

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

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IN THE MATTER OF ADVICE LETTER)
NO. 1906-ELECTRIC OF PUBLIC)
SERVICE COMPANY OF COLORADO)
TO REVISE ITS COLORADO PUC NO. 8-)
ELECTRIC TARIFF TO REVISE)
JURISDICTIONAL BASE RATE) PROCEEDING NO. 22AL-XXXXE
REVENUES, IMPLEMENT NEW BASE)
RATES FOR ALL ELECTRIC RATE)
SCHEDULES, AND MAKE OTHER)
PROPOSED TARIFF CHANGES)
EFFECTIVE DECEMBER 31, 2022.)

DIRECT TESTIMONY AND ATTACHMENTS OF KRISTOPHER R. FARRUGGIA

ON

BEHALF OF

PUBLIC SERVICE COMPANY OF COLORADO

November 30, 2022

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LIST OF ATTACHMENTS

Attachment KRF-1	Wildfire Mitigation Plan 2021 Annual Report
Attachment KRF-2	Wildfire Capital Additions January 1, 2021- December 31, 2023
Attachment KRF-3	WMP Distribution O&M
Attachment KRF-4	WMP Transmission O&M

1 construction, and maintenance of Public Service’s Distribution system. I have had
2 responsibility for overseeing the execution of the Distribution aspects of the
3 Company’s 2020 Wildfire Mitigation Plan (“WMP” or “Plan”).¹ A description of my
4 qualifications, duties, and responsibilities is set forth in my Statement of
5 Qualifications at the conclusion of my Direct Testimony.

6 **Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

7 A. The purpose of my Direct Testimony is to support the 2022 and 2023 capital plant
8 additions associated with the WMP. I also support the Transmission and
9 Distribution WMP operations and maintenance (“O&M”) expenses that the
10 Company is seeking to recover through this rate case.²

11 **Q. HOW IS THE REMAINDER OF YOUR DIRECT TESTIMONY ORGANIZED?**

12 A. I first provide background on the Company’s WMP, including the relevant
13 procedural background and discussion of the Company’s wildfire mitigation actions
14 under the WMP. Next, I present the Company’s WMP Transmission and
15 Distribution capital additions that are part of the Company’s proposed Test Year.³
16 Finally, I address WMP O&M.

¹ The WMP is a result of the Unopposed Partial Settlement Agreement (“Wildfire Settlement Agreement”) related to wildfire mitigation reached in Proceeding No. 19AL-0268E (the “2019 Electric Phase I”) rate case. The WMP was developed and approved with modifications in Proceeding No. 20A-0300E (the “Wildfire Proceeding”).

² Company witnesses Mr. Arthur P. Freitas and Ms. Marci A. McKoane address the deferral of WMP costs in their respective Direct Testimonies.

³ As discussed by Company witness Mr. Steven P. Berman, the Company is proposing a test year (the “Test Year”) that reflects rate base using a 13-month average convention for the period ending December 31, 2023. Plant balances are based on actual plant additions through June 31, 2022 plus forecasted additions through December 31, 2023. The Test Year also consists of forecasted sales revenue for 2023 and actual O&M expense for the twelve months ended June 30, 2022 with individual adjustments and inflationary increases to reflect a representative level of costs for the period the rates will be in effect.

1 **Q. ARE YOU SPONSORING ANY ATTACHMENTS AS PART OF YOUR DIRECT**
2 **TESTIMONY?**

3 A. Yes, I am sponsoring the following attachments:

- 4 • Attachment KRF-1: Wildfire Mitigation Plan 2021 Annual Report;
- 5 • Attachment KRF-2: Wildfire Capital Additions January 1, 2021 –
6 December 31 2023;
- 7 • Attachment KRF-3: WMP Distribution O&M; and
- 8 • Attachment KRF-4: WMP Transmission O&M.

9 **Q. PLEASE DISCUSS HOW THE CAPITAL ADDITIONS AND O&M EXPENSE**
10 **INFORMATION RELATES TO INFORMATION PRESENTED IN OTHER PARTS**
11 **OF THE COMPANY'S DIRECT TESTIMONY.**

12 A. As discussed in more detail below, the WMP includes activities functionalized as
13 Distribution and Transmission. Company witnesses Mr. David C. Mino and Mr.
14 Gilbert Y. Flores discuss the capital additions and O&M expenses for those
15 functions in their respective Direct Testimonies. In order to assist parties and the
16 Commission in assessing the Company's WMP activities, my Direct Testimony and
17 attachments identify the capital additions and O&M expense directly attributable to
18 the WMP.

19 **Q. HOW DID THE COMPANY ISOLATE THE WMP-RELATED CAPITAL**
20 **ADDITIONS AND O&M EXPENSE?**

21 A. The Company has separate Work Breakdown Structures ("WBS") accounting for
22 the capital projects associated with the WMP. The Company used this information
23 when identifying the applicable witness for each capital project, resulting in a list

1 of capital projects that are specific to the WMP. These projects are identified in
2 Attachment KRF-2 to my Direct Testimony.

3 The Company also uses separate accounting for O&M expenses, also
4 allowing for identification and isolation. That separate accounting, however,
5 occurs at a more granular level than the inputs to the cost of service study
6 presented by Mr. Freitas.⁴ The Company therefore prepared Attachments KRF-3
7 and KRF-4 to isolate the Distribution and Transmission WMP O&M.

8 **Q. WHAT RECOMMENDATIONS ARE YOU MAKING IN YOUR DIRECT**
9 **TESTIMONY?**

10 A. I recommend the Commission find that the Company's 2022-2023 wildfire capital
11 additions and Test Year O&M expenses, as set forth in my Direct Testimony and
12 in the cost of service presented by Mr. Freitas, are reasonable and prudent, and
13 further recommend the Commission authorize recovery of these costs through
14 base rates.

