GIVE GRAVE CONSIDERATION TO REAL RATE IMPACTS AND DISCOUNT MODELED RATE IMPACTS

Q: PLEASE EXPLAIN YOUR CONCERN ABOUT THE DIFFERENCE BETWEEN REAL RATE IMPACTS AND MODELED IMPACTS

A: All models are based on numerous assumptions. If the assumptions are not accurate, then the models could suggest an alternative that in real life will cost substantially more than the model predicted. Choosing an inappropriate scenario based on inaccurate

modeling could occur in this 10M-245E docket due to Xcel modeling coal costs at an escalation rate of less than 2% while actual coal costs are going up about 10% per year. In addition, the use of a discount rate of over 7%[19] unrealistically discounts future fuel costs. Again, this could lead to the choice of an alternative that will cost rate payers much more than was predicted by the model. This is explained further below.

A. Ratepayers Pay Real—Not Modeled—Rate Impacts

It is obvious that rate payers pay **real** rate impacts—not modeled impacts. As the data below will indicate, Colorado regulators and rate payers have been very generous with Xcel in recent years, allowing three rate increases in four years and allowing Xcel to grossly overbuild its system in Colorado. It is time to hold the line—and not let Xcel's claims that "they just have to have that 1 x1 gas turbine at Cherokee or their system may become unstable" be used to extract yet more concessions from Colorado. Similar claims were made with respect to the new coal plant in Pueblo,[20] the new gas turbines at Fort Saint Vrain[21] and the results have played out in the last three rate cases (Dockets 06S-234EG, 08S-520E and 09AL-299E) and now Colorado rate payers are ensuring that Xcel is receiving record earnings while Minnesota rate payers who have a larger system, more employees and more capital investment, provide much smaller contributions to Xcel's earnings.

B. Xcel Has Grossly Overbuilt Their Colorado System Leading to Large Amounts of Excess Capacity that Ratepayers Are Already Paying For

[19] Fuel costs are discounted at the after tax Weighted Average Cost of Capital ("WACC") of 7.6%. See for example page 139 in Xcel's Emission Reduction Plan, KTH-2. The fact that fuel costs are discounted at 7.6% was confirmed in cross examination of Mr. Hilll by Ms. Glustrom on Friday October 22, 2010 in this 10M-245E docket.

[20] The new coal plant in Pueblo was approved in the 04A-214E, 04A-215E and 04A-216E combined dockets.

[21] Two new gas turbines were approved at the Fort St Vrain site in the 07A-469E docket.

Exhibits LWG-39 and LWG-40 [22] are Xcel's most recent Loads and Resources Tables for their Colorado system.[23] These tables show that Xcel has vastly overbuilt its Colorado system and Colorado ratepayers are presently paying for over 800 MW of excess capacity—on top of the 16% reserve margin, which is on top of designing the system to meet the peak hour of the year—which by definition only occurs once a year. Capacity is not cheap to build and having over 800 MW of excess capacity on top of the approved 16% reserve margin is a very expensive mistake that is presently being borne by ratepayers. The 800 MW of excess capacity that Xcel has built in Colorado probably represents approximately $1 billion dollars in investment that didn't need to be made to maintain system reliability for Xcel's system in Colorado. Xcel has received three rate increases in four years to pay for all of this excess capacity and as discussed further below, now Colorado has become the largest contributor—by a lot—to Xcel's increased earnings. The three Colorado rate increases were as follows:

Docket 06S-234EG	$107 million annual increase in revenue
Docket 08S-520E	$112 million annual increase in revenue
Docket 09AL-299E	$128 million annual increase in revenue

Enough is enough! It is past time that the Commission stood up for Colorado rate payers and ensured that Xcel does not make additional unnecessary and unwise investments in its Colorado system (such as an ill-advised $174 million SCR on the Cherokee 4 coal plant). If the Commission allows Xcel to proceed with ill-advised investments in their aging coal

[22] Exhibit LWG-40 is Xcel's Loads and Resources Table assuming the Cherokee 1 and 2 coal plants are retired in 2012 under the "Clean Air Clean Jobs" plan being considered in this 10M-245E docket.
[23] The Loads and Resources Tables found in Exhibits LWG-39 and LWG-40 are from the November 2010 update to the 2007 Colorado Resource Plan submitted in Docket 07A-447E to the Colorado PUC.

plants, rate payers will once again be left paying the bill for these imprudent capital expenditures as well for increased fuel, operating and legal costs.

C. Colorado is Already Contributing Much More Than Its Share to Xcel's Corporate Profits

For the last several years, Colorado has been contributing increasing amounts to Xcel Energy's corporate earnings. For the period from 2006 to 2008, Minnesota's contribution to Xcel's earnings dropped while Colorado's increased. The Minnesota operating utility is Northern States Power of Minnesota ("NSP-Minn"). The Colorado operating company is known as Public Service Company of Colorado ("PSCo"). These are the two largest operating utilities in the Xcel system. Typically the other two operating utilities that make up Xcel Energy Inc (i.e. NSP-Wisconsin and SPS) make much smaller contributions to Xcel Energy's corporate earnings. Colorado's increasing contribution to Xcel Energy's corporate earnings in the 2006 to 2008 time frame are shown in Table LWG Supp-5 below.

Table LWG Supp-5

Percentage Contribution to Xcel Energy Corporate Earnings
2006 to 2008 by Minnesota ("NSP-Minn") and Colorado ("PSCo")
Data from page 50, Xcel Energy's 2008 10-K[24]
Available from www.xcelenergy.com

	2006	2007	2008
NSP-Minnesota	47.4%	45.9%	44.3%
PSCo (Colorado)	41.5%	51%	52.7%

[24] In an earlier version of Xcel Energy's 2008 10-K, this data was on page 54.

