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## **Colorado's Clean Air Clean Jobs Act Will Accomplish Neither Government Officials and Special Interests Pushed HB 1365 on a Foundation of Fallacies**

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The Colorado Public Utilities Commission (PUC), Xcel Energy, and Governor Bill Ritter colluded to fast track the misnamed Clean Air Clean Jobs Act (HB 1365), which effectively mandates coal-fired power plants to switch to natural gas. The trio essentially duped lawmakers into hasty passage of this bill. They warned legislators that the federal Environmental Protection Agency (EPA) would crack down on Colorado coal power with the Clean Air Act. But that was really a bogeyman meant to frighten lawmakers. While it is true that President Barack Obama's EPA is hostile to coal-generated energy, the governor and the PUC grossly exaggerated the regulatory threat in order to advance their agenda, and Xcel went along with the ruse.

After rushing the bill's passage under false pretenses, the trio rushed its implementation to avoid consideration of less costly alternatives that easily could meet the EPA's Clean Air Act guidelines. Xcel makes a nice profit, while Governor Ritter and the PUC satisfy their anti-coal agenda, and ratepayers pay the price.

**How It Happened.** Shortly after Ritter was elected in 2006, the PUC—supposedly an independent, judicial commission created to protect consumers—changed its mission from ensuring “abundant, reliable and affordable”<sup>1</sup> energy to achieving “reasonably-priced services consistent with the economic, environmental and social values of our state.”<sup>2</sup> In other words, the commission unilaterally adopted an aggressive agenda less concerned with ratepayers and more consistent with Commissioners Ron Binz's and Matt Baker's environmental “values.”

In early 2010, Governor Ritter's office led the negotiations that culminated with passage of HB 1365. Ritter, who had decided against running for a second term the previous January, called HB 1365 the “exclamation point”<sup>3</sup> of his “New Energy Economy.” HB 1365 was sold as a

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cheaper alternative to step-by-step compliance with supposedly pending Clean Air Act regulations.

However, Xcel publicly acknowledges that the legislation would result in \$1.3 billion in construction costs (all the new generation and transmission equipment).<sup>4</sup> HB 1365 allows Xcel to recoup 10.5 percent interest on construction expenditures, totaling \$130 million.<sup>5</sup> The most significant cost, however, is the new 900 megawatts (MW) of natural gas, which is projected to be four times as expensive as coal.<sup>6</sup> In 2009, fuel represented about a third of the average Xcel utility bill.<sup>7</sup> Ratepayers will pick up the entire tab.

The argument that HB 1365 is a cheaper alternative to compliance is false. To comply with actual foreseeable air quality regulations would cost about one-tenth of Xcel's estimated construction costs for HB 1365.

If Coloradans want to pay more for electricity so that Xcel can replace its coal-fired power plants with natural gas plants, then that's their collective right. But they should not be misled into thinking that costly fuel switching is necessary because the EPA says so. Yet that is exactly the argument that Ritter, the PUC, and Xcel made to lawmakers, who in turn made it to their constituents. Ritter calls HB 1365 a "template" for the country.<sup>8</sup> If that is the case, then the country is in trouble, because this "template" is a case of collusion built on a foundation of fallacies.

**The Collusion.** As mentioned earlier, the Ritter administration led negotiations for the fuel-switching bill, but the PUC was also a willing participant in brokering a deal to assure Xcel's cooperation. Peter Blake, writer for the popular Colorado politics blog Face the State, exposed the collusion:

Binz was trading flurries of e-mails on the pending bill with Ritter aide Kelly Nordini, natural gas lawyer Russell Rowe, and Xcel executives Karen Hyde, Roy Palmer and Paula Connelly. Xcel, seeking immediate and complete cost recovery for their capital costs, wanted to be sure the PUC would support that.<sup>9</sup>

Even more damaging revelations come from Binz's emails from earlier this year:

- March 8: "We will agree to using the extraordinary cost recovery in proportion to pressure that the approved plan puts on the company's financial health."
- March 9: "The Commission and Xcel have agreed on language for cost recovery."
- March 11: "I was working with Karen Hyde up until 9:00 last evening to hammer out the final language in a couple of areas."<sup>10</sup>

