

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO

PROCEEDING NO. 23AL-0243E

IN THE MATTER OF ADVICE LETTER NO. 1923 - ELECTRIC FILED BY PUBLIC SERVICE COMPANY OF COLORADO TO REVISE ITS COLORADO P.U.C. NO. 8 - ELECTRIC TARIFF TO PLACE INTO EFFECT REVISED BASE RATES AND OTHER AFFECTED CHARGES FOR ALL ELECTRIC RATE SCHEDULES BY ELIMINATING THE GENERAL RATE SCHEDULE ADJUSTMENT (GRSA) AND GENERAL RATE SCHEDULE ADJUSTMENT - ENERGY (GRSA-E) AS WILL BE ESTABLISHED BY THE COMMISSION IN PROCEEDING NO. 22AL-0530E, TO INITIATE TIME-DIFFERENTIATED GENERATION AND TRANSMISSION DEMAND CHARGES FOR SECONDARY GENERAL SERVICE (SCHEDULE SG) AND SECONDARY GENERAL CRITICAL PEAK PRICING SERVICE (SCHEDULE SG-CPP), TO INTRODUCE NEW ELECTRIC VEHICLE RATE OPTIONS FOR CUSTOMERS TAKING SERVICE AT THE PRIMARY DISTRIBUTION LEVEL, TO ADJUST THE PRIMARY GENERAL CRITICAL PEAK PRICING AND SECONDARY PHOTOVOLTAIC TIME-OF-USE SERVICE SECTION TIME-DIFFERENTIATED DEMAND CHARGES, TO MAKE SEVERAL ADMINISTRATIVE REVISIONS, AND TO RECEIVE APPROVAL OF DEFERRED ACCOUNTING TREATMENT FOR RATE CASE EXPENSES, TO BECOME EFFECTIVE JUNE 15, 2023.

**INTERIM COMMISSION DECISION REQUIRING
SUPPLEMENTAL DIRECT TESTIMONY ON
TIME-OF-USE ENERGY RATE PERIODS**

Mailed Date: July 26, 2023

Adopted Date: July 19, 2023

I. BY THE COMMISSION

A. Statement

1. On May 15, 2023, Public Service filed Advice Letter No. 1923-Electric (AL-1923) with tariff sheets setting forth its base rates for retail electric utility service. Through this Phase II proceeding, Public Service proposes to eliminate the General Rate Schedule Adjustment (GRSA) and General Rate Schedule Adjustment – Energy (GRSA-E) to be set by the

Commission in the Company's current 2022 Phase I Rate Case (Proceeding No. 22AL-0530E) and establish new base rates and other affected charges in the Company's Electric Tariff.

2. By Decision No. C23-0373, issued on June 5, 2023, the Commission set for hearing and suspended the effective date of the tariff sheets filed with AL 1923 for 120 days pursuant to § 40-6-111(1), C.R.S. The decision also established a notice and intervention period ending on June 30, 2023.

3. This Decision directs Public Service to file Supplemental Direct Testimony addressing the on-peak, off-peak, and shoulder periods for its time-of-use (TOU) rates in accordance with the following discussion.

B. Public Service's Analysis of TOU Rates in its Direct Testimony

4. In the Direct Testimony of Public Service witness Jeffrey Knighten, the Company presents its analysis of the on-peak, off-peak, and shoulder periods of the Company's TOU rates as required by Decision No. C22-0398.¹ The full analysis, included in Attachment JRK-3, examines the Company's hourly system load net of renewable generation for the years 2022 (actual), 2025 (forecasted), and 2030 (forecasted). The forecasted load and generation portfolios are based on information included in the Company's 2021 Electric Resource Plan and Clean Energy Plan in Proceeding No. 21A-0141E (ERP Proceeding).²

5. Mr. Knighten explains that in completing the analysis, he determined the highest 1,000 load hours (net of renewable generation) in each year and the specific time of day those

¹ Decision No. C22-0398, issued June 30, 2022, Proceeding No. 22AL-0143E.

