

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

PROCEEDING NO. 20I-0437E

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IN THE MATTER OF THE INVESTIGATION INTO THE HISTORY AND CONTINUING OPERATIONS OF THE PUBLIC SERVICE COMPANY OF COLORADO COMANCHE UNIT 3 GENERATING STATION PURSUANT TO DECISION NO. C20-0505.

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**DECISION OPENING INVESTIGATORY  
PROCEEDING AND NOTICE OF INQUIRY**

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Mailed Date: October 30, 2020  
Adopted Date: October 28, 2020

**I. BY THE COMMISSION**

**A. Statement**

1. On July 14, 2020, the Colorado Public Utilities Commission (Commission) issued Decision No. C20-0505, in Proceeding No. 19AL-0268E, the Public Service Company of Colorado (Public Service or Company) general rate case, addressing applications for rehearing, reargument, or reconsideration; addressing related motions; and conditionally requiring a compliance filing.

2. The Commission, in Decision No. C20-0505, discussed a number of the continuing operations and equipment problems that have plagued Comanche Unit 3 since it was declared in-service and placed in rate base as a used and useful generation on May 14, 2010.<sup>1</sup> The specific incidents that the Commission discussed in the decision included: the boiler tube leaks encountered in late 2009 that Public Service indicated were due to inadequate post weld

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<sup>1</sup> Public Service Advice Letter No. 1563 – Electric, May 10, 2010, effective date May 14, 2010.

stress relieving treatments;<sup>2</sup> the stack noise issue;<sup>3</sup> the reduced capacity factors due to planned outages required to correct improperly welded components in the boiler and unplanned outages as a result of slagging due to malfunctioning water cannons;<sup>4</sup> the replacement of the finishing superheater which was the subject of a recommendation to disallow recovery of \$11.7 million in investments in Proceeding No. 19AL-0268E;<sup>5</sup> and finally, the report of a major incident at Comanche Unit 3 where the loss of lubrication oil for the steam turbine shaft resulted in major damage.

3. The Commission concluded its discussion in the decision stating “[b]ased on the foregoing, we intend to discuss further the merits of opening an investigation into the history and continuing operations of Comanche 3, particularly as Colorado utilities consider various measures for reducing emissions of carbon dioxide and other greenhouse gas emissions.”<sup>6</sup>

4. The relevant sections of Decision No. C20-0505 are provided below for convenience:

55. In Decision No. C20-0096, the Commission determines that Sierra Club had made a persuasive case in support of a disallowance of \$11.7 million of investment costs associated with a replacement finishing superheater (FSH) installed on the Comanche 3 generation unit. The Commission agrees with Sierra Club that Public Service should have recognized the flaw in the design of the FSH before Comanche 3 was completed, specifically that the FSH would be prone to exfoliation because of the use of T-91 and T-92 alloys based on a June 2007 EPRI study. The Commission states that while Public Service mitigated the potential financial consequence of a later cost disallowance by securing a substantial discount from Alstom for the FSH replacement, that action alone does not suffice to show that Public Service’s actions with respect to the original FSH were prudent. The Commission states that embracing state-of-the

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<sup>2</sup> Proceeding No. 09AL-299E, Hearing Transcript, December 16, 2009, Excerpt pp. 2-8.

<sup>3</sup> Proceeding No. 09AL-299E, Public Service 10th Weekly Update Regarding Comanche 3, Attachment 4.

<sup>4</sup> Staff of the Commission’s Investigation of the Historic and Expected use of Public Service Company of Colorado’s Existing Generation resources pursuant to Decision No. C13-0094 (Proceeding No. 11A-869E issued January 24, 2013), Public Version, September 17, 2013.

<sup>5</sup> Decision No. C20-0505, Proceeding No. 19AL-0268E, mailed July 14, 2020, pp.18-21.

<sup>6</sup> Decision No. C20-0505 at ¶ 67.

art design comes with risk, and the financial consequences of problems stemming from such risk should not be assumed to be the exclusive burden of ratepayers.