⁴ As discussed by Mr. Freitas in his Direct Testimony, the actual O&M expenses for the 12 months ended June 30, 2022 is the foundation of the O&M expenses in the Test Year cost of service study. That actual O&M is presented in Mr. Freitas's Attachment APF-10, referred to as the Audit Trail Map. WMP O&M is within the Distribution and Transmission cost centers in the Audit Trail Map, which is not prepared at a level of granularity that does not allow for separate identification of all WMP O&M.

1 **II. PUBLIC SERVICE'S WMP**

2 **Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR DIRECT TESTIMONY?**

3 A. This section of my Direct Testimony describes Public Service's WMP, including
4 discussion of its components.

5 **Q. PLEASE DESCRIBE THE COMPANY'S WMP.**

6 A. The Company's WMP takes a comprehensive and prioritized approach to wildfire
7 risk reduction in the Company's service territory. The WMP includes a variety of
8 programs designed to mitigate the risk of utility-caused ignitions that could result
9 in a wildfire. These programs include Inspection and Modeling, Repair and
10 Replacement, Protection, and incremental Vegetation Management activities.

11 **Q. PLEASE SUMMARIZE THE WMP PROGRAMS AND THE ACTIVITIES WITHIN
12 THEM.**

13 A. The WMP programs are summarized as follows:

- 14 • *Repair and Replacement Programs.* These include the following
15 subcategories of work: bare secondary conductor replacement, covered
16 conductor installation, distribution pole repair/replacements, equipment
17 upgrades (cutouts, arresters, etc.), overhead rebuilds of small
18 conductor, high priority defect correction, and major line rebuilds.
- 19 • *Inspection, Modeling, and Asset Data Gathering.* This includes the
20 following subcategories of work: Above Groundline inspections, Infrared
21 inspections, overhead secondary open wire quantification, overhead
22 inspection, distribution pole inspections, risk modeling development,
23 situational awareness tools, structure wind strength reviews, and annual
24 visual inspections.
- 25 • *Protection Programs.* These include the following subcategories of
26 work: Advanced Distribution Management System enhanced system
27 protection, protection study for feeders, recloser communications
28 network, substation relay communications upgrades, substation relay

1 upgrades for remote non-reclosing, and design and install revised
2 protection schemes.

3 • *Expanded Vegetation Management.* This includes incremental
4 Mountain Hazard Tree (“MHT”) Program actions, creating a defensible
5 space around poles (“DSAP”) or pole brushing on equipment poles,
6 secondary voltage line clearance, and right-of-way (“ROW”) vegetation
7 type conversion (enhanced).

8 • *Metrics, Tracking, and Reporting.* To measure WMP performance over
9 time, the Company will track and measure multiple metrics. These
10 include Plan and cost performance metrics in addition to a set of metrics
11 designed to measure Plan efficacy, or wildfire risk reduction, over time
12 as programs are implemented.

13 • *Ongoing Assessment of Other Activities for Future Consideration.* In
14 addition to the core components of the Plan described above, the
15 Company will continue to study new, emerging, and evolving
16 technologies and practices that it will consider for future implementation
17 in conjunction with the Plan. For example, the Company is considering
18 targeted undergrounding of overhead lines as well as operational
19 protocols that could be considered within Public Service’s service
20 territory to minimize the risk of wildfires.

21 • *Community and Development.* As the Company continues to engage
22 with communities and develop the WMP, there will be projects initiated
23 to facilitate both. For example, the Company used third party resources
24 to maintain the website, www.xcelenergywildfireprotection.com, as a
25 means of providing the most up to date WMP information to the general
26 public, including announcements of upcoming meetings and access to
27 materials from previous meetings. In addition, software and
28 professional services such as fire experts and advanced risk modeling
29 software will improve the development of the WMP. Community-specific
30 initiatives with non-profit fire protection agencies, as an example, will
31 also be considered and funded through the Community and
32 Development program.

33 **Q. HOW DID THE COMPANY DEVELOP THE WMP?**

34 A. The Company developed its WMP based on a detailed risk assessment (the
35 Wildfire Risk Model) and identified areas with potential for high fire consequence
36 in its service territory (that area being the “Wildfire Risk Zone” or “WRZ”).

1 **Q. HAS THE WMP BEEN REVIEWED AND APPROVED BY THE COMMISSION?**

2 A. Yes. The Commission approved the Company's WMP, with some modifications,
3 in Proceeding No. 20A-0300E (the "Wildfire Proceeding").⁵

4 **Q. HAS THE COMPANY CONTINUED TO ASSESS NEW WILDFIRE MITIGATION**
5 **STRATEGIES AFTER COMMISSION APPROVAL OF THE WMP?**

6 A. Yes. One aspect of the WMP is ongoing assessment of new and innovative
7 activities for future consideration.⁶ This is consistent with taking a comprehensive
8 and prioritized approach to wildfire risk reduction and also acknowledges the
9 heightened importance of these vital activities. The Company is working toward
10 bringing an updated WMP forward for consideration.

11 **Q. DID THE COMMISSION ALSO APPROVE CERTAIN RATEMAKING FOR WMP**
12 **ACTIVITIES IN THE WILDFIRE PROCEEDING?**

13 A. Yes. The Commission approved a deferred accounting mechanism for the
14 Distribution capital additions and incremental Distribution O&M expenses Public
15 Service will incur to support its WMP. The deferred accounting treatment as
16 currently approved covers the years of 2021, 2022, and 2023. The deferral does
17 not include incremental Transmission capital costs because they already are
18 recoverable through the Company's Transmission Cost Adjustment ("TCA").⁷
19 Company witnesses Mr. Freitas and Ms. McKoane discuss the mechanics of the
20 approved deferred accounting in their respective Direct Testimonies.

