

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

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

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

6 A: Scenarios 6.2J and 5B are minor modifications to and logical outgrowths of PSCo’s
7 previously filed Preferred Plan 6.1E. Scenario 6.2J in effect simply accelerates both the
8 retirement of Cherokee Unit 4 and the installation of the replacement Cherokee 1 x 1
9 combined cycle as set forth in 6.1E, and would serve to obviate the need for an SNCR on
10 Cherokee 4 in 2012.¹ Scenario 5B was part of PSCo’s original filing, and differs from
11 6.1E in that it proposes SCR control on Cherokee Unit 4 instead of retirement.² An SCR
12 level of control reflects the maximum amount of NOx reductions that would be afforded
13 under traditional direct regulation of NOx on a coal-fired electric generating unit (EGU)
14 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 that 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.

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

3 Scenario 6.2J involves a combination of individual unit retirements and
4 installation of air pollution controls at various facilities in order to achieve the emission
5 reduction requirements under the Act. Specifically, scenario 6.2J requires the retirement
6 of Cherokee Units 1, 2, 3 and 4, as well as Valmont 5, by the end of 2017. Pawnee will
7 continue to run on coal and will be equipped with an SCR to reduce NO_x and a flue-gas
8 desulphurization system (limespray dryer) to reduce emission of SO₂ by 2014. Under
9 scenario 6.2J, the Cherokee facility will have two new combined cycle natural gas-fired
10 EGUs installed as replacement power at the facility, one in 2015, and the other by 2017
11 for the retirement of Cherokee Unit 4. The combined cycle natural gas units will
12 eliminate the emissions of SO₂ and mercury, and will have a significantly lower NO_x
13 emissions profile as compared to the coal-fired units they will replace. The Hayden
14 facility will continue to run on coal and will be equipped with a SCR system to reduce
15 emissions of NO_x on Units 1 and 2 in 2015 and 2016, as a conditional part of the PSCo
16 Plan depending on the Air Quality Control Commission's (AQCC's) confirmation of the
17 Department's regional haze determination. Again, scenario 5B is very similar to 6.2J, but
18 with the important difference that SCR would be installed and the unit would continue to
19 burn coal rather than be retired, and the second combined cycle natural gas replacement
20 power unit would not be needed or be part of the plan.

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

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

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

12 A: Yes.

13 **Q: WHAT NO_x EMISSION REDUCTIONS DOES THE DEPARTMENT EXPECT**
14 **FROM THE SCENARIOS?**

15 A: The Department reviewed scenarios 6.2J, 5B, 6E FS and 6.1E FS, and confirmed the
16 2008 actual emissions of NO_x from the units covered by the scenarios. The Department
17 also calculated the expected future NO_x emissions from the facilities that will continue to
18 operate, including any new combined cycle natural gas replacement power, after
19 December 2017.

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

1 70% by 2017 under different operating assumptions.³ By the Department's calculation
2 and assuming both a 0.12 lb/mmBtu emission rate and Cherokee Unit 4 operating on
3 natural gas (assuming 2008 heat input levels), scenarios 6E FS and 6.1E FS result in total
4 projected NOx emissions of 3,095 tpy at the end of 2017 from the units in these scenarios
5 (excluding Hayden). Compared to 2008 emissions of 18,147 tpy NOx (excluding
6 Hayden), this reflects an 83% NOx reduction for each of the two scenarios, reductions
7 which would be greater under a reduced capacity factor assumption. *See*, CDPHE's
8 Testimony Regarding Fuel Switching, November 2, 2010, p. 2.

9 The NOx emissions from the facilities under scenario 6.2J (excluding the Hayden
10 facility, as it is conditionally provided for in PSCo's Plan) are expected to go from
11 18,147 tpy in 2008 to 1,620 tpy by 2017, a 16,527 tpy reduction, which reflects an overall
12 91% reduction in NOx emissions from 2008 levels. Including Hayden, the NOx emission
13 reductions under scenario 6.2J are expected to go from 25,162 tpy in 2008 to 3,076 tpy
14 by 2017, a 22,086 tpy reduction, which reflects an overall 88% reduction in NOx
15 emissions from 2008 levels. These NOx emissions reduction figures account for NOx
16 emissions from the 2015 and 2017 combined cycle natural gas replacement power at the
17 Cherokee facility (222 tpy NOx starting in 2015 and an additional 111 tpy NOx starting
18 in 2017). These NOx emissions reductions are the same as those reflected in the
19 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.

1 the retirement of Cherokee Unit 4, which is set forth in the Department's September 17,
2 2010 testimony (*see*, also, Exhibit PT 3 to that testimony).