56. In its RRR, Public Service requests that the Commission reconsider its disallowance of the investment costs to replace FSH for the Comanche 3 generating unit. The Company principally argues that the Commission is overly reliant on a single piece of evidence “produced in a dynamic environment as the Company was evaluating its approach to replace the FSH.” Public Service states that Sierra Club failed to demonstrate that the EPRI study was conclusive and thus the study does not constitute evidence to demonstrate that Public Service’s actions regarding the original FSH were imprudent. The Company further states that the 2007 EPRI study itself indicates that further research was needed and that the then-current level of understanding was not sufficiently developed for events to be predicted.

57. We grant Public Service’s RRR on this issue and permit the Company to recover the \$11.7 million investment in the replacement FSH at Comanche 3 through rates. While Sierra Club put forth compelling testimony, we agree with Public Service that Sierra Club’s argument largely hinges on the 2007 EPRI report that, upon reconsideration, does not conclusively state that the alloys are problematic or should be avoided.

58. The 2007 EPRI report sets off from an understanding that oxidation of “engineering alloys is a thermodynamically expected and unavoidable phenomenon.” It characterizes the authors’ endeavor as gathering data on various alloys with the goal of eventually creating a predictive mathematical model that could predict oxidation rates and failures, though the authors recognize that more data was needed to reach that goal. So, while the report collects data on expected oxidation of the alloys used in steam boilers, it does not and was not intended to evaluate whether or how those alloys should continue to be used in steam boilers.

59. With respect to the T-91 alloy, the report observes that there were some reports from Japan of scale exfoliation occurring from alloy T-91. However, on the same page it states that other field experience in Japan with T-91 suggested a much lower tendency for exfoliation than for the lower-Cr ferritics, and that no exfoliation was observed from T-91 and T-122 alloys for up to five years of service. It also noted that some T-91 tubes “removed from reheater service after long [service periods]” showed scale patterns that led to short-term overheating. In short, the report briefly describes results from installations with the newer T-91 alloy but does not suggest or conclude that its use is discouraged or should be avoided in steam boilers. No similar qualitative discussion was provided for T-92 alloy.

60. In its response to Public Service’s RRR, Sierra Club points out that the EPRI report cites other reports that discuss the T-91 and T-92 alloys. But those other reports are not within this record and the Commission cannot rely on information that is not within the record of this Proceeding.

61. In the end, we find the evidence and testimony on this issue is inconclusive. It does not show that at the time Comanche 3 was designed and

constructed Public Service should have known that the T-91 alloy would be a poor choice for the finishing superheater at Comanche 3. And we are not fully convinced that decision was so deficient that we should disallow cost recovery.

62. However, our decision to allow Public Service to recover through rates the \$11.7 million investment in the replacement FSH at Comanche 3 is made with reluctance. The Commission's records show a continuing history of construction and operational problems with the Comanche 3 unit that have forced the Commission to exercise careful scrutiny of the Company's investments in the plant and its ongoing operations.

63. In Proceeding No. 09AL-299E, the rate case in which Public Service initially sought recovery of the costs of Comanche 3 through base rates, extensive testimony addressed problems with welds on a material that "becomes very brittle when it's heated up." At one of the hearings in the case, the plant expert testifying on behalf of Public Service was asked by a Commissioner about possibilities that, when Comanche 3 was up and running, problems would again arise. As part of this questioning, the Commissioner posited that from an engineering perspective, Public Service would want to make sure that the plant was operating correctly and that the tube failures being addressed were "not going to come back and bite [the Company] later, because [the Company] moved too quickly in accepting it." The Commission contrasted those engineering concerns with the financial decision-making with regard to how fast the Company took possession of the Comanche 3 plant for cost recovery purposes. In response, the witness admitted to the Commissioner knowledge from Alstom that comparable problems occurred on similar boilers built in China and Taiwan. The witness also was aware of the potential need for "long-term, warranty-related" discussions with Alstom.