⁵ Proceeding No. 20A-0300E, Decision No. R21-0109, at 11, ¶ 49 (mailed Feb. 26, 2021) (the "Wildfire Decision"). The Commission denied in part certain exceptions to the Wildfire Decision and modified the Wildfire Decision to clarify Paragraph 93 relating to TCA filing requirements. See Decision No. C21-0237.

⁶ Attachment KRF-1 at 4.

⁷ Wildfire Decision at 20, ¶ 92.

1 **Q. DOES PUBLIC SERVICE FILE ANNUAL REPORTS REGARDING THE WMP?**

2 A. Yes. Public Service filed its first annual report on June 1, 2021 (“2020 WMP
3 Report”) and filed its second annual report on May 20, 2022 (“2021 WMP
4 Report”).⁸ For convenience, the 2021 WMP Report (without attachments) is
5 provided as Attachment KRF-1 to my Direct Testimony.

⁸ The 2020 and 2021 WMP Reports were filed in Proceeding No. 20A-0300E.

1 requests another \$199.7 million of WMP-related capital additions for 2023. In total,
 2 Public Service is seeking to recover \$310.3 million in 2022 and 2023 capital
 3 additions associated with its WMP as part of this rate case. Attachment KRF-2 to
 4 my Direct Testimony details the Company’s capital additions for 2021, 2022 and
 5 2023. Throughout my Direct Testimony, 2022 and 2023 capital additions include
 6 actual plant in service through June 30, 2022, and forecasted data for the
 7 remainder of 2022 and all of 2023.

8 **TABLE KRF-D-1**
 9 **Public Service Electric**
 10 **WMP Capital Additions**
 11 **(\$ Millions)**

	2021 (Actual)	2022			2023 (Forecast)
		1/1 – 6/30 (Actual)	7/1 – 12/31 (Forecast)	Total	
Distribution	\$47.5	\$50.2	\$35.6	\$85.8	\$75.5
Transmission	\$34.1	\$7.1	\$17.7	\$24.8	\$124.2
Total*	\$81.6	\$57.3	\$53.3	\$110.6	\$199.7
* There may be differences between the sum of the individual category amounts and Total amounts due to rounding.					

12 **Q. PLEASE DESCRIBE THE WILDFIRE CAPITAL ADDITIONS THE COMPANY IS**
 13 **SEEKING TO RECOVER THROUGH BASE RATES IN THIS PROCEEDING.**

14 A. The bulk of the capital additions fall into the Repair and Replace Category and are
 15 comprised of Distribution conductor replacement projects, Distribution pole
 16 replacements and Transmission major line rebuilds. In addition, the Company has
 17 implemented and will continue to implement Relay Upgrades, which fall under the
 18 Protection Category. Table KRF-D-2 below presents the Company’s 2022 and
 19 2023 WMP capital additions broken out by program, while Tables KRF-D-3 and

1 KRF-D-4 further show the breakdown of these costs for Distribution and
 2 Transmission, respectively.

3 **TABLE KRF-D-2**
 4 **Public Service Electric**
 5 **WMP Capital Additions by Program**
 6 **Distribution and Transmission**
 7 **(\$ Millions)**

	2021 (Actual)	2022			2023 (Forecast)
		1/1 – 6/30 (Actual)	7/1 – 12/31 (Forecast)	Total	
Protection	\$4.4	\$1.7	\$8.0	\$9.7	\$14.4
Repair and Replace	\$77.2	\$55.6	\$45.3	\$101.0	\$185.3
Total*	\$81.6	\$57.3	\$53.3	\$110.6	\$199.7
* There may be differences between the sum of the individual category amounts and Total amounts due to rounding.					

8 **TABLE KRF-D-3**
 9 **Public Service - Electric Distribution**
 10 **WMP Capital Additions by Program**
 11 **(\$ Millions)**

	2021 (Actual)	2022			2023 (Forecast)
		1/1 – 6/30 (Actual)	7/1 – 12/31 (Forecast)	Total	
Protection	\$4.4	\$1.7	\$8.0	\$9.7	\$14.4
Repair and Replace	\$43.1	\$48.5	\$27.6	\$76.2	\$61.1
Total*	\$47.5	\$50.2	\$35.6	\$85.8	\$75.5
* There may be differences between the sum of the individual category amounts and Total amounts due to rounding.					

TABLE KRF-D-4
Public Service - Electric Transmission
WMP Capital Additions by Program
 (\$ Millions)

	2021 (Actual)	2022			2023 (Forecast)
		1/1 – 6/30 (Actual)	7/1 – 12/31 (Forecast)	Total	
Protection	NA	NA	NA	NA	NA
Repair and Replace	\$34.1	\$7.1	\$17.7	\$24.8	\$124.2
Total*	\$34.1	\$7.1	\$17.7	\$24.8	\$124.2
* There may be differences between the sum of the individual category amounts and Total amounts due to rounding.					

Q. PLEASE DESCRIBE THE MAIN DRIVERS OF THE COMPANY’S 2022 AND 2023 WILDFIRE DISTRIBUTION CAPITAL ADDITIONS.

A. The majority of the 2022 and 2023 wildfire Distribution capital additions is attributable to three projects within the Repair and Replace and Protection categories: (1) Conductor Replacements; (2) Pole Replacements; and (3) Relay Upgrades. The remaining Distribution capital additions will be driven by equipment upgrades. The table KRF-D-5 below provides additional detail regarding 2022 and 2023 wildfire Distribution capital additions.

