BEFORE THE PUBLIC UTILITIES COMMISSION

STATE of COLORADO

DOCKET NO. 10M - 245E

SUPPLEMENTAL ANSWER TESTIMONY OF PAUL R. TOURANGEAU ON BEHALF OF THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT REGARDING PUBLIC SERVICE COMPANY OF COLORADO'S SCENARIOS 5B, 6.2J, 6E FS AND 6.1E FS

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."

Q: PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A: My name is Paul Tourangeau. My business address is 4300 Cherry Creek Drive South, Denver, Colorado, 80246.

Q: BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?

A: I am employed by the Colorado Department of Public Health and Environment (the Department). I am the Director of the Air Pollution Control Division.

Q: HAVE YOU INCLUDED A DESCRIPTION OF YOUR QUALIFICATIONS, DUTIES, AND RESPONSIBILITIES?

A: I previously included a description of my qualifications, duties and responsibilities as Exhibit PT 1 to the Department's September 17, 2010 testimony.

Q: WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A: The purpose of my testimony is to provide the Department's assessment of Public Service Company of Colorado's (PSCo's) emission reduction scenarios 6.2J, 5B, 6E FS and 6.1E FS. These scenarios have been submitted by PSCo to the Public Utilities Commission (PUC) pursuant to The Clean Air – Clean Jobs Act (Act). Through this

testimony, the Department provides comment to the PUC regarding the scenarios, including the expected NOx reductions, and how the scenarios are consistent with current and reasonably foreseeable requirements of the state and federal Clean Air Acts (CAA).

Q: WHAT IS THE DEPARTMENT'S UNDERSTANDING OF THE FOUR SCENARIOS 6.2J, 5B, 6E FS AND 6.1E FS?

A: Scenarios 6.2J and 5B are minor modifications to and logical outgrowths of PSCo's previously filed Preferred Plan 6.1E. Scenario 6.2J in effect simply accelerates both the retirement of Cherokee Unit 4 and the installation of the replacement Cherokee 1 x 1 combined cycle as set forth in 6.1E, and would serve to obviate the need for an SNCR on Cherokee 4 in 2012.[1] Scenario 5B was part of PSCo's original filing, and differs from 6.1E in that it proposes SCR control on Cherokee Unit 4 instead of retirement.[2] An SCR level of control reflects the maximum amount of NOx reductions that would be afforded under traditional direct regulation of NOx on a coal-fired electric generating unit (EGU) of this nature. From an air quality perspective, however, scenario 6.2J, considering NOx

[1] In discussing scenario 5B, PSCo indicates that the option of installing SNCR on Cherokee Unit 4 in 2012 "is still available to the Commission, and the Commission may want to include that option in its selected alternative, but with the installation of the SCR by end of 2017, the Company believes that its plan is [in] compliance with the CACJA without the additional cost of SNCR on Cherokee 4." Supplemental Direct Testimony of Karen Hyde, October 25, 2010, p. 10. PSCo has also indicated that SNCR is unnecessary under scenario 6.2J. Supplemental Direct Testimony of Gary Magno, October 25, 2010, pp. 3-4. The Department agrees, and understood an SNCR on Cherokee Unit 4 under 6.1E to be a lesser level of interim NOx control as an element of later retirement of Cherokee Unit 4 in 2022. With either the retirement of Cherokee 4 in 2017 or SCR at Cherokee 4 in 2017, installation of an SNCR in 2012 is not necessary for the plan to meet reasonably foreseeable requirements of the Clean Air Act.

[2] Under scenario 5B, PSCo appears to be proposing to install SCR at Cherokee Unit 4 by the end of 2016. However, if the PUC were to approve that scenario, PSCo is also asking for latitude to install SCR on Cherokee 4 by the end of 2017. This latitude would apparently fit better with planned outages and provide additional flexibility for PSCo to explore other options, including its preferred retirement of the plant. Supplemental Direct Testimony of Karen Hyde, October 25, 2010, p. 10. SCR in 2016 as opposed to 2017 would provide earlier emission reductions; however, the Department believes that installation in 2016 or 2017 would meet reasonably foreseeable requirements of the Clean Air Act. Moreover, because the Department agrees than a scenario that includes or promotes the retirement of Cherokee 4 is the best from an air quality standpoint, the Department supports an approach that provides flexibility if it can foster this ultimate result.

and other air pollutant reductions, provides the most benefit of the scenarios provided by PSCo on October 25, 2010.