² Hearing Exhibit 101, Knighten Direct, p. 31.

1,000 hours occur. He focused on the top 1,000 hours because the Company's TOU rates are designed with approximately 1,000 on-peak hours per year.³

6. Furthermore, Mr. Knighten goes on to explain that the analysis provided in Attachment JRK-3 largely excludes the effects of energy storage resources. He argues that the best way to set TOU rates is based on system load net of renewable generation without considering the effects of storage, where energy storage is to be akin to traditional dispatchable generation.⁴

7. Mr. Knighten explains that Public Service's TOU rates generally use an on-peak period of 3 p.m. to 7 p.m. on non-holiday weekdays, with a two-hour shoulder period both before and after the 10 on-peak period, from 1 p.m. to 3 p.m. and from 7 p.m. to 9 p.m. All other hours, including all hours on holidays and weekends, are classified as off-peak. These TOU periods apply to the Company's Schedule RE-TOU, C-TOU, and SG-TOU Pilot rates, except that the Schedule RE-TOU rate does not include an evening shoulder period and instead reverts to off-peak pricing after 7 p.m.⁵ Schedule RE-TOU is the Company's the largest TOU rate schedule in terms of both number of customers and revenues.⁶

³ Hearing Exhibit 101, Knighten Direct, p. 31.

⁴ Hearing Exhibit 101, Knighten Direct, p. 32.

⁵ Hearing Exhibit 101, Knighten Direct, p. 33.

⁶ Hearing Exhibit 101, Knighten Direct, p. 38.

8. With that background, Mr. Knighten goes on to explain that, in 2022, the top 1,000 load net of renewable generation hours most frequently occurred during the current on-peak period of 3 p.m. to 7 p.m., although the hour of 7 p.m. to 8 p.m. also contained many of the top 1,000 hours.⁷ He states that the Company's 2025 shows fewer instances of the top 1,000 hours of load net of renewable generation occurring during the afternoon shoulder (*i.e.*, 1 p.m. through 3 p.m.) and the first two hours of the on-peak period, and more instances of the top 1,000 hours occurring during the evening shoulder period of 7 p.m. to 9 p.m., with the hour from 7 p.m. to 8 p.m. having the most instances of high load net of renewable generation.⁸ Mr. Knighten goes on to state that the Company's forecast for 2030 shows similar results to 2025, with the most instances of high load net of renewable generation from 7 p.m. to 9 p.m.⁹

9. Mr. Knighten further explains that the Company reviewed loss of load probability (LOLP) data and concludes in Attachment JRK-3 that such LOLP data generally agrees with the load net of renewable generation analysis.¹⁰ He states that this result is not surprising, as hours with high load net of renewable generation require more dispatchable generation to meet the load need and therefore have less reserve generation available in the event of a generator outage.

⁷ Hearing Exhibit 101, Knighten Direct, pp. 33-34.

⁸ Hearing Exhibit 101, Knighten Direct, p. 34.

⁹ Hearing Exhibit 101, Knighten Direct, p. 35.

¹⁰ Hearing Exhibit 101, Knighten Direct, p. 37.

10. Mr. Knighten concludes that Public Service's current TOU periods are a good match for current system conditions (based on 2022 data) and that it is premature to alter the TOU periods for any of the affected rate schedules in this Proceeding.¹¹ He also argues that under the terms of the Unanimous and Comprehensive Stipulation and Settlement Agreement (Residential TOU Settlement) in Proceeding No. 19AL-0687E, the structure of Schedule RE-TOU may only be modified prior to April 1, 2025 for two reasons: (1) if needed to maintain revenue neutrality between other residential rate schedules; and (2) to add an evening shoulder period if at least 22 of the top 100 load net of renewables hours occur between 7 p.m. and 9 p.m. Mr. Knighten states that neither of these provisions have been triggered.¹²