TABLE KRF-D-5
Public Service - Electric Distribution
WMP Capital Additions Detail
 (\$ Millions)

Program Area	Mitigation Activity	2021 (Actual)	2022			2023 (Forecast)
			1/1 – 6/30 (Actual)	7/1 – 12/31 (Forecast)	Total	
Repair and Replace	Conductor Replacement	\$4.4	\$28.0	\$13.6	\$41.6	\$27.4
Repair and Replace	Pole Replacement	\$38.8	\$18.1	\$11.8	\$29.9	\$26.2
Repair and Replace	Equipment Upgrade	\$0.0	\$2.4	\$2.2	\$4.6	\$7.5
Protection	Substation Communication	\$0.2	\$0.0	\$1.2	\$1.3	\$0.0
Protection	Substation Relay Upgrades	\$2.1	\$1.2	\$6.8	\$8.0	\$13.9
Protection	Reclosers	\$2.0	\$0.3	\$0.0	\$0.3	\$0.5
Protection	Recloser Communication	\$0.0	\$0.1	\$0.0	\$0.1	\$0.0
Total*		\$47.5	\$50.2	\$35.6	\$85.8	\$75.5

* There may be differences between the sum of the individual category amounts and Total amounts due to rounding.

Q. PLEASE DISCUSS THE PATTERN OF CONDUCTOR REPLACEMENT PLANT ADDITIONS.

A. The pattern of 2021-2023 plant additions is primarily driven by in-servicing patterns within this category. For example, the 2022 amount of Conductor Replacement shown in Table KRF-D-5 above (\$41.6 million) is partially influenced by challenges encountered in 2021 that resulted in work undertaken in 2021 not being placed into service until 2022. Those challenges were detailed in the 2021 WMP Report and explained in more detail later in my Direct Testimony. Conductor Replacement capital additions return to a more normalized level in 2023. Further, Conductor Replacement *capital expenditure* is fairly consistent across the three years, as is

1 the total amount of conductor replaced under the program. Finally, as discussed
2 in the 2021 Wildfire Annual Report, the balance of work between replacement and
3 rebuilds is shifting in favor of the latter.¹¹

4 **Q. WHAT IS CONTRIBUTING TO THE INCREASE IN SUBSTATION RELAY**
5 **ADDITIONS IN 2022 AND 2023?**

6 A. First, the initial substation relay projects completed as part of the WMP generally
7 were less complex, and did not include relay installs, but rather were rewiring. As
8 time has progressed, the projects have shifted toward new relay installs, increasing
9 the per-project cost. Second, later projects also include breakers, which increase
10 the per-project cost. Finally, there is projected increase in the number of relays to
11 be completed over the period.

12 **Q. PLEASE DESCRIBE THE MAIN DRIVERS OF THE COMPANY'S 2022 AND**
13 **2023 WILDFIRE TRANSMISSION CAPITAL ADDITIONS.**

14 A. The 2022 and 2023 wildfire Transmission capital additions are driven primarily by
15 Major Line Rebuild and High Priority Defect Correction Projects. The Company is
16 planning to address approximately 250 high priority defects in the WRZ and to in-
17 service approximately 14 miles of transmission lines related to the following 69 kV
18 lines in 2022: Villa Grove – Poncha (Line 6905); Alamosa - Mosca (Line 6935);
19 Alamosa-Antonito (Line 6914); and Rifle – Bluestone Valley (Line 6670). In 2023,
20 approximately 65 miles of 69 kV transmission lines will be constructed. In addition,
21 the new priority defects identified in 2022 will be addressed in 2023 (inspections

¹¹ See Attachment KRF-1 at 22.

1 are still in progress). Table KRF-D-6 below provides a breakdown of 2022 and
 2 2023 wildfire Transmission capital additions, by program area and mitigation
 3 activity.

4 **TABLE KRF-D-6**
 5 **Public Service - Electric Transmission**
 6 **WMP Capital Additions Detail**
 7 **(\$ Millions)**

Program Area	Mitigation Activity	2021 (Actual)	2022			2023 (Forecast)
			1/1 – 6/30 (Actual)	7/1 – 12/31 (Forecast)	Total	
Repair and Replace	Major Line Rebuilds	\$25.0	\$6.7	\$4.8	\$11.5	\$118.6
Repair and Replace	High Priority Defect Correction	\$9.1	\$0.4	\$12.9	\$13.3	\$5.6
Total*		\$34.1	\$7.1	\$17.7	\$24.8	\$124.2

* There may be differences between the sum of the individual category amounts and Total amounts due to rounding.

8 **Q. CAN YOU PROVIDE ADDITIONAL DETAIL ON THE MAJOR LINE REBUILDS**
 9 **THAT ARE PART OF THE 2022 AND 2023 WILDFIRE TRANSMISSION**
 10 **CAPITAL ADDITIONS?**

11 A. Yes. The Table KRF-D-7 below provides a summary of the Company's largest
 12 drivers for the planned 2022 and 2023 major line rebuilds.

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4

TABLE KRF-D-7¹²
Public Service - Electric Transmission
Wildfire Major Line Rebuilds
 (\$ Millions)

Project	Voltage	Approx. Total Mileage*	Scope	Est. 2022 Capital Additions	Est. 2023 Capital Additions	Est. total 2022-2023 Project Capital Additions	Projected Completion Year
6905 Villa Grove – Poncha Rebuild	69 kV	15	Complete rebuild of a 69 kV line between Villa Grove to Poncha Junction (including the Mears Junction Tap but excluding the 6905-12S and 6905-12N section where the structures are newer).	\$1.0	\$0.0	\$1.0	2022
6935 Alamosa – Mosca Rebuild	69 kV	18	Complete rebuild of a 69 kV transmission line between Mosca Junction and Alamosa Switchyard.	\$5.9	\$0.0	\$5.9	2022
6683 Uintah – Fruita Rebuild	69 kV	3	Complete rebuild of a 69 kV circuit between Uintah and Fruita substations. This is a radial line; Most of the line will be built on new ROW to continue to serve the customers while the replacement line is being built.	\$0.7	\$8.1	\$8.8	2023
6914 Alamosa – Antonito Rebuild	69 kV	39	Complete rebuild of a 69 kV circuit between Alamosa and Antonito substations. This is a radial line; the line will be built on new ROW to continue to serve the customers while the replacement line is being built.	\$2.3	\$31.3	\$33.6	2024

¹² Values shown here are the portions of projects placed in-service in 2022 and 2023.