Scenario 6.2J involves a combination of individual unit retirements and installation of air pollution controls at various facilities in order to achieve the emission reduction requirements under the Act. Specifically, scenario 6.2J requires the retirement of Cherokee Units 1, 2, 3 and 4, as well as Valmont 5, by the end of 2017. Pawnee will continue to run on coal and will be equipped with an SCR to reduce NOx and a flue-gas desulphurization system (limespray dryer) to reduce emission of SO_2 by 2014. Under scenario 6.2J, the Cherokee facility will have two new combined cycle natural gas-fired EGUs installed as replacement power at the facility, one in 2015, and the other by 2017 for the retirement of Cherokee Unit 4. The combined cycle natural gas units will eliminate the emissions of SO_2 and mercury, and will have a significantly lower NOx emissions profile as compared to the coal-fired units they will replace. The Hayden facility will continue to run on coal and will be equipped with a SCR system to reduce emissions of NOx on Units 1 and 2 in 2015 and 2016, as a conditional part of the PSCo Plan depending on the Air Quality Control Commission's (AQCC's) confirmation of the Department's regional haze determination. Again, scenario 5B is very similar to 6.2J, but with the important difference that SCR would be installed and the unit would continue to burn coal rather than be retired, and the second combined cycle natural gas replacement power unit would not be needed or be part of the plan.

PSCo scenarios 6E FS and 6.1E FS are similar to the original PSCo Preferred Plan 6.1E except, rather than a later retirement of Cherokee Unit 4 in that plan, these two scenarios provide for fuel switching from coal to natural gas at Cherokee Unit 4 in 2017,

which the unit is currently permitted to do. The Department incorporates by reference its testimony of November 2, 2010 regarding PSCo scenarios 6E FS and 6.1E FS, including the discussion and conclusions that those two scenarios would be consistent with reasonably foreseeable requirements of the CAA. In addition, the Department also incorporates by reference its September 17, 2010 testimony regarding the original PSCo Preferred Plan 6.1E, as it reflects the Department's discussion and conclusions regarding that plan and, as explained above, scenarios 6.2J and 5B are, from an air quality perspective, minor modifications to and logical outgrowths of that original plan.

Q: ARE SCENARIOS 6.2J, 5B, 6E FS AND 6.1E FS LIKELY TO ACHIEVE A GREATER THAN 70% REDUCTION OF NOx MEASURED FROM 2008 LEVELS?

A: Yes.

Q: WHAT NOx EMISSION REDUCTIONS DOES THE DEPARTMENT EXPECT FROM THE SCENARIOS?

A: The Department reviewed scenarios 6.2J, 5B, 6E FS and 6.1E FS, and confirmed the 2008 actual emissions of NOx from the units covered by the scenarios. The Department also calculated the expected future NOx emissions from the facilities that will continue to operate, including any new combined cycle natural gas replacement power, after December 2017.

The Department reviewed scenarios 6E FS and 6.1E FS and discussed the expected NOx reductions in its testimony of November 2, 2010, which are greater than

70% by 2017 under different operating assumptions.[3] By the Department's calculation and assuming both a 0.12 lb/mmBtu emission rate and Cherokee Unit 4 operating on natural gas (assuming 2008 heat input levels), scenarios 6E FS and 6.1E FS result in total projected NOx emissions of 3,095 tpy at the end of 2017 from the units in these scenarios (excluding Hayden). Compared to 2008 emissions of 18,147 tpy NOx (excluding Hayden), this reflects an 83% NOx reduction for each of the two scenarios, reductions which would be greater under a reduced capacity factor assumption. *See*, CDPHE's Testimony Regarding Fuel Switching, November 2, 2010, p. 2.