Blake noted the bill "was introduced four days later and rushed through the legislature in a couple of weeks."<sup>11</sup> *Denver Post* columnist Vincent Carroll makes the same case for collusion: "As early as last December [2009]," two PUC Commissioners Baker and Binz, "had talked with natural gas interests about possible legislation and have been touting it since."<sup>12</sup>

Two former PUC Commissioners and current co-chairs of Affordable and Reliable Energy Colorado (AREC), Polly Page and Carl Miller, blast the current commission's involvement in the drafting and passage of HB 1365, accusing them of "politicizing the time-honored and open PUC process."<sup>13</sup> Page and Miller write that they "are appalled with the reported lack of transparency, the behind-the-scene manipulation and the promotion of personal ideology and special interest agendas that have taken place in Xcel's case."<sup>14</sup>

Current commissioners' involvement may even be "illegal," said Page in a radio interview with one of the authors of this paper.<sup>15</sup> Miller and Page state that "existing law, rules and tradition prohibit PUC Commissioners from becoming involved in or discussing any issue that they may rule on except those presented in an open PUC meeting or hearing."<sup>16</sup>

Page believes "the legislators were somewhat deceived"<sup>17</sup> into voting for the fuel-switching bill. The PUC, the executive branch and Xcel used the EPA bogeyman to scare lawmakers into rushing the legislation through the General Assembly to help solidify Ritter's legacy as the nation's greenest governor. That's the only argument that makes any sense because the economics of the legislation surely do not.

**EPA Bogeyman.** Governor Ritter, the PUC, and Xcel would have you believe that the costs of fuel switching are unavoidable, because the federal government is forcing Colorado's hand. The first sentence of HB 1365 states, "The General Assembly hereby finds, determines, and declares that the federal 'Clean Air Act' likely will require reductions in emissions from coal-fired power plants operated by rate-regulated utilities in Colorado."<sup>18</sup> Xcel's Karen T. Hyde told the Public Utility Commission that the utility negotiated and ultimately supported HB 1365 because "the EPA will require the State of Colorado and other states to comply with a series of regulatory mandates unprecedented in the history of the Clean Air Act."<sup>19</sup> General Assembly members say they supported HB 1365 because the EPA was about to crack down on coal-fired power plants in Colorado.

Where did they get this idea? It is true that coal-fired utilities in the eastern half of the United States are bracing for the implementation of the extremely onerous EPA Interstate rule, which will require upgrades so expensive that it is expected to shutter almost 40 gigawatts of coal power.<sup>20</sup> But Colorado is not subject to the rule. Most Colorado coal plants are already outfitted with state-of-the-art emissions controls, including sulfur dioxide scrubbers and screens to capture particulate emissions. Therefore, the state's coal power plants are well positioned to comply affordably with any foreseeable EPA crackdown on existing sources.

In all states, the executive branch of government is responsible for implementing the federal Clean Air Act, so it stands to reason that the legislature would rely on the Ritter administration for information regarding foreseeable air quality regulations. The Ritter administration took utmost advantage of this situation.

Quite simply, the Ritter administration grossly exaggerated the EPA regulatory threat. Table 1 shows the federal Clean Air Act regulations that the Ritter administration claims are in the pipeline. Of the 11, eight are not foreseeable, two are pending (Mercury Hazardous Air Pollutant and Regional Haze), and one (Ozone National Ambient Air Quality) is a possibility. For a

detailed analysis of each regulation, see Appendix 1. The governor claims HB 1365 is a good idea because it would head off a flood of federal air quality regulations. Absent his exaggerations, however, the actual regulatory threat is more like a trickle.