Project	Voltage	Approx. Total Mileage*	Scope	Est. 2022 Capital Additions	Est. 2023 Capital Additions	Est. total 2022-2023 Project Capital Additions	Projected Completion Year
6670 Rifle – Cameo Rebuild (including Bluestone Valley Expansion and 6672 Cameo – Bluestone Valley Removal)	69 kV/230 kV	45	The proposed alternative to rebuild 6670 Rifle – Cameo Rebuild (now two separate lines: 6670 Rifle – Bluestone Valley and 6672 Bluestone Valley – Cameo after Bluestone Valley was in serviced) is to build out Bluestone Valley substation to bring in a new 230 kV feed into the substation from a 230 kV transmission line, 5509 Parachute – Cameo that’s about 0.5 mile way from the substation. This will allow the retirement of Line 6672 Bluestone Valley – Cameo, which is located in the rugged terrain of DeBeque Canyon, instead of rebuilding in-place at a premium cost.	\$0.0	\$34.7	\$34.7	2024
6584 Mitchell Creek – Rifle & Shoshone – Glenwood Springs	69 kV	31	Complete rebuild of a 69kV transmission line between Mitchell Creek and Rifle. In addition, the section between Shoshone and Glenwood Springs will need to be refurbished, rebuilt, or retired.	\$1.4M	\$44.5	\$45.9	2025

* This table shows the total project mileages including the mileages that have been or will be in-serviced outside of the test year

1

2 **Q. HOW DOES THE WORK TO BE COMPLETED IN 2022 COMPARE TO WHAT**
 3 **WAS ORIGINALLY PRESENTED IN THE WILDFIRE PROCEEDING?**

4 A. As discussed in its 2021 WMP Annual Report, the Company encountered several
 5 challenges while executing repair and replace programs in 2021.¹³ Those
 6 challenges, along with others that have continued into 2022 and schedule

¹³ See Attachment KRF-1 at 19-23.

1 changes, have resulted in costs that exceed those initially forecasted as part of the
2 WMP submitted in the Wildfire Proceeding.

3 **Q. PLEASE DESCRIBE SOME OF THESE CHALLENGES.**

4 A. Several of the challenges were described in the 2021 WMP Annual Report. For
5 example, there have been significant increases in material costs and construction
6 and labor rates from what was assumed in the Wildfire Proceeding. Costs of 2022
7 work are also affected by an increased construction scope (rebuild versus
8 reconductor) than was assumed in the Wildfire Proceeding. Further, 2022 results
9 will be impacted by carryover of 2021 items into 2022 (increased covered
10 conductor scope), and the movement of certain 2022 in-service dates to 2023. In
11 addition to impacting costs and scheduling, these challenges could contribute to
12 the Company's Work Completion Ratio ("WCR") metric for 2022.

13 **Q. WHAT IS THE WCR METRIC?**

14 A. The WCR metric is one of three WMP Key Performance Indicators ("KPIs")
15 adopted by the Wildfire Decision. The KPIs are as follows:¹⁴

- 16 • *Vegetation Management Maintenance Cycles:* During each of the
17 calendar years 2021 and 2022 Public Service is to maintain vegetation
18 around all distribution and transmission assets in the WRZ on at least a
19 90 percent completion of cycle basis.
- 20 • *Work Completion:* During each of the calendar years 2021 and 2022,
21 Public Service is to complete 90 percent of its scheduled work annually
22 as proposed in the Company's WMP.
- 23 • *Work Completion Ratio:* During calendar years 2021 and 2022, Public
24 Service will complete system hardening Repair/Replacement and
25 System Protection programs to the percent of actual spend as compared

¹⁴ Wildfire Decision at 20-21, ¶ 94. Paragraph 95 of the Recommended Decision also provides for additional reporting on other metrics, like the number of ignitions and Red Flag Warning days experienced, but they do not affect potential rate case requirements.

1 to budget, across the entire WRZ, equal to or exceeding 0.900 and
2 report the actual WCR by county in the WRZ. If the WCR is less than
3 0.900 then the Company is to report WCR by system hardening program
4 repaired or replaced for each county within the WRZ.

5 **Q. DOES THE COMPANY REPORT ON KPIS IN ITS WMP ANNUAL REPORTS?**

6 A. Yes. The 2021 KPIS are addressed in the Company's 2021 WMP Annual Report.
7 The 2022 KPIS will be addressed in the Company's 2022 WMP Annual Report,
8 which must be filed in May 2023.

9 **Q. WILL THE INFORMATION FROM THE 2022 ANNUAL REPORT BE RELEVANT**
10 **TO THE COMPANY'S REQUESTS IN THIS PROCEEDING?**

11 A. Yes. The Wildfire Decision provides that if the Company does not achieve its KPIS
12 for 2022,¹⁵ then the Company must "provide detailed testimony and/or evidence
13 explaining why it did not achieve the applicable target at the time or times the
14 Company seeks base rate cost recovery for distribution WMP costs and/or
15 transmission WMP capital."¹⁶ Whether the Company achieves its 2022 KPIS will
16 be addressed in the 2022 Wildfire Annual Report. The Company expects to
17 provide the 2022 Wildfire Annual Report as part of its Rebuttal Testimony in this
18 Proceeding.