The NOx emissions from the facilities under scenario 6.2J (excluding the Hayden facility, as it is conditionally provided for in PSCo's Plan) are expected to go from 18,147 tpy in 2008 to 1,620 tpy by 2017, a 16,527 tpy reduction, which reflects an overall 91% reduction in NOx emissions from 2008 levels. Including Hayden, the NOx emission reductions under scenario 6.2J are expected to go from 25,162 tpy in 2008 to 3,076 tpy by 2017, a 22,086 tpy reduction, which reflects an overall 88% reduction in NOx emissions from 2008 levels. These NOx emissions reduction figures account for NOx emissions from the 2015 and 2017 combined cycle natural gas replacement power at the Cherokee facility (222 tpy NOx starting in 2015 and an additional 111 tpy NOx starting in 2017). These NOx emissions reductions are the same as those reflected in the Department's assessment of PSCo original Preferred Plan 6.1E as fully implemented with

[3] NOx emissions from Cherokee Unit 4 after a fuel switch to natural gas and assuming 2008 operations were calculated using 0.12 lb/mmBtu NOx for natural gas operations, and a 2008 heat input rate for the unit of 26,439,306 mmBtu (2008). NOx emissions from the unit after a fuel switch to natural gas at an assumed 50% operating capacity factor were calculated using 3520 mmBtu/hr maximum heat input, a 0.12 lb/mmBtu NOx for natural gas operations, and 4,380 hours reflecting 50% capacity.

the retirement of Cherokee Unit 4, which is set forth in the Department's September 17, 2010 testimony (*see*, also, Exhibit PT 3 to that testimony).

Scenario 5B (SCR on Cherokee 4) would result in NOx emissions from Cherokee 4 going from 4,225 tpy (2008) to an expected 925 tpy, and would result in total NOx emissions under 5B going from 18,147 tpy (2008) to 2,434 tpy[4], reflecting an 87% NOx reduction by the end of 2017 (excluding Hayden). If Hayden were included, NOx emissions under 5B would go from 25,162 tpy (2008) to 3,890 tpy, reflecting an 84% NOx reduction under 5B.

Q: ARE THERE OTHER EMISSION REDUCTIONS ASSOCIATED WITH THESE SCENARIOS?

A: Yes. For 6.2J, the Department estimates that, by the end of 2017, considering the retirements, controls and replacement power, emissions from the Front Range facilities will be reduced by: 18,502 tpy SO_2; 308 tpy carbon monoxide; approximately 194 lbs/year mercury; 101 tpy of direct total particulate matter based on the Division's analysis; and 10,000,000 tpy carbon dioxide from PSCo's analysis.[5] In addition, while the Department cannot quantify secondary fine particulate pollution reductions from the scenarios, the Department believes that the significant reduction of NOx and SO_2 emissions under the scenarios will provide for reduced fine particulate pollution, referred

[4] Cherokee Unit 4 emitted 4,225 tpy NOx in 2008 as reported in EPA's Clean Air Markets Division database. NOx emissions from Cherokee Unit 4 with SCR were calculated using 26,439,306 mmBTU in 2008 and an SCR operating at 0.07 lb/mmBTU NOx emissions rate ((26,439,306 *0.07)/2000) = 925 tpy). The NOx emissions from Plan 5B in total, excluding Hayden, were calculated using Cherokee Unit 4 with SCR, Pawnee with an SCR (36,775,940 mmBTU in 2008 and SCR at 0.07 lb/mmBTU) and the 2015 2x1 replacement power of 221.9 tpy NOx. *See also*, Exhibit PT-3 to the Department's September 17, 2010 testimony for pertinent emissions information.