Table 1: How the supposed impetus for HB 1365 stacks up to reality

"Foreseeable" Regulations <sup>21</sup>	Verdict	Explanation (Sources in Appendix 1)
Regional Haze	Pending	Colorado Regional Haze plan due to EPA by January
NO <sub>2</sub> Standard	Red Herring	EPA proposed to change secondary NO <sub>2</sub> standard; not enforceable
Nitrogen Deposition Plan	Red Herring	EPA has no authority to implement plan
Ozone Standard	Perhaps	Very controversial; strong opposition in Congress; Obama already delayed issuance; years away
CO <sub>2</sub> reporting	Red Herring	Reporting already required
SO <sub>2</sub> Standard	Red Herring	According to EPA data, Colorado already compliant
PM 2.5 Standard	Red Herring	Colorado likely compliant; all coal plants have already installed best PM 2.5 controls
CO Standard	Red Herring	98% of CO emissions from mobile sources; unlikely to impact existing plants
Mercury HAP Standard	Pending	Many of Xcel's coal plants achieve new standard, thanks to existing controls
Greenhouse Gases	Red Herring	Regulations will not apply to existing plants

**Exaggerated Controls.** In addition to the overblown threat of an EPA regulatory crackdown, the trio also misled Coloradans about the measures that will be necessary to meet the Clean Air Act regulations that actually exist.

Although HB 1365 repeatedly calls for a plan to reduce “emissions,” it mandates specific emissions reductions for only one pollutant: nitrogen oxides (NOx). The law requires at least 70 percent reductions in nitrogen oxides from at least 900MW of coal power. For perspective, consider that 900MW is about 30 percent of Xcel’s coal power. HB 1365 singles out NOx because it is the only major pollutant that is not extensively controlled already within Xcel’s array of coal-fired power plants.

NOx is a primary ingredient in pollution that helps create both haze and ozone. As such, Colorado coal-fired power plants *must* install NOx control retrofits in order to comply with the Regional Haze rule, and they *might* have to install such technologies in order to comply with a tightened Ozone Rule. Compliance with the Regional Haze rule requires an existing coal-fired power plant to install “best” available retrofit controls, whereas the same power plant would have to install “reasonable” available controls in order to comply with a tightened ozone emissions standard. Under the Clean Air Act, states enjoy wide latitude in determining “best” and “reasonable” controls, and they are allowed to predicate their decisions on cost-effectiveness.

If the Obama administration tightens the National Ambient Air Quality Standard for ozone, then Colorado coal-fired power plants would be subject to a succession of NOx control mandates—first under the Regional Haze rule, and then under an Ozone Standard. According to the Ritter Administration, such a “traditional step-wise regulatory approach...could lead to controls for regional haze, such as selective non-catalytic reduction (SNCR), followed later by removing SNCR and installing a new selective catalytic reduction (SCR) emissions control system to meet the new ozone requirements.”<sup>22</sup>

Table 2. NOx Controls, Costs and Benefits

Type of Control	Capital Cost/per plant (millions)	Emissions reductions (%)
Combustion Controls <sup>23</sup>		
Low Nox Burners (LNB)	2-4	10-40
LNB + Overfire Air	2-4	10-40
Overfire Air	.5-1	15-30
Oxygen Enhanced Combustion	2-3	20-50
Post Combustion Controls <sup>24</sup>		
Selective Non-Catalytic Reduction (SNCR)	100	20-50
Selective Catalytic Reduction (SCR)	100	70-90

It was this prospect in particular—installing SNCR to meet the Regional Haze rule and then SCR to meet a possible tightened Ozone Standard—that propelled HB 1365 to passage.<sup>25</sup> As shown in table 2, SCR is a very expensive pollution control, with capital costs of roughly \$100 million per plant. If it were true that Colorado coal-fired power plants would have to install maximum feasible NOx control technology in order to comply with foreseeable Clean Air Act regulations, then coal plants would have to install ultra-expensive SCR NOx control technologies, and it is possible that fuel switching to natural gas would be a more affordable alternative.

But that is not the case. Retrofit technology required by the pending Regional Haze regulation is subject to a higher cost threshold than that required by a tightened National Ambient Air Quality Standard for Ozone. Yet the Ritter administration claims controls to meet the Ozone Standard (SCR) would be 10 times as expensive as controls required by the Regional Haze regulation (SNCR). It is implausible that the EPA would mandate such an expensive pollution control for a coal-fired power plant under a tightened Ozone Standard. Therefore, the Ritter administration’s “two-step regulatory approach” for NOx controls on existing coal-fired power plants—the *raison d’être* for HB 1365—was a straw man meant to make fuel switching seem affordable by comparison.