¹⁵ As noted in the Wildfire Decision, the KPIS are for activities during calendar years 2021 and 2022. The Company achieved all 2021 KPIS. See Attachment KRF-1 at 8.

¹⁶ *Id.*

1 **Q. OVERALL, HOW DOES THE PROJECTED WMP WORK TO BE COMPLETED**
2 **THROUGH 2023 COMPARE TO WHAT WAS PRESENTED IN THE WILDFIRE**
3 **PROCEEDING?**

4 A. The work to be completed through 2023 remains directed at the overall objective
5 of the WMP: to promote public safety through programs to construct, maintain, and
6 operate the electric system in a manner to minimize wildfire risk. As time has
7 passed, the Company has refined its planning based on new, more detailed
8 information and in light of changing circumstances.

9 For Distribution, the Company is anticipating that it will cost more than
10 initially budgeted in the Wildfire Proceeding to complete the identified amount of
11 work. As discussed in the 2021 Wildfire Annual Report, the Company experienced
12 a number of challenges executing its repair and replacement programs in 2021.
13 That contributed to carryover work into 2022 (and associated cost increases
14 beyond what was originally estimated for that year in the Wildfire Proceeding).
15 Further, other factors like increased material costs, increased construction and
16 labor rates and increased construction scope (rebuild versus reconductor), are all
17 contributing to higher costs than originally budgeted.

18 Transmission work also is affected by these factors. In addition, when the
19 budgets were developed in the Wildfire Proceeding, it was anticipated that the
20 number of identified high priority defects would begin declining in 2021 as more
21 transmission line is inspected. That has not materialized: the Company found 250
22 new priority defects in the WRZ that need to be addressed in 2022 and
23 approximately 260 additional WRZ priority defects for 2022.

1 **IV. WILDFIRE MITIGATION O&M**

2 **Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR DIRECT TESTIMONY?**

3 A. The purpose of this section of my Direct Testimony is to support the Company's
4 WMP O&M expense through June 30, 2022, as adjusted for: (1) items discussed
5 below; and (2) labor and non-labor costs as discussed and quantified by Company
6 witnesses Mr. Michael P. Deselich and Mr. Freitas, as the appropriate level of
7 WMP O&M expense in the Test Year.

8 **Q. WHAT ARE THE TYPES OF O&M COSTS THE COMPANY INCURS TO**
9 **SUPPORT ITS WMP?**

10 A. O&M expenditures are required across all programs to support the WMP. The
11 largest O&M categories are: (1) Inspection and Modeling; and (2) Vegetation
12 Management, but the Community and Development, Repair and Replace, and
13 Protection programs have O&M components as well. I present the breakdown of
14 these O&M costs by program later in my Direct Testimony.

15 **Q. WHAT ARE INSPECTION AND MODELING EXPENSES?**

16 A. Inspection and Modeling work relates to wind strength and loading analysis. These
17 expenses also include visual inspections that will cover approximately one-quarter
18 of the Distribution feeders by either foot, drone, helicopter, or a combination
19 thereof, to identify potential imminent hazards or defects that could lead to an
20 ignition.

21 **Q. PLEASE DESCRIBE THE WMP VEGETATION MANAGEMENT EXPENSES.**

22 A. Vegetation Management O&M has four aspects: (1) the DSAP program
23 (Distribution only); (2) the Mountain Hazzard Tree program (both Distribution and

1 Transmission); (3) Distribution secondary voltage clearing (Distribution only); and
2 (4) ROW vegetation type conversion (Transmission only). These programs all
3 involve pruning, removal, mowing, and application of herbicide to trees and tall-
4 growing brush on land adjacent to Public Service's ROW and facilities.

5 **Q. PLEASE PROVIDE ADDITIONAL INFORMATION REGARDING THE DSAP**
6 **PROGRAM.**

7 A. The DSAP program (also referred to as "pole-brushing") is a distribution vegetation
8 management activity designed to create a vegetation-free zone around the base
9 of electrical poles. It is necessary because if the equipment on top of a pole
10 creates a spark, then the most likely risk of ignition is on the ground around the
11 pole, directly below that equipment. Generally, creating a 10-foot radius firebreak
12 clearance around the pole will reduce the risk of sparks that may occur during the
13 operation of pole-top equipment igniting vegetation beneath the pole.

14 **Q. WHAT IS THE MOUNTAIN HAZZARD TREE PROGRAM?**

15 A. Prior to the Wildfire Proceeding, the Company had an existing MHT Program for
16 Transmission and Distribution systems. That program was developed in response
17 to pine and spruce beetle infestations within the Company's service territory.
18 Generally, the MHT program is a mid-cycle activity (in which activities are
19 undertaken typically two years after normal maintenance) to reduce the likelihood
20 of dead, dying, or damaged trees or limbs from making contact with electrical
21 conductors by proactively remediating the hazard. Historically, MHT activities
22 were performed only in areas where pine and spruce trees are the predominating
23 tree species. Some of these areas were within the WRZ.

1 As part of the Company's initial WMP and the WMP authorized in the
2 Wildfire Proceeding, the Company expanded MHT patrolling to include all parts of
3 the WRZ, not just the portions of the WRZ that were largely dominated by spruce
4 and pine trees (as occurred under the original MHT). Ultimately, the enhanced
5 MHT that occurs under the WMP covers all distribution and transmission corridors
6 in the WRZ.