64. In Decision No. C10-0255, issued in Proceeding No. 09AL-299E in March of 2010, the Commission noted that one of the major issues in the docket was the timing of cost recovery for the Comanche 3 generating unit. The Commission summarized that the timing issue arose because Comanche 3 was not ready to be declared in-service and placed in rate base as a used and useful generation asset on or before December 31, 2009. The Commission stated that since issuing December 2009, Public Service had filed ten weekly updates concerning Comanche 3 but that due to media reports, letters from county commissioners, and information received at a Commissioners' Informational Meeting, the Commission became informed about a new issue associated with noise from Comanche 3. The Commission concluded that this noise problem might bear on the Commission's consideration of Comanche 3's satisfaction of the standard for rate base inclusion.

65. A 2013 report prepared by Commission Staff in Proceeding No. 13I-0215E disclosed that for its first two years of operation, Comanche 3 lost 38 percent of its capacity due in part to planned outages associated with the "weld techniques used during the construction of the unit." Two major outages, one from September 10, 2011 to December 23, 2011 and another from January 1, 2012 to January 7, 2012, were used to correct welding issues in the boiler. Staff

observed in its report that the plant was still experiencing limited outages in 2013 as the “welding issue continued toward resolution.” Staff further reported that in addition to the weld problems, unplanned outages in the boiler’s pendant section were the result of slagging problems caused by water cannon malfunctions during the startup of the unit. Staff also noted that during operating months 13 to 24, Public Service, utilizing economic dispatch, experienced a four-month period of time where gas-fired units were dispatched ahead of Comanche 3 and all other coal units because of low gas prices.

66. Problems at Comanche 3 have not ended. After issuing Decision No. C20-0096, we were informed that the unit was again not operating due to necessary repairs of failed equipment. The informal briefing of the Commissioners was later raised in public comments offered at an April 23, 2020 hearing in the Commission’s ongoing rulemaking in Proceeding No. 19R-0096E. In that proceeding, the Commission is considering new provisions for the assessment of existing generation resources in an electric resource plan (ERP) proceeding including the benchmarking of existing units such as Comanche 3 to other generation options available in the market to gauge their performance against potential alternatives and to examine early plant retirements. Public Service’s next ERP, expected to be filed in 2021, must also include the presentation of a Clean Energy Plan pursuant to § 40-2-125, C.R.S., enacted by the 2019 General Assembly and signed into law by Governor Polis. The new statute requires Public Service, by 2030, to reduce the carbon dioxide emissions associated with electricity sales to its customers by 80 percent from 2005 levels. Such emission reductions are expected to be achieved, at least in part, through accelerated retirement of existing generating facilities.

67. Based on the foregoing, we intend to discuss further the merits of opening an investigation into the history and continuing operations of Comanche 3, particularly as Colorado utilities consider various measures for reducing emissions of carbon dioxide and other greenhouse gas emissions.<sup>7</sup>

5. We therefore find it appropriate to open a non-adjudicated proceeding for the purpose of authorizing Commission Staff (Staff) to complete an investigation into the history and continuing operation of the Public Service Comanche Unit 3 generating station.

6. Public Service is directed to cooperate with Staff as it performs its investigation.

7. Considering that this is a non-adjudicated Staff investigation, there will be no parties to this proceeding.

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<sup>7</sup> Decision No. C20-0505 at pp. 18-23. (footnotes omitted)

8. Issues to be investigated for the Comanche Unit 3 facilities shall include but not be limited to the following:

- a) The Company's root cause analysis of the incident on or about June 2, 2020 where the loss of lubricating oil for the steam turbine main resulted in major damage and an extended outage for Comanche Unit 3;<sup>8</sup>
- b) Corrective actions being implemented to prevent recurrence of a similar event;
- c) Adequacy of and compliance with the lockout-tagout procedures that apply to the equipment and actions taken during the June 2, 2020 event;
- d) Adequacy of training programs as they apply to the actions taken by plant personnel during the June 2, 2020 event;
- e) Estimated capital cost for repair of damages incurred as a result of the June 2, 2020 incident;
- f) Estimated cost of replacement power incurred as a result of the June 2, 2020 incident;
- g) Chronology of major planned and unplanned outages and major de-rates since the beginning of commercial operations on May 14, 2010 and identify chronic issues causing outages or derates;
- h) Root cause of outages identified in g) above;
- i) Corrective action taken (*i.e.*, changes on operations, materials selection, etc.) to prevent reoccurrence for each of the outages identified in g) above;
- j) Incremental capital expense incurred to repair or replace damaged equipment for each outage identified in g) above;
- k) Impact on coal supply contracts;
- l) Availability of the unit as compared to similar coal-fired generating units;
- m) Actual capacity factors to date as compared to projected capacity factors since commercial operation on May 14, 2010;<sup>9</sup>
- n) Incremental capital investments projected at the time of approval of the unit as compared to actual incremental capital investments;