[5] *See,* CDPHE Direct Testimony, September 17, 2010, pp. 13-14. Regarding CO2 emissions, s*ee*, PSCo Clean Air-Clean Jobs Emissions Reduction Plan, August 25, 2010, p. 101.

to as $PM_{2.5}$ pollution. This is because NOx and SO2, after being emitted from a facility, in part transform under atmospheric conditions to form $PM_{2.5}$ pollution.[6]

With respect to 5B, there would be similar overall emissions reductions to 6.1E or 6.2J, however, to some degree less with the ongoing operation of Cherokee Unit 4 on coal. For 5B, the Department estimates that, by the end of 2017, considering the retirements, controls and replacement power, emissions from the Front Range facilities will be reduced by: 16,524 tpy SO_2; 166 tpy carbon monoxide; approximately 188 lbs/year mercury; 67 tpy of direct total particulate matter based on the Division's analysis; and 8,000,000 tpy carbon dioxide from PSCo's analysis.[7] There would be some level of continuing SO2 emissions from Cherokee Unit 4 under 5B (1,668 tpy (2008) as controlled by the existing flue-gas desulphurization system on that unit). Similar to 6.2J, there would be reduced fine particle pollution, referred to as $PM_{2.5}$ pollution, under 5B.

The other emission reductions associated with the two fuel switch scenarios, 6E FS and 6.1E FS, which include additional SO_2, mercury and CO_2 emission reductions, are those as set forth in the Department's Testimony Regarding Fuel Switching of November 2, 2010 (pp. 2-5).

Q: WHAT CURRENT AND REASONABLY FORESEEABLE CLEAN AIR ACT REQUIREMENTS DID THE DEPARTMENT CONSIDER IN EVALUATING THESE SCENARIOS?

[6] *See*, 73 Fed. Reg. 28321, 28327-28 (May 16, 2008) ("Implementation of New Source Review for Particulate Matter Less Than 2.5 Micrometers").

[7] *See,* CDPHE Direct Testimony, September 17, 2010, pp. 13-14, and specifically Exhibit PT 3, to assign other pollutant emissions reductions under 5B with Cherokee Unit 4 continuing to operate on coal after 2017. Regarding CO2 emissions, s*ee*, PSCo Clean Air-Clean Jobs Emissions Reduction Plan, August 25, 2010, p. 101.

A: The Department considered the same current and reasonably foreseeable requirements previously discussed in the Department's September 17, 2010, testimony. Such current and reasonably foreseeable requirements include, without limitation, those previously described and pertaining to regional haze, ozone and other national ambient air quality standards (NAAQS), greenhouse gases, mercury and other hazardous air pollutants. These are all areas that EPA is currently regulating, and where further regulation is reasonably foreseeable in the near future. Reflective of those reasonably foreseeable requirements, EPA recently-issued the agency's 2011-2015 Strategic Plan, which states as follows:

> "America's communities face serious health and environmental challenges from air pollution and the growing effects of climate change. During my first year as Administrator, the EPA finalized an endangerment finding on greenhouse gases, proposed the first national rules to reduce greenhouse-gas emissions under the Clean Air Act and initiated a national reporting system for greenhouse-gas emissions. All of these advances signaled historic progress in the fight against climate change. Climate change must be considered and integrated into all aspects of our work. While the EPA stands ready to help Congress craft strong, science-based climate legislation that addresses the spectrum of issues, we will assess and develop regulatory tools as warranted under law using the authority of the Clean Air Act. We have strengthened the ambient air-quality standards for nitrogen dioxide and sulfur dioxide and proposed stronger standards for ozone, which will help millions of Americans breathe easier and lead healthier lives. We also are developing a comprehensive strategy for a cleaner and more efficient power sector, with strong and achievable emission-reduction goals for sulfur dioxide, nitrogen oxide, mercury and other air toxics. Strengthening the ambient air-quality standards consistent with the latest scientific information and gaining additional reductions in air toxics from a range of industrial facilities will significantly improve air quality and reduce risks to communities across the country."[8]

The Department does not believe that the intent of the Act is to have the Department evaluate reasonably foreseeable requirements for new natural gas