3 Scenario 5B (SCR on Cherokee 4) would result in NOx emissions from Cherokee
4 4 going from 4,225 tpy (2008) to an expected 925 tpy, and would result in total NOx
5 emissions under 5B going from 18,147 tpy (2008) to 2,434 tpy⁴, reflecting an 87% NOx
6 reduction by the end of 2017 (excluding Hayden). If Hayden were included, NOx
7 emissions under 5B would go from 25,162 tpy (2008) to 3,890 tpy, reflecting an 84%
8 NOx reduction under 5B.

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

11 A: Yes. For 6.2J, the Department estimates that, by the end of 2017, considering the
12 retirements, controls and replacement power, emissions from the Front Range facilities
13 will be reduced by: 18,502 tpy SO₂; 308 tpy carbon monoxide; approximately 194
14 lbs/year mercury; 101 tpy of direct total particulate matter based on the Division's
15 analysis; and 10,000,000 tpy carbon dioxide from PSCo's analysis.⁵ In addition, while
16 the Department cannot quantify secondary fine particulate pollution reductions from the
17 scenarios, the Department believes that the significant reduction of NOx and SO₂
18 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, *see*, PSCo Clean Air-Clean Jobs Emissions Reduction Plan, August 25, 2010, p. 101.

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

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

13 The other emission reductions associated with the two fuel switch scenarios, 6E
14 FS and 6.1E FS, which include additional SO₂, mercury and CO₂ emission reductions, are
15 those as set forth in the Department's Testimony Regarding Fuel Switching of November
16 2, 2010 (pp. 2-5).

17 **Q: WHAT CURRENT AND REASONABLY FORESEEABLE CLEAN AIR ACT**
18 **REQUIREMENTS DID THE DEPARTMENT CONSIDER IN EVALUATING**
19 **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, see, PSCo Clean Air-Clean Jobs Emissions Reduction Plan, August 25, 2010, p. 101.

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

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

28
29 The Department does not believe that the intent of the Act is to have the
30 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

1 replacement power, contrary to the assertions of some parties.⁹ Accordingly, in
2 evaluating whether a scenario is consistent with reasonably foreseeable requirements, the
3 Department has properly focused on requirements that currently apply and will apply to
4 the utility's existing coal-fired units. Nonetheless, the Department has considered
5 existing and reasonably foreseeable requirements for new stationary natural gas turbines,
6 as several PSCo scenarios envision one or two combined cycle turbines to replace some
7 of the power from coal unit retirements. There are several federal requirements that
8 could apply, including: 40 C.F.R. 63 Subpart YYYY National Emission Standards for
9 Hazardous Air Pollutants for Stationary Combustion Turbines, (updated 69 FR 10537,
10 Mar. 5, 2004), 40 C.F.R. 60 Subpart KKKK Standards of Performance for Stationary
11 Combustion Turbines, and 40 C.F.R. 60 Subpart GG Stationary Gas Turbines (this
12 regulation applies to older turbines, and is not likely to apply here). Construction of new
13 combustion turbines would also be subject to Colorado Reasonably Available Control
14 Technology (RACT) requirements. The new turbines would be expected to be subject to
15 the netting requirements under the NSR/PSD programs. It is the Department's opinion
16 that the turbines proposed by PSCo, new combined cycle natural gas with selective
17 catalytic reduction, will be able to meet RACT requirements and would comply with
18 existing and reasonably foreseeable MACT and NSPS regulations, and would be subject
19 to netting elements, and this would be accommodated in the permitting process for these
20 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.

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

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

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

15 “The Department recognizes and agrees that if a PSCo or PUC plan provides a resulting
16 facility and air emissions profile that affords the same or greater air emissions reductions
17 sooner than PSCo Plan 6.1.E when fully implemented (and consistent with the
18 Department’s September 17, 2010 and October 4 and 14, 2010, filings) then, from an air
19 emissions perspective, it would be expected to be consistent with the reasonably
20 foreseeable requirements of the Clean Air Act. Thus, the greater and timelier emission
21 reductions that are provided in a plan as compared to 6.1.E, the more likely that scenario
22 will meet current and reasonably foreseeable requirements. Such scenarios could
23 include, for example, additional controls (such as SCR) or retirement of Cherokee 4
24 earlier than originally proposed by PSCo.”¹⁰
25

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.

1 Accordingly, the Department effectively and previously opined that 6.2J and 5B
2 meet reasonably foreseeable requirements. The Department further confirmed that
3 position in my October 26, 2010 testimony before the Commission. In general, with the
4 combination of retirements, air pollution control retrofits, and replacement power with
5 combined cycle natural gas units, scenarios 6.2J and 5B provide for significant emission
6 reductions of NO_x, SO₂, hazardous air pollutants, particulate matter including some
7 amount of primary and secondary PM_{2.5} emissions, and carbon dioxide.