Table 3. Cost of Compliance with Foreseeable NOx Controls

Regulation	Control	Capital Cost M\$/plant	# of Xcel coal plants	Total Cost Million \$/plant
Regional Haze	NOx combustion controls	4	12	48
Ozone	SNCR	10	12	120
	Total			168

A more reasonable and affordable “two step regulatory approach” would have Xcel install low NOx burners on its coal-fired power plant fleet in order to comply with the Regional Haze rule. That is what Utah is doing.<sup>26</sup> Then, if the federal EPA tightens the Ozone Standard, Xcel could install SNCR controls. All told, such a course of action would comply with foreseeable Clean Air Act regulations, at a cost of almost \$170 million (see Table 3), which is roughly one-eighth of Xcel’s estimated \$1.3 billion “construction,” cost.

**Schedule Shenanigans.** Normally, a major resource plan such as the one mandated by HB 1365 would take years to consider. For example, the Public Utilities Commission examined Xcel’s last Electric Resource Plan for almost three years. Yet HB 1365, which was enacted in April, requires Public Utilities Commission to decide on Xcel’s implementation plan by December 15.

Even Xcel concedes the rushed schedule is inimical to a good planning. According to Xcel, “attempting to incorporate additional traditional resource planning issues, such as planning how best to meet future capacity and energy needs of the system with alternate resource portfolios, was not possible in the timeframe provided by [the] Clean Air Clean Jobs Act.”<sup>27</sup> If the compressed timeframe is hurting the resource planning process, then what’s the hurry?

In fact, the impetus for the bad policy is another bogeyman. The Ritter administration would have Coloradans believe the EPA is poised to run roughshod over the state’s environmental management unless Xcel’s HB 1365 plan is finalized by January. Nothing could be further from the truth.

Here’s how the ruse worked. The putative purpose of HB 1365 is to address air quality regulations. That is why parts of the HB 1365 plan as submitted by Xcel are also parts of the State’s Regional Haze plan, which is due to the EPA for review by January 9, 2011. Thus, the two plans are inextricably linked. The Ritter administration claims that if the Public Utilities Commission fails to approve Xcel’s HB 1365 strategy by December, then Colorado will not meet the EPA’s January deadline for a Regional Haze plan, and the EPA would take over the program and impose unduly onerous controls.<sup>28</sup>

This is another gross exaggeration. Claiming that a missed deadline would result in an EPA takeover is like saying you would go directly to jail if you miss a credit card payment. This is not how state-EPA relations work. The most likely result of a missed deadline is...more negotiations. It would go something like this—EPA’s Regional Office would want assurance that

Colorado is working on a plan, Colorado would show that is indeed working on a plan, and then the EPA would set a new deadline.

The threat of an EPA takeover is a phantom menace created by the Ritter administration, and a very successful one at that. Senate Minority Leader Josh Penry (R) cited “less federal intrusion in Colorado” as a reason for Republican support of HB 1365. The real reason that Governor Ritter, Xcel, and the PUC pushed a rushed schedule is so that they can control the process to completion before Ritter leaves office.

**Conclusion.** Coloradans were sold a false bill of goods on HB 1365. In early 2010, the Ritter administration, the Public Utilities Commission, and Xcel Energy trumped up the threat of federal air quality regulations in order to lend a false impetus for the legislation. Now they are exaggerating the threat of a federal takeover in an effort to rush the legislation’s implementation.

When all the subterfuge is stripped away, what is left is a classic case of *quid pro quo* politics. By pushing through a fuel-switching measure, Ritter gets to cement his green legacy as an anti-coal crusader. For lawmakers representing natural gas regions, the benefit of fuel switching is obvious. And Xcel gets more than \$100 million in profits. Those are the winners.

The losers include the Colorado coal industry, the eighth largest in the nation. The reduced demand will cause 500 miners to lose their jobs, according to Stuart Sanderson of the Colorado Mining Association.<sup>29</sup>

The biggest losers, naturally, are Xcel customers. The price tag of meeting foreseeable federal Clean Air Act regulations is almost \$1 billion cheaper than Xcel’s estimated HB 1365 construction costs. And that doesn’t even include the costs of natural gas, which is projected to be four times more expensive than coal. It is wrong to force customers to bear billion-dollar costs only to pad Ritter’s resume and Xcel’s bottom line, while pushing PUC’s ideology-driven “social values” agenda.