[8] U.S. EPA, "Fiscal Year 2011-2015 EPA Strategic Plan," September 30, 2010, pp. 1-2. *See also id.* at pp. 7-10, 49-52. http://www.epa.gov/ocfo/plan/2015/FY_2011-2015_EPA_Strategic_Plan_with_hyperlinks.pdf

replacement power, contrary to the assertions of some parties.[9] Accordingly, in evaluating whether a scenario is consistent with reasonably foreseeable requirements, the Department has properly focused on requirements that currently apply and will apply to the utility's existing coal-fired units. Nonetheless, the Department has considered existing and reasonably foreseeable requirements for new stationary natural gas turbines, as several PSCo scenarios envision one or two combined cycle turbines to replace some of the power from coal unit retirements. There are several federal requirements that could apply, including: 40 C.F.R. 63 Subpart YYYY National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines, (updated 69 FR 10537, Mar. 5, 2004), 40 C.F.R. 60 Subpart KKKK Standards of Performance for Stationary Combustion Turbines, and 40 C.F.R. 60 Subpart GG Stationary Gas Turbines (this regulation applies to older turbines, and is not likely to apply here). Construction of new combustion turbines would also be subject to Colorado Reasonably Available Control Technology (RACT) requirements. The new turbines would be expected to be subject to the netting requirements under the NSR/PSD programs. It is the Department's opinion that the turbines proposed by PSCo, new combined cycle natural gas with selective catalytic reduction, will be able to meet RACT requirements and would comply with existing and reasonably foreseeable MACT and NSPS regulations, and would be subject to netting elements, and this would be accommodated in the permitting process for these new sources. The Department has recently permitted similar sources and believes that

[9] The Department notes that the Act is intended, among other things, to "promote the use of natural gas and other low emitting resources," to consider "the use of natural gas to reduce coal-fired emissions," to promote the "retirement of coal-fired units if the retired coal-fired units are replaced by natural gas-fired electric generation or other low-emitting resources," and to "expeditiously accelerate coal plant retirements." *See, e.g.,* §§ 40-3.2-202(1), 202(2), 204(2)(a)(II) and (III) and 206(1)(a), C.R.S.

permitting of these sources would be relatively straightforward. Moreover, as discussed elsewhere herein, retirement of coal units and replacement with combined cycle natural gas power units will lead to significant emission reductions and is otherwise wholly consistent with the intent of the Act.

Q: ARE SCENARIOS 6.2J, 5B, AND 6E FS AND 6.1E FS, CONSISTENT WITH CURRENT AND REASONABLY FORESEEABLE REQUIREMENTS UNDER THE CLEAN AIR ACT?

A: Yes. In its September 17, 2010 testimony, the Department provided its determination of why previous scenario 6.1E met reasonably foreseeable requirements. From an emissions standpoint, scenario 6.2J is identical to previous scenario 6.1E, except the reductions from the retirement of Cherokee 4 will be realized several years earlier (2017 instead of 2022). Scenario 5B is similar to 6.1E, except that it includes an SCR on Cherokee 4 instead of SNCR followed by retirement. As the Department has previously opined in this docket:

> "The Department recognizes and agrees that if a PSCo or PUC plan provides a resulting facility and air emissions profile that affords the same or greater air emissions reductions sooner than PSCo Plan 6.1.E when fully implemented (and consistent with the Department's September 17, 2010 and October 4 and 14, 2010, filings) then, from an air emissions perspective, it would be expected to be consistent with the reasonably foreseeable requirements of the Clean Air Act. Thus, the greater and timelier emission reductions that are provided in a plan as compared to 6.1.E, the more likely that scenario will meet current and reasonably foreseeable requirements. Such scenarios could include, for example, additional controls (such as SCR) or retirement of Cherokee 4 earlier than originally proposed by PSCo."[10]

[10] Response of the Colorado Department of Public Health and Environment to Peabody Energy Corporation's Motion to Vacate Procedural Schedule and Set a Status Conference, October 18, 2010.

Accordingly, the Department effectively and previously opined that 6.2J and 5B meet reasonably foreseeable requirements. The Department further confirmed that position in my October 26, 2010 testimony before the Commission. In general, with the combination of retirements, air pollution control retrofits, and replacement power with combined cycle natural gas units, scenarios 6.2J and 5B provide for significant emission reductions of NOx, SO_2, hazardous air pollutants, particulate matter including some amount of primary and secondary $PM_{2.5}$ emissions, and carbon dioxide.