11. While Mr. Knighten acknowledges that only Schedule RE-TOU is subject to the terms of the Residential TOU Settlement restrictions, he states that Public Service prefers to maintain consistent TOU periods between the various TOU rate schedules in order to reinforce customer understanding (or conversely, avoid customer confusion), particularly since Schedule C-TOU has only been in place for a short period of time and the Schedule SG-TOU Pilot is just getting underway.¹³ He adds that customers are just starting to take service under a TOU rate construct after the Company has undertaken a significant effort to educate Residential and Small Commercial customers about TOU rates generally and the existing TOU periods specifically, as an integral component of the Advanced Meter rollout and education campaign.¹⁴

12. Mr. Knighten further states that altering the TOU periods in this Proceeding would require a new (or significantly modified) educational program, which could result in

¹¹ Hearing Exhibit 101, Knighten Direct, p. 35.

¹² Hearing Exhibit 101, Knighten Direct, p. 38.

¹³ Hearing Exhibit 101, Knighten Direct, p. 38.

¹⁴ Hearing Exhibit 101, Knighten Direct, p. 39.

conflicting messages around TOU periods before the originally contemplated transition is complete would result in customer dissatisfaction, decreased understanding of TOU periods (and therefore electiveness of TOU rates) or both. He argues that the Company's existing awareness and education campaign should continue as designed and scheduled until some period of time after customer transition has been completed in the Spring of 2025, and new TOU periods should not be implemented prematurely as it is important that the transition be successful.¹⁵

13. Mr. Knighten explains that Public Service is required to make certain periodic filings under the terms of the Residential TOU Settlement and that the Company is required to file an Advice Letter on April 1, 2025, addressing the future of Schedule RE-TOU.¹⁶ He goes on to conclude:

If the electric system develops consistent with current expectations, then it may be reasonable and appropriate to alter the Company's TOU periods as part of that comprehensive reassessment. By the time the Company files the 2025 Advice Letter filing required by the Residential TOU Settlement, it is possible that results from 2023 and 2024 will show that the top load net of renewables hours are occurring later in the day. Further, that filing will have additional information to help identify whether the movement is expected to continue beyond 2025... or whether there is an expectation that system peaks will stabilize around a more defined set of hours. In the meantime, the Company will continue to provide the Commission with information through its periodic, required Residential TOU Settlement filings so that parties are well prepared for the April 2025 Advice Letter filing.¹⁷

C. Findings and Conclusions

14. Mr. Knighten provides 2022 and 2030 Load Duration Curves for both load as a whole and for load net of renewable generation in Attachment JRK-3 Figures 1 and 2 at pp. 7-8.¹⁸

¹⁵ Hearing Exhibit 101, Knighten Direct, p. 41.

¹⁶ Hearing Exhibit 101, Knighten Direct, p. 43.

¹⁷ Hearing Exhibit 101, Knighten Direct, p. 44.

¹⁸ Hearing Exhibit 101, Knighten Direct, Attachment JRK-3, pp. 7-8.

All of these load duration curves show a very steep drop off in demand—perhaps as much as 1,500 MW—during the first 50 to 150 hours and then far more modest declines after that over the 1,000 hours analyzed. Therefore, this attribute of the load duration curves may raise questions about whether a far narrower set of hours than the highest 1,000 hours may be driving new capacity needs after 2022 and should be primarily considered in setting TOU rates.

15. Mr. Knighten also presents the top 100 hours of demand net of renewables in 2022 in Figure 3 of Attachment JRK-3, identifying that only 6 hours of the top 100 occurred from 7 p.m. to 9 p.m. in 2022.¹⁹ At the same time, however, Mr. Knighten’s analysis may be incomplete, because large amounts of new solar plus storage capacity may be coming online in 2023 and afterwards and thus the Figure 3 does not show the results for the top 100 hours from 2024 or 2030.

16. In addition, Attachment JRK-3 shows how including storage in the 2025 analysis changes the results in ways that appear to shift higher numbers of peak demand hours to later in the evening.