It is time to change course. The PUC should reject the arbitrary deadline it helped impose, and take as much time as necessary to carefully consider an implementation plan for HB 1365. Knowing that the PUC, Xcel, and the executive branch sold the Colorado General Assembly a false bill of goods, the legislature should repeal HB 1365. If that fails, Colorado energy consumers should consider a lawsuit against the PUC, Xcel, and the executive branch for illegal collaboration on HB 1365.

## **Appendix: “Foreseeable” Federal Air Quality Regulations**

**Regional Haze, BART.** In order to protect visibility in certain designated areas like national parks, Colorado coal-fired power plants constructed between 1962 and 1977 will have to implement Best Available Retrofit Technology (BART) to control sulfur dioxide and nitrogen oxides emissions by 2017.

**Nitrogen Dioxide National Ambient Air Quality Standard Primary Standard.** The federal Environmental Protection Agency is reviewing the *secondary* nitrous dioxide National

Ambient Air Quality Standard, not the primary standard. There is no federally foreseeable specified deadline for attainment for secondary standards. In other words, this regulation has no teeth.

**Nitrogen Deposition Reduction Plan.** The Nitrogen Deposition Reduction Plan was issued in 2007 by a multi-agency task force—consisting of the Colorado Department of Public Health and Environment and the federal Environmental Protection Agency and National Park Service—but is non-binding. Even if it were binding, it does not call for emissions controls for coal-fired power plants.

**Ozone National Ambient Air Quality Standard.** In 2007, EPA lowered the National Ambient Air Quality Standard (NAAQS) for Ozone from 80 parts per billion (ppb) to 75 ppb. A nine-county region, centered on Denver, is in non-attainment with the revised standard. In order to achieve attainment, the Air Quality Control Commission formulated an Ozone Action Plan. The Plan does not mandate emissions controls for coal-fired power plants, and it is expected to bring the nine-county non-attainment region into or very near compliance by 2018. Currently, the EPA is considering a further Ozone NAAQS revision. It has been widely reported that the Obama administration is considering a new standard somewhere between 60 and 70 ppb. Such a standard would prove very onerous. According to the Manufacturer's Alliance, it would cost hundreds of billions of dollars and scores of thousands of jobs.<sup>30</sup> Due to the large regulatory impact, the administration's proposed standard has proven very controversial. There is a bipartisan coalition in Congress that supports legislation to block a revision of the ozone NAAQS. Clearly, the Obama administration is aware of the pushback. The EPA was supposed to issue a new ozone standard in August, but it postponed that decision. Even if the EPA issues a new ozone NAAQS, it will face a barrage of litigation. According to a February 2010 National Academy of Sciences study, ozone increases are largely caused by emissions from Asian manufacturing.<sup>31</sup> That is likely to make a difference in any court challenge.

If, (1) the EPA issues new ozone standards, and (2) Congress does not override them, and (3) the standards survive litigation, then (4) coal fired power plants in Colorado would have to install Reasonably Available Control Technology.

**P.M. 2.5 National Ambient Air Quality Standard.** The EPA is currently reviewing its National Ambient Air Quality Standard (NAAQS) for particulate matter with a diameter of less than 2.5 micrometers (P.M. 2.5). Currently, the P.M. 2.5 NAAQS is set at 15 micrograms per cubic meter. However, all Colorado coal-fired power plants already have particulate filters, the maximum control technology for P.M. 2.5 emissions. Moreover, it is unlikely that any area of Colorado would be in non-attainment of even the most stringent P.M. 2.5 NAAQS now being considered by the EPA.<sup>32</sup>

**SO<sub>2</sub> NAAQS.** The EPA is reviewing the primary NAAQS for sulfur dioxide. However, according to the EPA's own emissions data, Colorado air quality does not violate the most stringent SO<sub>2</sub> NAAQS that the EPA is considering.<sup>33</sup>