7 **Q. PLEASE DESCRIBE THE SECONDARY VOLTAGE CLEARING ACTIVITIES.**

8 A. The Company generally focuses its vegetation management efforts on
9 transmission and primary distribution lines that may have a larger impact on
10 customers. The Secondary Voltage Clearing program targets distribution
11 secondary and service lines within the WRZ, which are smaller lines, but
12 nonetheless present a risk of starting ignitions. This activity proactively manages
13 vegetation around these types of lines, focusing on hazards from encroaching
14 vegetation, such as tree limbs.

15 **Q. PLEASE DESCRIBE THE ROW CONVERSION O&M ACTIVITIES.**

16 A. ROW conversion O&M is focused on transmission and expands upon the
17 Company's existing practice of trimming within ROWs by trimming additional
18 vegetation beyond what is required to achieve normal compliance. The ROW
19 conversion program proactively manages additional vegetation, including smaller
20 trees and shrubs to further reduce the fuel along the electrical corridors in the WRZ.
21 The program not only reduces the risk of wildfire, but also allows for better access
22 to facilities for inspections and maintenance.

1 **Q. WHAT ARE PROTECTION O&M EXPENSES?**

2 A. Protection O&M expense are for installing reclosers.

3 **Q. WHAT ARE REPAIR AND REPLACE O&M EXPENSES?**

4 A. This is the O&M expense associated with the repair and replacement capital
5 additions.

6 **Q. WHAT ARE COMMUNITY AND DEVELOPMENT O&M EXPENSES?**

7 A. Community and Development O&M expense relates to inspection of lines,
8 community outreach activities, a fire scientist and Risk Model development and
9 studies, as well as wildfire mitigation consulting expertise.

10 **A. Overview of WMP O&M**

11 **Q. PLEASE SUMMARIZE THE WMP TEST YEAR O&M EXPENSE.**

12 A. Table KRF-D-8 summarizes the WMP Test Year O&M expense. Additional
13 information is provided as Attachment KRF-3, which shows actual Distribution
14 WMP O&M expense for the 12-months ended June 30, 2022, and Attachment
15 KRF-4, which shows actual Transmission WMP O&M expense for the 12-months
16 ended June 30, 2022.

17 **TABLE KRF-D-8:
WMP Test Year O&M Expenses
Public Service Electric
(\$ Millions)**

Category	Test Year Amount
Distribution 12-Months Ended June 30, 2022	\$4.3
Transmission 12-Months Ended June 30, 2022	\$0.8
Test Year Adjustments	\$1.1
Total*	\$6.2

*There may be differences between the sum of the individual category amounts and totals due to rounding.

1 **Q. ARE THESE WMP O&M EXPENSES REASONABLE AND NECESSARY TO**
2 **CARRY OUT THE WILDFIRE ACTIVES DESCRIBED ABOVE?**

3 A. Yes. These WMP O&M expenses, along with associated WMP labor and non-
4 labor costs discussed and quantified by Company witnesses Mr. Deselich and Mr.
5 Freitas, are necessary to ensure that the Company is able to complete the WMP
6 projects identified earlier in my Direct Testimony, which will reduce wildfire risks
7 for the Company's customers and Colorado as a whole, while also ensuring the
8 Company's continued ability to deliver safe and reliable electric service to our
9 customers.

10 **B. Historical O&M**

11 **Q. HOW DOES THE WMP O&M FOR THE 12 MONTHS ENDED**
12 **DECEMBER 31, 2021 COMPARE TO THE WMP O&M FOR THE 12 MONTHS**
13 **ENDED JUNE 30, 2022?**

14 A. As shown in Table KRF-D-9, below, actual WMP O&M costs for the 12 months
15 ended June 30, 2022, were \$1.1 million lower than those for the 12 months ended
16 December 31, 2021. Table KRF-D-9 also identifies the differences in Distribution
17 and Transmission WMP historical O&M for these time periods. Additionally,
18 Tables KRF-D-10 and KRF-D-11 provide details for each category within
19 Distribution and Transmission, respectively.

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TABLE KRF-D-9
Public Service Electric
WMP O&M Comparison
 (\$ Millions)

	12 Months Ended December 31, 2021	12-Months Ended June 30, 2022	Difference
Distribution	\$5.3	\$4.3	\$(1.0)
Transmission	\$0.9	\$0.8	\$(0.1)
Total*	\$6.2	\$5.1	\$(1.1)
* There may be differences between the sum of the individual category program amounts and Total amounts due to rounding.			

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TABLE KRF-D-10
Public Service Electric
WMP Distribution O&M Comparison
 (\$ Millions)

	12 Months Ended December 31, 2021	12-Months Ended June 30, 2022	Difference
Community and Development	\$0.4	\$0.3	\$(0.1)
Inspection and Modeling	\$1.8	\$1.7	\$(0.1)
Protection	\$0.0	\$0.0	\$0.0
Vegetation Management	\$1.7	\$1.4	\$(0.3)
Repair and Replace	\$1.4	\$0.9	\$(0.5)
Total*	\$5.3	\$4.3	\$(1.0)
* There may be differences between the sum of the individual category program amounts and Total amounts due to rounding.			

TABLE KRF-D-11
Public Service Electric
WMP Transmission O&M Comparison
 (\$ Millions)

	12 Months Ended December 31, 2021	12-Months Ended June 30, 2022	Difference
Inspection and Modeling	\$0.6	\$0.5	\$(0.1)
Vegetation Management	\$0.2	\$0.2	\$0.0
Repair and Replace	\$0.1	\$0.1	\$0.0
Total*	\$0.9	\$0.8	\$(0.1)
*There may be differences between the sum of the individual category program amounts and Total amounts due to rounding.			