17. As explained in more detail below, we find that it is necessary for Public Service to supplement its analysis provided in Attachment JRK-3 and summarized in the Direct Testimony of Mr. Knighten in order to ensure the record in this Proceeding includes information on the appropriate on-peak, off-peak, and shoulder periods for the Company’s TOU rates. The additional analysis should focus more narrowly on the few hours that seem to

¹⁹ Hearing Exhibit 101, Knighten Direct, Attachment JRK-3, p. 9.

comprise the highest peak day demands and may be driving new capacity needs after 2022 (*i.e.*, a peak demand determination as used in an ERP context instead of the top 1,000 hours as presented by Mr. Knighten) and should more fully consider the impacts of storage. We direct Public Service to use the Encompass model—the model used for bid evaluation and selection purposes in the Company’s ongoing ERP Proceeding—to quantify the benefits and costs of decreasing demand in a phased manner in the peak day in 2030 from 7 p.m. to 10 p.m. by a reasonable approximation of 400 MW and increasing demand by reasonable approximately of 200 MW from 1 p.m. to 4 p.m. and by 200 MW after 10 p.m. This analysis shall be presented in Supplemental Direct Testimony to support a determination in this Proceeding whether modified TOU periods would better reflect the long-term needs of the system and motivate more appropriate customer behavior.

18. We require this analysis to address a potential concern illustrated by the graph included in this Decision as Attachment A that focuses solely on the top few hours that may be driving new capacity needs after 2022. As such, by considering these fewer, more critical hours in 2023 and afterwards as more solar plus storage is added to the system, additional analysis may lead to a better understanding of peak day demand issues in ways that may not be fully captured in an analysis that treats the top 1,000 hours equally or uses 2022 as the analysis year. The dark line below the yellow shaded area in this graph is the hourly coincident demand (in MWs) on the Company’s peak demand day in 2030 net of solar generation based on data available in the ERP Proceeding. This more focused presentation of the data may indicate that the peak demand hours net of solar (and perhaps the Company’s highest LOLP hours) may typically occur between 7 p.m. and 9 p.m. in the evening after 2023 and through 2030 in ways that are not meaningfully captured by examining either a distribution of the top 1,000 hours

over time or the top 100 hours in 2022.

19. If this concern turns out to be accurate, the superimposing of the Company's current TOU periods in 2030 may present at least two potential problems. First, the current TOU rates may encourage residential customers, and particularly the owners of electric vehicles, to start using more energy at 7 p.m., which may be the highest LOLP hour by 2030. This raises the question whether customer behavior should be encouraged to change earlier than contemplated in the Residential TOU Settlement in order to encourage electricity usage later in the evening, especially given that there may be a long customer education process. Second, the current TOU rates may encourage customers to conserve energy from 1 p.m. to 4 p.m., a period when solar generation may otherwise be curtailed during peak demand days. This raises the question whether the TOU period should instead encourage greater electricity usage during these times.

20. We also recognize the strategic challenge in designing and implementing TOU periods into the future as Public Service's system is significantly transitioning its fleet of generation resources, including the expansion of renewable generation in the ERP Proceeding. We therefore seek for the record in this Phase II rate proceeding to more fully address how and when it is reasonable to begin adjusting customer behavior in anticipation of 2030 and beyond. Along these lines, we direct Public Service to construct graphs in the form presented in Attachment A for each year from 2024 through 2030, or alternatively present additional versions of Figure 3 at p. 11 of Attachment JRK-3 looking at the top 100 hours for each of the years between 2024 and 2030, and to provide an analysis of the appropriate TOU periods for each year. To the extent necessary, these additional graphs should correspond to the projections for summer and winter peaks.

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

1. Public Service shall submit Supplemental Direct Testimony consistent with the discussion above. The deadline for the filing of the Supplemental Direct Testimony will be established by a separate future decision.

2. This Decision is effective upon its Mailed Date.

**B. ADOPTED IN COMMISSIONERS' WEEKLY MEETING
July 19, 2023.**

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ATTEST: A TRUE COPY

Rebecca E. White,
Director

THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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Commissioners