

Decision No. C24-0401-I

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO

PROCEEDING NO. 22A-0382ST

IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF
COLORADO FOR APPROVAL OF ITS STEAM REGULATORY AND RESOURCE PLAN.

**INTERIM COMMISSION DECISION
DEEMING APPLICATION COMPLETE,
REFERRING PROCEEDING TO AN ADMINISTRATIVE
LAW JUDGE, AND REQUIRING ADDITIONAL
SUPPLEMENTAL DIRECT TESTIMONY**

Mailed Date: June 11, 2024

Adopted Date: May 29, 2024

I. BY THE COMMISSION

A. Statement

1. On September 1, 2022, Public Service Company of Colorado (Public Service or Company) filed an Application for approval of its Regulatory and Resource Plan (Plan) concerning the investments in and operations of its district steam system through 2030.

2. On March 29, 2023, in accordance with previous Commission decisions, Public Service filed its second “Additional Technologies Report” (Second Report). In the Second Report, the Company asked the Commission to approve a course of action entailing completion of further studies addressing certain additional technologies and the holding of this Proceeding in abeyance pending the submission of the completed studies.

3. The Company submitted these additional studies along with the Supplemental Direct Testimony of three witnesses on May 6, 2024. Public Service now asks that the Commission

deem the Application complete and to schedule a prehearing conference to establish a procedural schedule.

4. Through this Decision, the Commission deems the Application complete, for purposes of § 40-6-109.5, C.R.S., and requires the submittal of additional Supplemental Direct Testimony, and refers this Proceeding to an Administrative Law Judge (ALJ).

B. Background

5. Public Service filed the Plan pursuant to the terms of the settlement agreement approved by Decision Nos. R19-0591, C19-0734 and C22-0251 in the Company's most recent Steam Rate Case, Proceeding No. 19AL-0063ST. The Company also filed with the Plan the results of an Engineering Study that includes an evaluation of each of the Company's individual customer's steam facilities and potential future conversion to another fuel source.

6. On September 2, 2022, the Commission issued a Notice of the application.

7. On October 19, 2022, by Decision No. C22-0633-I, the Commission granted interventions by Staff of the Public Utilities Commission (Staff), the Colorado Energy Office (CEO), Colorado Energy Consumers (CEC) and the City and County of Denver (CCD). In Decision No. C22-0633-I, the Commission required Public Service to work with the parties to attempt to achieve a consensus approach to developing information that will enable the Commission to determine whether air-source heat pumps, district geo-exchange, or other geothermal technologies (the "Additional Technologies") are viable alternatives for the steam system's customers. The Commission specified that within 45 days of the Decision's effective date, the Company was to either present a proposal for the study of the Additional Technologies in the context of its district steam system or explain why it believes they are not viable candidates for its customers at this time. The Commission also directed the Company to develop and present an

additional analysis of steam rates through 2030 assuming a 7.5 percent annual reduction of steam sales.

8. On December 5, 2022, Public Service filed its “Additional Technologies Report,” in which it described constructive discussions with the parties on a variety of relevant topics, such as the strategy and scope for additional studies, potential third-party funding sources for additional studies, criteria to consider whether alternative technologies are viable candidates for further study, and conceptual long-term visions for the steam system. That report also stated the Company’s intent to file a subsequent report within 90 days, providing information on finalized scopes of work, cost, and timelines for formal studies of the viability of the additional technologies.

9. On December 29, 2022, the Commission granted the additional 90 days to develop the scope of work by Decision No. C22-0841-I.

10. The Company submitted the resulting scopes of work for two proposed projects on March 29, 2023. The first project proposed investigating the feasibility and economic attractiveness of customer conversions to air- or ground-source heat pumps. This project had an estimated duration of 18 weeks and a budget of \$168,945. The second project, which would evaluate the feasibility and economics of a district ambient temperature fluid circulation system, had an estimated duration of 15 weeks and budget of \$166,720.

11. On April 24, 2023, by Decision No. C23-0265-I, the Commission approved the scopes of work for the two studies and held this Proceeding in abeyance pending the completion of the studies and the Company’s submission of Supplemental Direct Testimony. The Commission also directed the Company to discuss the findings of the studies and their significance in the context of 1) the existing steam system and 2) the previously completed studies of the technical and financial viability of current steam customers migrating to on-site gas-fired and electric boilers.

The Commission specified that the Supplemental Direct Testimony was to provide comparisons of the lifecycle costs (from both the customer and system perspectives) and payback periods for each of the five technology options (on-site electric boilers, on-site gas boilers, on-site air-source heat pumps, on-site ground-source heat pumps, and an ambient temperature district system with associated on-site heat pumps). The Commission also specified that the Supplemental Direct Testimony on potential heat pump adoption should incorporate the impacts of both federal and state subsidies and tax credits for each technology as appropriate.

12. As noted above, the Company submitted the results of the two studies on May 6, 2024, along with the Supplemental Direct Testimony of three witnesses.