8 Regarding scenario 5B, the Department believes that an SCR level of control on
9 Cherokee Unit 4 reflects the maximum amount of NO_x reductions that would be afforded
10 under traditional direct regulation for NO_x on a coal-fired EGU of this nature. Thus in
11 general SCR would be expected to be consistent with reasonably foreseeable
12 requirements of the CAA with respect to requirements that would relate to NO_x
13 emissions from that unit, for example ozone and regional haze requirements. Moreover,
14 as CDPHE has previously stated,¹¹ use of this level of control for NO_x emissions from
15 Cherokee Unit 4 would in the Department's opinion address the primary inconsistency
16 issue that arose from the so-called "truncated" plan, wherein a lesser level NO_x control of
17 SNCR was presumed on the unit indefinitely. The Department believes that with an SCR
18 level of control on Cherokee Unit 4, and with NO_x emissions at a level of 2,434 tpy for
19 the plan as a whole by 2017, Plan 5B meets the reasonably foreseeable NO_x requirements
20 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.

1 While Plan 5B would result in some level of ongoing SO₂ emissions from
2 continuing operation of Cherokee Unit 4, that unit presently has a flue-gas
3 desulphurization (FGD) unit in operation. As of 2017 the FGD system satisfies the
4 requirements for regional haze in the first planning period (these SO₂ emissions are
5 accounted for in the present BART Alternative demonstration before the AQCC), and it
6 would be expected to be adequate for the second regional haze planning period (although
7 it might be reviewed for upgrades or enhancements to the system, but not removal or
8 replacement of the existing SO₂ control system). CO₂ emissions from Cherokee Unit 4
9 would not be reduced by the use of SCR control on the unit, but CO₂ reductions from
10 scenario 5B as a whole, afforded by other retirements in the plan, would serve to reduce
11 the potential for inconsistency with the CAA with respect to future greenhouse gas
12 emission reduction requirements.

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

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

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

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

1 Moreover, with the likelihood that there will be a price on or some form of federal
2 regulation to reduce carbon emissions, scenario 6.2J provides greater CO₂ reductions than
3 scenario 5B. Because scenario 6.2J affords greater reductions in greenhouse gas
4 emissions over others scenarios (for example, 2,000,000 additional tpy CO₂ reductions
5 over 5B), it is more consistent with future regulations that would serve to reduce
6 greenhouse gases from large sources such as coal-fired EGUs. Through the retirement of
7 certain units, scenario 6.2J serves to reduce carbon dioxide from the facilities in the Plan
8 from 34,000,000 to 24,000,000 by 2017,¹² reflecting a 23% reduction. As stated by
9 PSCo, retirement of Cherokee 4 “would be a better option to minimize [the] risk” of
10 future CO₂ regulation.¹³ Similarly, PSCo has indicated that “Scenario 5B does not
11 provide as much of a hedge against carbon costs” that would occur with the retirement of
12 Cherokee 4.¹⁴ The Division agrees with PSCo that retirement of Cherokee 4, as opposed
13 to SCR, provides greater consistency and protection from risks associated with future
14 carbon regulation.

15 As stated by PSCo, “[t]he company thinks that the installation of SCR on
16 Cherokee 4 is *not* the best final resolution for Cherokee 4. The Company believes that it
17 would be better to retire Cherokee 4 rather than invest in emissions controls and life
18 extensions at the gaining plant.”¹⁵ Accordingly, the Company would only “reluctantly”
19 agree to install SCR and continue burning coal at Cherokee 4. *Id.* at p. 8. Similarly, the
20 Department believes that a scenario that includes more retirements of coal units and
21 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.

1 the Act’s explicit direction to consider “the use of natural gas to reduce coal-fired
2 emissions,” and to “expeditiously accelerate coal plant retirements.” *See, e.g.,* §§ 40-3.2-
3 202(1), 202(2), 204(2)(a)(II) and (III) and 206(1)(a), C.R.S. Solely from an air quality
4 and a public health perspective, the better choice would be those scenarios that offer the
5 greatest emission reductions. However, the Department also understands and appreciates
6 that the Commission must evaluate the plan against other requirements, including
7 consideration of reasonable costs and insuring that the approved plan preserves reliable
8 electric service for consumers.

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

17 A: Yes.

18 **Q: WHAT IS YOUR DETERMINATION?**

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

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

6 **Q: DOES THIS CONCLUDE YOUR TESTIMONY?**

7 A: Yes.