Regarding scenario 5B, the Department believes that an SCR level of control on Cherokee Unit 4 reflects the maximum amount of NOx reductions that would be afforded under traditional direct regulation for NOx on a coal-fired EGU of this nature. Thus in general SCR would be expected to be consistent with reasonably foreseeable requirements of the CAA with respect to requirements that would relate to NOx emissions from that unit, for example ozone and regional haze requirements. Moreover, as CDPHE has previously stated,[11] use of this level of control for NOx emissions from Cherokee Unit 4 would in the Department's opinion address the primary inconsistency issue that arose from the so-called "truncated" plan, wherein a lesser level NOx control of SNCR was presumed on the unit indefinitely. The Department believes that with an SCR level of control on Cherokee Unit 4, and with NOx emissions at a level of 2,434 tpy for the plan as a whole by 2017, Plan 5B meets the reasonably foreseeable NOx requirements of the CAA.

[11] *See, e.g.,* Response of the Colorado Department of Public Health and Environment to the Colorado Public Utilities Commission's September 29, 2010 Order Denying Motion for Partial Judgment, October 4, 2010, and Response of the Colorado Department of Public Health and Environment to PSCo's Application for Rehearing, Re-argument and/or Reconsideration, October 14, 2010.

While Plan 5B would result in some level of ongoing SO_2 emissions from continuing operation of Cherokee Unit 4, that unit presently has a flue-gas desulphurization (FGD) unit in operation. As of 2017 the FGD system satisfies the requirements for regional haze in the first planning period (these SO_2 emissions are accounted for in the present BART Alternative demonstration before the AQCC), and it would be expected to be adequate for the second regional haze planning period (although it might be reviewed for upgrades or enhancements to the system, but not removal or replacement of the existing SO_2 control system). CO_2 emissions from Cherokee Unit 4 would not be reduced by the use of SCR control on the unit, but CO_2 reductions from scenario 5B as a whole, afforded by other retirements in the plan, would serve to reduce the potential for inconsistency with the CAA with respect to future greenhouse gas emission reduction requirements.

The Department reviewed 6E FS and 6.1E FS for their emission reductions and, for the reasons set forth in its testimony of November 2, 2010, concluded that those two scenarios would be consistent with reasonably foreseeable requirements of the CAA. The Department expects that these emissions reductions from the plans will be consistent with the current and reasonably foreseeable requirements of the CAA, and allow PSCo to achieve compliance while avoiding the piecemeal and less efficient approach of responding separately and sequentially to each individual regulatory requirement to control emissions at each of its covered facilities.

Q: IS SCENARIO 6.2J SUPERIOR TO SCENARIOS 5B, 6E FS AND 6.1E FS FROM AN AIR QUALITY PERSPECTIVE?

A: Yes. In addition to determining whether a plan is consistent with current reasonably foreseeable requirements, the Act also provides that the Commission "shall provide the Department an opportunity to . . . comment on the air quality, all other pollutants, and other emission reductions of the plan." C.R.S. § 40-3.2-204(2)(b)(II)(A), C.R.S. Thus, the Department's comments to the Commission are not limited solely to whether the utility's plan is consistent or not with current and reasonably foreseeable requirements. In light of the current procedural posture whereby the Commission has various scenarios "on the table" before it, the Department believes that it is appropriate for the Department to comment on the relative merits of the air quality aspects of the scenarios.

From an air quality perspective, scenario 6.2J is superior to any of the other plans that PSCo has indicated are acceptable to the Company. For that reason, compared to the other acceptable scenarios to date, scenario 6.2J is the preferred scenario of the Department. Scenarios 6.2J and 5B both retire Cherokee 1, 2, 3, and Valmont 5. The distinction is that scenario 6.2J also retires Cherokee 4, while 5B applies the most stringent NOx control (SCR) to the unit. When replacement power is factored in, scenario 6.2J affords better NOx reductions than 5B, which are important for ozone reduction and long-term maintenance of the ozone NAAQS. Significantly, scenario 6.2J also provides for incrementally more reductions in sulfur dioxide, mercury, and carbon dioxide. Indeed, SO2 and Hg emissions would be virtually eliminated from Cherokee 4 when retired and replaced with natural gas power, which would also eliminate the possibility of additional required emission controls or affecting existing emissions controls at some point in the future.