C. Discussion

13. Based on the studies filed on May 6, 2024, the Company reports that¹replacing steam facilities with air source heat pumps alone is not technically feasible at this time. Instead, a backup heat source is required, such as electric resistance or gas. The Company also reports that it is not feasible to utilize geothermal heat as a heat source for water source heat pumps due to the limited availability of open land in downtown Denver and the difficulty and cost of drilling wells. The Company states that it is technically feasible for customers to install a water source heat pump paired with an ambient temperature loop, and that repurposing the Company's chilled water network to provide ambient loop service would be the most feasible option. However, this option is very costly and has technical challenges.

14. The Company further states that the development of an ambient loop system to serve downtown Denver customers offers potential promise, but that such a solution is many years, perhaps even decades, from full design, development and implementation.² Public Service states

¹ Hrg. Exh. 106, Second Supplemental Direct Testimony of Ryan A. Matley, p. 15.

² Id., p. 16.

that the cost of conversion to customers is substantial and that the majority of steam customers would see a payback of greater than 25 years without incentives. The Company notes that the electric infrastructure costs are also substantial, estimating that total customer and Company investments would likely be between \$729 to \$854 million. The Company estimates that this conversion would reduce greenhouse gas emissions by at most 71,031 metric tons, resulting in high abatement costs of between \$342 and \$601 per ton.³

15. Nonetheless, the Company states that it is interested in exploring pilot and demonstration projects to take measured steps to develop thermal energy resources, such as an ambient loop system. For the purposes of this Proceeding, though, the Company contends that the most reasonable and economically viable course for the near term through at least 2030 is to continue operating the Steam System using existing resources. As a result, the Company continues to support its Steam Regulatory and Resource Plan as proposed in its original Application, which is to continue to operate the steam system as it is currently configured, including life-extension activities on the boilers to enable them to continue to operate beyond their current retirement dates of 2025.⁴

D. Findings and Conclusions

16. With the addition of the heat pump and ambient temperature district system studies, we deem the Company's Application complete for the purpose of § 40-6-109.5, C.R.S.

17. We refer this proceeding to an ALJ for a Recommended Decision. The ALJ shall adopt a procedural schedule by a separate future decision.

18. We further find good cause to require Public Service to file additional Supplemental Direct Testimony, given the relatively high cost of heating with the steam system and the

³ Id., p. 49.

⁴ Id., pp. 15-16.

regulations enacted by both the Colorado Air Quality Control Commission (Regulation 28) and the City and County of Denver (Municipal Bill 21-1310) that may impact heating systems on the very building types that the steam system serves. Specifically, in order to evaluate the appropriate baseline to use in assessing the incremental costs of the heat pump systems assessed in the two studies we direct the Company to answer the following questions:

- 1) The Company indicates that an estimated 27 percent of existing steam customers would have a payback of 8 years or less by switching to gas heating sources.⁵ Assuming those customers moved their entire peak heating load to gas, what is the estimated cost of upgraded gas infrastructure, both in the immediate local vicinity and upstream in order to accommodate the increased capacity requirements? Also, include any safety/integrity projects known to be needed to continue safely serving gas to the study area. All costs should be provided in actual capital expenditure, as well as anticipated revenue requirement, including typical additions to cost like net salvage value and operations and maintenance expenses.
- 2) The Company indicates that there is the potential for a negative spiral to occur if a significant number of existing steam customers leave the steam system, presumably for the gas option.⁶ Please provide each of the requested cost projections described in the previous question for the circumstance in which all existing steam customers switch to gas and the gas system must accommodate the entirety of the peak heating load from all steam network customers.
- 3) Please identify both the number of current steam customers and the percentage of steam revenues those customers represent that are subject to either Regulation 28, Denver's Building Performance Standard, or other requirements that are likely to impact the building's heating source or efficiency. Has the Company in any way identified the expected costs of compliance for those customers in order to compare or net out the incremental costs of water source heat pumps and ancillary equipment against improvements that would otherwise be necessary to comply with applicable regulations? If estimates or analysis were done either on the net incremental cost to customers or on the projected changes in heating and cooling demands as a result of applicable building regulations, please provide those and identify if the company used them in any way in its analysis.

19. The ALJ shall establish a filing deadline for the additional Supplemental Direct Testimony as part of the procedural schedule.

⁵ Hrg. Exh. 101, Direct Testimony of Alexander G. Trowbridge, p. 28.

⁶ Id., p. 29.

II. ORDER**A. It Is Ordered That:**

1. The Application for approval of a Regulatory and Resource Plan filed by Public Service Company of Colorado (Public Service) is deemed complete, for purposes of § 40-6-109.5, C.R.S., consistent with the discussion above.

2. This Proceeding is referred to an Administrative Law Judge, consistent with the discussion above.

3. Public Service shall file additional Supplemental Direct Testimony, consistent with the discussion above.

4. This Decision is effective on its Mailed Date.

**B. ADOPTED IN COMMISSIONERS' WEEKLY MEETING
May 29, 2024.**

(S E A L)



ATTEST: A TRUE COPY

THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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MEGAN M. GILMAN

TOM PLANT

Commissioners

Rebecca E. White,
Director