Xcel Energy Services, Inc.
Public Service Company of Colorado
Comanche Unit 2
(Repl-2025-001)
Replacement & Reliability Study

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Disclaimer

The information contained in this report is subject to change based on assumptions. The best available information has been used to model the future transmission and generation facilities in this study. Should any of these assumptions change, the results and conclusions from the study are subject to reevaluation. This draft report is yet to be reviewed by the affected Transmission Owners and the results/conclusions of the study report could change based on the findings of the review process.

0 Certifications

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the Laws of the State of Colorado.

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1 Executive Summary

This report details the results of the generator replacement study performed for the replacement request Repl-2025-001 located at Comanche substation in Pueblo, CO. The new solar plant will replace the existing 335 MW Comanche unit 2. The existing Comanche Unit 2 will be retired effective December 31st, 2026 and the replacement generator will be in operation by January 1st, 2027.

A review of the existing generator retirement and replacement study reports for Repl-2024-1 indicates that all scenarios required for evaluating the new request Repl-2025-1 have already been thoroughly analyzed as part of a previous project with comparable system conditions, assumptions, and study methodologies. The previously completed studies encompass the full range of operational scenarios necessary to assess system performance, including steady-state power flow, short-circuit analysis and transient stability.

The following reports were reviewed and confirmed to contain the required scenario assessments:

- Comanche Unit 2 (Repl-2024-001) Replacement and Reliability Study (dated 04/14/2025)
- Comanche Unit 2 (Repl-2024-001) Replacement and Reliability Study-Addendum (dated 06/10/2025)

Because the system topology, study criteria, and modeling parameters remain consistent, the results and conclusions from the earlier studies are directly applicable to the new generator project. No material changes have been identified that would warrant re-running the studies or modifying the previous findings.

1.1 Project Overview

Replacement request Repl-2025-001 (Arroyo 2 solar) consists of 89 Sungrow SG4400UD-MV-US solar inverters interconnecting through three 94/125.3/156.7 MVA main power transformers to 230kV line. Repl-2025-001 connects to the Comanche 230kV substation through ~4.03 miles 230kV transmission line shared with Repl-2021-001.

The study involved reviewing scenarios related to replacing the existing generator with the new replacement generator. The scenarios related to reliability during the gap period are no longer applicable due to the delay in retirement date of Comanche unit 2 and there is no gap period between the retirement of existing generator and the date of commercial operation for Repl-2025-001.

2 Conclusion

Based on this review, the conclusions from the previous studies remain unchanged and fully support the evaluation needs for the new generator project. No restudy is recommended or required. Comanche Unit 2 can be replaced with Repl-2025-001 solar plant with no material adverse impact on the transmission system.