Q. PLEASE DISCUSS THE MAIN DRIVERS OF THE COMPANY'S TEST YEAR DISTRIBUTION WILDFIRE O&M EXPENSES.

A. As shown in Table KRF-D-9 above, most WMP O&M in the Test Year relates to Distribution projects. Within the Distribution function, Vegetation Management and Inspection and Modeling are the two largest categories. As compared to the 12 months ended December 31, 2021, Distribution function O&M expense is approximately one million dollars lower for the Test Year.

The Test Year reflects six months of expanded Vegetation Management projects that started in 2022. Also, for Inspection and Modeling, a new overhead inspection program began in 2022, which impacts O&M for the 12 months ended June 30, 2022, as does the continuation of the Wind Strength Review and Clearance project. These new aspects were offset by capitalization of fuses, arresters and cutouts due to the change in scope between reconductor and rebuild, resulting in lower overall Distribution O&M expense.

1 **Q. PLEASE DISCUSS THE MAIN DRIVERS OF CHANGES TO TRANSMISSION**
2 **WILDFIRE O&M EXPENSES.**

3 A. Transmission O&M generally was unchanged between the 12 months ended
4 December 31, 2021 and June 30, 2022. The slight decrease for Inspection and
5 Modeling was due to mild weather conditions in early 2022, which allowed easier
6 access to certain locations (not needing as many special equipment such as
7 snowcats or helicopters to get to the structures in 2022).

8 **C. Test Year Adjustments**

9 **Q. PLEASE EXPLAIN THE PROPOSED WMP TEST YEAR O&M ADJUSTMENT.**

10 A. The WMP test year O&M adjustment is for software licensing costs the Company
11 began incurring after June 30, 2022.

12 **Q. WHAT IS THE SOFTWARE RELATED TO THESE COSTS?**

13 A. The Company engaged an outside consultant, Technosylva, to develop software
14 and algorithms that estimate wildfire spread as part of improving the Wildfire Risk
15 Model. Technosylva is an industry leading company focused on wildfire behavior
16 simulation.

17 **Q. PLEASE PROVIDE ADDITIONAL DETAIL REGARDING THE TECHNOSYLVA**
18 **SOFTWARE.**

19 A. This risk modeling software takes into account current and forecasted weather
20 information and ground fuel conditions to forecast where a fire could potentially
21 spread, and provides consequence estimates from analyzing the simulated wildfire
22 spread. The software conducts millions of simulations daily that quantify potential
23 impacts to buildings, population, utility assets, and critical facilities. It monitors risk

1 real-time, thereby assisting the Company in being able to make operational
2 decisions to minimize the risk of a wildfire. The software utilizes the Company's
3 asset-specific location data to simulate and estimate possible wildfire impacts from
4 an ignition occurring along or near existing utility assets.

5 Ultimately, the software represents a significant improvement over the
6 current static Wildfire Risk Model, which estimates the consequence of possible
7 wildfire impacts by applying a distribution of the potential number of acres burned
8 using limited historical wildfire data.

9 **Q. WILL THE COMPANY CONTINUE TO INCUR THESE COSTS DURING THE**
10 **PERIOD RATES WILL BE IN EFFECT?**

11 A. Yes. The Company will incur an annual license fee for the Technosylva software.
12 The first annual license payment was made in the fall of 2022, and it will be
13 renewed in the fall of 2023.

14 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

15 A. Yes, it does.

Statement of Qualifications

Kristopher R. Farruggia is the Regional Vice President of Distribution Operations for Public Service Company of Colorado. In this position, Kristopher has responsibility for overseeing the Distribution Operations group responsible for design, construction, and maintenance of the Distribution system in Public Service. Since early 2021, Kristopher has had responsibility for overseeing the execution of Distribution Wildfire Program work in Colorado to include public outreach and engagement with industry peers.

Kristopher joined Xcel Energy in 2005. From early 2007 through the end of 2012, Kristopher was a leader in the Distribution Contracting group. In that role, he had responsibility for management and oversight of major capital construction programs and projects including overhead rebuild, pole replacements, and conversions. From 2012 to 2020, Kristopher was a Chief of Staff and Director of Operations for Public Service Distribution with responsibility overseeing gas, electric, and design work across the Public Service footprint. Kristopher moved into his current role in September of 2021.

Kristopher graduated from Regis University in 2009 with a Bachelor of Science degree in Computer Information Systems and Enterprise & Web Application Engineering and is currently pursuing a Master of Business Administration from Colorado State University Global with an anticipated completion of June 2024.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO


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IN THE MATTER OF ADVICE LETTER)
NO. 1906-ELECTRIC OF PUBLIC)
SERVICE COMPANY OF COLORADO)
TO REVISE ITS COLORADO PUC NO.)
8-ELECTRIC TARIFF TO REVISE)
JURISDICTIONAL BASE RATE) PROCEEDING NO. 22AL-XXXXE
REVENUES, IMPLEMENT NEW BASE)
RATES FOR ALL ELECTRIC RATE)
SCHEDULES, AND MAKE OTHER)
TARIFF PROPOSALS EFFECTIVE)
DECEMBER 31, 2022.)

AFFIDAVIT OF KRISTOPHER R. FARRUGGIA
ON BEHALF OF
PUBLIC SERVICE COMPANY OF COLORADO

I, Kristopher R. Farruggia, being duly sworn, state that the Direct Testimony and attachments were prepared by me or under my supervision, control, and direction; that the Direct Testimony and attachments are true and correct to the best of my information, knowledge and belief; and that I would give the same testimony orally and would present the same attachments if asked under oath.


Dated at Denver, Colorado, this 22ND day of November, 2022.



Kristopher R. Farruggia
Regional Vice President, PSCo Distribution

Subscribed and sworn to before me this 22nd day of NOV., 2022.

Hannah Ahrendt
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID# 20224026062
MY COMMISSION EXPIRES JULY 5, 2026



Notary Public
My Commission expires July 5, 2026