Moreover, with the likelihood that there will be a price on or some form of federal regulation to reduce carbon emissions, scenario 6.2J provides greater CO_2 reductions than scenario 5B. Because scenario 6.2J affords greater reductions in greenhouse gas emissions over others scenarios (for example, 2,000,000 additional tpy CO2 reductions over 5B), it is more consistent with future regulations that would serve to reduce greenhouse gases from large sources such as coal-fired EGUs. Through the retirement of certain units, scenario 6.2J serves to reduce carbon dioxide from the facilities in the Plan from 34,000,000 to 24,000,000 by 2017,[12] reflecting a 23% reduction. As stated by PSCo, retirement of Cherokee 4 "would be a better option to minimize [the] risk" of future CO2 regulation.[13] Similarly, PSCo has indicated that "Scenario 5B does not provide as much of a hedge against carbon costs" that would occur with the retirement of Cherokee 4.[14] The Division agrees with PSCo that retirement of Cherokee 4, as opposed to SCR, provides greater consistency and protection from risks associated with future carbon regulation.

As stated by PSCo, "[t]he company thinks that the installation of SCR on Cherokee 4 is *not* the best final resolution for Cherokee 4. The Company believes that it would be better to retire Cherokee 4 rather than invest in emissions controls and life extensions at the gaining plant."[15] Accordingly, the Company would only "reluctantly" agree to install SCR and continue burning coal at Cherokee 4. *Id.* at p. 8. Similarly, the Department believes that a scenario that includes more retirements of coal units and replacement with new combined cycle natural gas units would be more consistent with

[12] PSCo Clean Air-Clean Jobs Emissions Reduction Plan, August 25, 2010, p. 101.
[13] Supplemental Direct Testimony of Gary Magno, October 25, 2010, pp. 7-8.
[14] Supplemental Direct Testimony of Karen Hyde, October 25, 2010, p. 9.
[15] Supplemental Direct Testimony of Karen Hyde, October 25, 2010, pp. 8-9.

the Act's explicit direction to consider "the use of natural gas to reduce coal-fired emissions," and to "expeditiously accelerate coal plant retirements." *See, e.g.,* §§ 40-3.2-202(1), 202(2), 204(2)(a)(II) and (III) and 206(1)(a), C.R.S. Solely from an air quality and a public health perspective, the better choice would be those scenarios that offer the greatest emission reductions. However, the Department also understands and appreciates that the Commission must evaluate the plan against other requirements, including consideration of reasonable costs and insuring that the approved plan preserves reliable electric service for consumers.

Q: HAVE YOU DETERMINED WHETHER ANY NEW OR REPOWERED ELECTRIC GENERATING UNIT PROPOSED UNDER THESE SCENARIOS, OTHER THAN A PEAKING FACILITY UTILIZED LESS THAN 20 PERCENT ON AN ANNUAL BASIS OR A FACILITY THAT CAPTURES MORE THAN SEVENTY PERCENT OF EMISSIONS NOT SUBJECT TO A NATIONAL AMBIENT AIR QUALITY STANDARD OR A HAZARDOUS AIR POLLUTANT STANDARD, WILL ACHIEVE EMISSION RATES EQUIVALENT TO OR LESS THAN A COMBINED-CYCLE NATURAL GAS GENERATING UNIT?

A: Yes.

Q: WHAT IS YOUR DETERMINATION?

A: Scenario 6.2J proposes two new EGUs for replacement power, both to be located at the Cherokee facility. One is a 2x1 combined cycle unit controlled with SCR to be constructed and operational in 2015, and the other is a 1x1 combined cycle unit controlled with SCR to be constructed and operational in 2017. Under 5B and the two fuel switch scenarios, the first of those replacement power units as described would be

constructed and operational in 2015. These new EGUs are to be state of the art combined-cycle natural gas units and, with the best level of control equipment, the Department believes they will emit NOx at a rate of 26.3 lbs/hour (or 4 parts per million), and thus meet the legislative element that they will achieve emission rates equivalent to or less than a combined-cycle natural gas generating unit.

Q: DOES THIS CONCLUDE YOUR TESTIMONY?

A: Yes.