**Mercury Section 112.** In order to comply with Section 112 of the Clean Air Act, Colorado coal-fired power plants will have to install Maximum Achievable Control Technology (MACT) for mercury. This is the most onerous regulatory control in the Clean Air Act, as it is defined as the top 12 percent performing control technologies in any industrial category. However, thanks both to existing controls and a relatively clean—that is, low-sulfur—supply, almost all of Xcel’s coal-fired power plants perform in the top 12 percent with respect to mercury emissions. For those that do not meet this threshold, MACT most likely will most likely be defined as a technology called “absorbent injection.” Federal estimates suggest that the cost of this technology will be about \$1.3 million per plant.<sup>34</sup>

**Greenhouse Gas Reporting.** Xcel already reports greenhouse gas emissions from its coal fired power plants.

**Carbon Monoxide NAAQS.** The EPA is reviewing the carbon monoxide NAAQS, and it could revise the standard. However, more than 98 percent of carbon monoxide emissions in Colorado are from cars and trucks. Emissions from stationary sources are caused by partially uncombusted carbons. Therefore, controlling for carbon monoxide in a stationary source is a matter of adjusting the heat of combustion, to ensure that all hydrocarbons are oxidized. As Xcel’s coal-fired power plants already do this, it is unlikely they would become subject to regulations under a revised carbon monoxide NAAQS.

**Greenhouse Gas Regulation.** While it is true that the EPA is proceeding with the regulation of greenhouse gases from stationary sources under the New Source Review provision of the Clean Air Act, this only applies to new source. That is, existing sources will not be regulated.

## Notes

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<sup>1</sup>Carl Miller and Polly Page interview, *The Amy Oliver Show*, 1310 KFKA, October 12, 2010.

<sup>2</sup>Public Utilities Commission website, <http://www.dora.state.co.us/puc/>, accessed October 13, 2010.

<sup>3</sup>Office of Governor Bill Ritter, “Signs Historic Clean Air Clean Jobs Act,” news release, April 19, 2010, <http://www.colorado.gov/cs/Satellite?c=Page&childpagename=GovRitter/GOVRLLayout&cid=1251573927379&pageName=GOVRWrapper>.

<sup>4</sup>Xcel “Clean Air Clean Jobs Emissions Reduction Plan, Docket No 10 10-245E, August 13, 2010, p. 10.

<sup>5</sup>Colo. Rev. Stat. § 40-3.2-207(3), “Current recovery shall be allowed on construction work in progress at the utility’s weighted average cost of capital, including its most recently authorized rate of return on equity, for expenditures on projects associated with the plan....” The current rate of return is 10.5 percent.

<sup>6</sup>Xcel “Clean Air Clean Jobs Emissions Reduction Plan,” Table 2.4: Gas Price Forecast, and Table 2.5: Coal Price Forecast, Docket, 10M-245E, August 13, 2010, p. 16.

<sup>7</sup>Answer Testimony of Ronald E Davis, PUC Staff, pg. 41, Docket No. 09AL-299E, September 4, 2009.

<sup>8</sup>Office of Governor Bill Ritter.

<sup>9</sup>Peter Blake, “Should Commissioners Disqualify Themselves because of Bias?” *Face the State*, August 26, 2010, <http://facethestate.com/peter-blake/19275-xcel-natural-gas-and-puc-ethics>.

<sup>10</sup>*Ibid.*

<sup>11</sup>*Ibid.*

<sup>12</sup>Vincent Carroll, “Malpractice at the PUC,” *Denver Post*, October 9, 2010, [http://www.denverpost.com/carroll/ci\\_16291164](http://www.denverpost.com/carroll/ci_16291164).

<sup>13</sup>Carl Miller and Polly Page, “Commentary on ‘Malpractice at the PUC,’” October 12, 2010.

<sup>14</sup>*Ibid.*

<sup>15</sup>Miller and Page, interview.

<sup>16</sup>Miller and Page, “Commentary.”

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<sup>17</sup>Miller and Page, interview.

<sup>18</sup>Colo. Rev. Stat. § 40-3.2-202 (1) Legislative Declaration.

<sup>19</sup>Direct Testimony and Exhibits of Karen T Hyde on Behalf of Xcel, Docket 10M-245E, August 13, 2010, pg. 29.

<sup>20</sup>ICF International, "Impact of Retiring at Risk Coal-fired Power Plants on Natural Gas Consumption, May 11, 2010, pgs. 1-2.