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<sup>8</sup> Public Service provided the CONFIDENTIAL Root Cause Analysis on October 8, 2020 as Response to Staff's General Audit CPUC Set 17.

<sup>9</sup> Public Service provided projected capacity factors for Comanche Unit 3 in its 2007 Colorado Resource Plan, Proceeding No. 07A-447E, Volume 2, Attachment 2.4-4, pp. 2-84 through 2-86.

o) Capital expenses incurred to replace or repair equipment recovered from manufacturers or vendors under warranty, if any;

p) Estimated cost of replacement power for plant availability that is less than projected or due to unplanned outages or de-rates; and

q) Estimated levelized cost of energy for the first ten years of operations.

9. While the list of issues identified above is substantially comprehensive, we direct Staff to consider and investigate other related issues that may arise during the course of the investigation.

10. The Commission's audit authority comes from various statutory provisions, namely §§ 40-3-102, 40-3-110, 40-6-106, 40-6-107, and 40-15-107, C.R.S. We designate the statutory audit authority of the Commission to Staff for this investigation. Staff may conduct all audits necessary to complete its investigation in accordance with the Commission's internal audit policy. Public Service shall make every reasonable effort to provide responses to Staff's audit requests within ten calendar days.

11. Considering that the Commission is directing Staff to provide comparisons of operations and outages of Comanche Unit 3 to original projections, the Commission waives Rule 1405(f) of the Commission's Rules of Practice and Procedure, 4 *Code of Colorado Regulations* 723-1, permitting Staff the opportunity to seek information more than ten years in the past.

12. Any records or documents requested by Staff in this investigation that are claimed to be a trade secret or confidential in nature shall be furnished pursuant to Rule 1100 of the Commission's Rules of Practice and Procedure, 4 *Code of Colorado Regulations*, 723-1, *et. seq.* If Public Service believes that any information produced requires extraordinary protection

beyond that provided in Rule 1100, *et. seq.*, then the Company shall submit a motion seeking such extraordinary protection.

13. We encourage Staff to make inquiries of appropriate Public Service personnel including Energy Supply personnel through written questions, interviews, or meetings. Public Service is directed to coordinate responses to written questions, and facilitate meetings and interviews of appropriate Company personnel as requested by Staff.

14. The purpose of this proceeding is to: authorize Staff to investigate the history and ongoing operations of Comanche Unit 3 as discussed above; and receive Staff's report of findings. Any further action will be taken up in future proceedings as appropriate.

## **II. ORDER**

### **A. The Commission Orders That:**

1. A non-adjudicatory proceeding is opened for the Commission Staff (Staff) investigation into the history and continuing operation of the Public Service Company of Colorado (Public Service) Comanche Unit 3 generating station consistent with the discussion above.

2. Staff shall conduct an investigation pursuant to the authority vested in the Commission pursuant to Title 40, Articles 1 through 7 of the Colorado Revised Statutes.

3. Public Service shall cooperate with Staff as it performs its investigation.

4. Staff shall file a report of its findings on or before March 1, 2021.

5. This Decision is effective upon its Mailed Date.



**B. ADOPTED IN COMMISSIONERS' WEEKLY MEETING  
October 28, 2020.**

(S E A L)



ATTEST: A TRUE COPY

A handwritten signature in cursive script that reads "Doug Dean".

Doug Dean,  
Director

THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF COLORADO

JEFFREY P. ACKERMANN

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JOHN GAVAN

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MEGAN M. GILMAN

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Commissioners