The trend that began in the 2006-2008 time frame has continued and become extremely serious in 2010 as shown in Table LWG Supp-6 below.

Table LWG Supp-6

Colorado's Contribution to Xcel's Increased Earnings
2010 Quarters 1-3
Data from Exhibits LWG 40-43
(Based on Xcel Energy Diluted Increased Earnings Per Share Before GAAP Adjustment)
(GAAP = Generally Accepted Accounting Practices)

	2010 Q1 Increased Earnings Per Share 2010 v 2009	2010 Q2 Increased Earnings Per Share 2010 v 2009	2010 Q3 Increased Earnings Per Share 2010 v 2009	2010 Year to Date (Sept 30, 2010 v 2009
Xcel Energy Inc. (Holding Company)	$0.04	$0.04	$0.14	$0.22
Public Service Company of Colorado (PSCo) Contribution	$0.06	$0.04	$0.09	$0.18
Northern States Power of Minnesota (NSP-Minn) Contribution	-$0.02	-$0.02	$0.04	$0.00
Percentage of Increased Earnings from Colorado ("PSCo")	150%	100%	64%	82%

From Table LWG Supp-6 above it can be seen that a very large share of Xcel's increased earnings are coming from Colorado, yet whether measured by the size of the system , the number of employees or the amount of capital expenditure, Xcel's Minnesota system is bigger as shown in Table LWG Supp-7 below. While the large increase in earnings in 2010 Q3 can be attributed in part to the beginning of tiered rates in Colorado,

this does not explain the on-going trend of large percentages of increased corporate earnings for Xcel Energy coming from Colorado.

Table LWG Supp-7

Xcel's Colorado and Minnesota Systems Compared
Relative Size, Employees and Capital Investment
PSCo v NSP-Minnesota
Data from Xcel Energy 2009 Annual Report, 10-K Filed 2010-02-26
and the Xcel Energy 2007 Annual Report
(Annual Reports available from www.xcelenergy.com under "Information for Investors")

	Public Service Company of Colorado ("PSCO")	Northern States Power of Minnesota ("NSP-Minn")	Which System is Bigger?	Source of Data
System Peak 2009	6,258 MW	8,615 MW	NSP-Minn	Pages 11 and 19, Xcel Energy 2009 Annual Report 10-K
System Peak 2010 (Projected)	6,608 MW	9,280 MW	NSP-Minn	Pages 11 and 19, Xcel Energy 2009 Annual Report 10-K
Number of Full-Time Employees 2009	2,791	3,763	NSP-Minn	Page 32, Xcel Energy 2009 Annual Report 10-K
Expected Capital Expenditures 2010-2013	$2.2 Billion	$4.9 Billion	NSP-Minn	Page 74, Xcel Energy 2009 Annual Report 10-K
Previously Projected Capital Expenditures 2008—2011 (From 2007)	$2.45 Billion	$3.9 Billion	NSP-Minn	Page 69 Xcel Energy 2007 Annual Report 10-K

Tables LWG Supp-5, 6 and 7 show that Colorado has been very generous with Xcel in recent years, despite the fact that Xcel's Minnesota system is larger by many key measures.

It is long past time that Colorado regulators began holding a stronger line with Xcel and began ensuring that Xcel's Colorado system is not continually over-built and stopped allowing inordinate amounts of Xcel's increased earnings to come from Colorado.

There is no question that the expenditure of $174 million for an SCR on Cherokee 4 will lead to **real** rate impacts as a result of the capital expenditure as well as the costs of coal and other operating costs that will become unavoidable. On the other hand, it is completely unclear how Xcel's modeled fuel cost rate impacts will evolve in the coming years. Importantly, it will very likely be possible to offset costs of natural gas through investment in efficiency and cost-efficient renewable energy.

Investing in an SCR for Cherokee 4 will prevent Xcel and Colorado rate payers from taking advantage of cost-competitive and truly clean options in the coming years and building a more flexible and resilient system for the 21st century. The Commission should not allow Xcel to foreclose these options for our state.

IX. CONCLUSION

Q: PLEASE SUMMARIZE YOUR SUPPLEMENTAL ANSWER TESTIMONY.

A: The conclusions in this Supplemental Answer Testimony are:

- The Commission should not choose Scenario 5B because it is likely to lead to very real and large rate impacts associated with paying both for the SCR on Cherokee 4 and the increased costs of coal and pollution control at this aging plant. These **real** rate impacts are likely to swamp any *modeled* savings projected by Xcel.

- Unfortunately, Xcel has chosen to run the models for this 10M-245E docket assuming coal costs will only increase at about 2% per year when it is clear that coal costs are now increasing much faster than that. In addition, constraints on future coal supplies are likely to lead to continued coal cost increases in the future that are substantially greater than those modeled by Xcel.

- To protect ratepayers from the uncertainties of price and supply related to both natural gas and coal, the Commission should minimize the commitment at this time to both old coal and new natural gas so that Colorado rate payer investments can be freed up for increased commitment to efficiency improvements and to Colorado-based wind and solar projects as part of the 2011 Resource Plan expected to be filed by Xcel in 2011 with a decision in 2012.

- While Ms. Glustrom shares strong concerns about supplies, prices and life-cycle emissions associated with natural gas, the road to a cleaner energy future lies through increased reliance on natural gas which has the ability to complement the variable generation of fuel-free renewable energy sources such as wind and solar. Coal plants are not easily cycled and continued heavy reliance on coal will not allow Xcel to modernize its generation fleet and lay the foundation for a transition to the clean energy future that awaits us.

Q: DOES THIS CONCLUDE YOUR SUPPLEMENTAL ANSWER TESTIMONY?

A: Yes. Thank you.