<sup>21</sup>Paul R. Tourangeau, Director of Air Pollution Control Division, "Informational Briefing Before the Colorado Public Utilities Commission, HB 10-1365, Clean Air/Clean Jobs Act, Air Quality Implementation," April 26, 2010, pp. 13-14, "Current and Foreseeable Air Quality Requirements Applicable to Coal Fired Power Plants."

<sup>22</sup>Direct Testimony of Paul R. Tourangeau on Behalf the CDPHE, Docket 10m-245E, September 17, 2010, p. 26.

<sup>23</sup>Capital cost of Combustion Controls are for 100MW coal plant; dollars-per-kilowatt-hour taken from BBC Research & Consulting, "Summary of Research on Potential Control Options, Emissions Reductions and Costs for Reducing SO<sub>2</sub> and NO<sub>x</sub> from Existing Major Colorado Point Sources," Section 2.

<sup>24</sup>Capital cost of Post Combustion Controls taken from Colorado Regional Haze SIP, p. 46.

<sup>25</sup>Direct Testimony and Exhibits of Karen T Hyde on Behalf of Xcel, August 13, 2010, Docket 10M-245E, pp. 30-31. "The problem with that approach [step-wise regulation] is that it could lead to unit by unit controls on coal units that would later need additional or different controls... We are concerned about investing significant money for controls for those plants at this time, especially if that investment were made in a piecemeal fashion. It is this concern that brought us [Xcel] to the table to negotiate and later support CACJA."

<sup>26</sup>Utah State Implementation Plan, Section XX, Regional Haze, September 3, 2008.

<sup>27</sup>Xcel "Clean Air Clean Jobs Emissions Reduction Plan," Docket No 10 10-245E, August 13, 2010, p.11.

<sup>28</sup>Air Pollution Control Division, "Statement of Basis, Specific Statutory Authority, and Purpose, Regulation No. 3, Part F, Best Available Retrofit Technology and Reasonable Progress for Regional Haze," September 2, 2010, p. 5; Direct Testimony of Paul R. Tourangeau on Behalf of the CDPHE, September 17, 2010, Docket 10m-245E, p. 3. "The federal Clean Air Act requires Colorado to submit a plan to address regional haze by early next year or the EPA will write its own plan for Colorado," from Office of Governor Bill Ritter, "Signs Historic Clean Air Clean Jobs Act."

<sup>29</sup>Ashley Sinclair, "HB 1365 Pits Coal, Natural Gas Industries," Colorado Statesman, March 26, 2010.

<sup>30</sup>Norman, Donald, "Economic Implications of EPA's Proposed Ozone Standard," Manufacturers Alliance, September 10, 2010, <http://www.mapi.net/Filepost/ER-707.pdf>.

<sup>31</sup>Les Blumenthal, "Asia Produced Ozone Making Its Way to U.S., Study Finds," McClatchy, February 21, 2010, <http://www.mcclatchydc.com/2010/02/21/86565/asia-produced-ozone-making-its.html>.

<sup>32</sup>The lowest threshold being considered by the EPA is 13 micrograms per cubic meter. According to the 2008 annual air quality report, Colorado ambient air concentrations of P.M. 2.5 are less than 10 micrograms per cubic meter. See, Colorado Department of Public Health and Environment, 2008 Air Quality Report, Figure 15, p. 32 <http://www.colorado.gov/airquality/documents/2008AnnualDataReport.pdf>.

<sup>33</sup>The most stringent SO<sub>2</sub> standard being considered by the EPA is 50 parts per billion. According to the EPA's analysis of SO<sub>2</sub> emissions, Colorado is now in attainment with this most stringent standard. See "Air Quality Analysis" of SO<sub>2</sub> NAAQS Regulatory Impact Analysis, Chapter 3, Figure 3.1, p. 32, <http://www.epa.gov/ttn/ecas/regdata/RIAs/fso2ria100602ch3.pdf>.

<sup>34</sup>"Mercury Control Technologies at Coal-Fired Power Plants Have Achieved Substantial Emissions Reductions," Government Accountability Office, GAO 10-47, October 2009, <http://www.gao.gov/new.items/d1047.pdf>.