

**NOTICE OF CONFIDENTIALITY**

***A PORTION OF THIS TESTIMONY OR TESTIMONY AND ATTACHMENTS  
HAS/HAVE BEEN FILED UNDER SEAL.***

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

\* \* \* \* \*

IN THE MATTER OF ADVICE LETTER )  
NO. 1857-ELECTRIC OF PUBLIC )  
SERVICE COMPANY OF COLORADO )  
TO REVISE ITS COLORADO PUC NO. )  
8-ELECTRIC TARIFF TO REVISE )  
JURISDICTIONAL BASE RATE ) PROCEEDING NO. 21AL-\_\_\_\_E  
REVENUES, IMPLEMENT NEW BASE )  
RATES FOR ALL ELECTRIC RATE )  
SCHEDULES, AND MAKE OTHER )  
PROPOSED TARIFF CHANGES )  
EFFECTIVE AUGUST 2, 2021 )

**DIRECT TESTIMONY AND ATTACHMENTS OF BETTY L. MIRZAYI**

**ON**

**BEHALF OF**

**PUBLIC SERVICE COMPANY OF COLORADO**

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**Confidential:** Attachment BLM-3C and Attachment BLM-4C

**July 2, 2021**

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**GLOSSARY OF ACRONYMS AND DEFINED TERMS**

<b><u>Acronym/Defined Term</u></b>	<b><u>Meaning</u></b>
2019 Electric Phase I	Proceeding No. 19AL-0268E
AGIS	Advanced Grid Intelligence and Security
AMI	Advanced Meter Infrastructure
BESS	Battery Energy Storage System
CDOT	Colorado Department of Transportation
CIAC	Contribution in Aid of Construction
Commission	Colorado Public Utilities Commission
CPCN	Certificate of Public Convenience and Necessity
DER	Distributed Energy Resources
DGA	Dissolved Gas Analysis
ECT	Electric Continuity Threshold
ERT	Electric Restoration Threshold
FERC	Federal Energy Regulatory Commission
FTY	Future Test Year
HTY	Historic Test Year
IEEE	Institute of Electrical and Electronics Engineers
LED	Light-Emitting Diode
O&M	Operation and Maintenance
Public Service or Company	Public Service Company of Colorado
QSP	Quality of Service Plan
SAIDI	System Average Interruption Duration Index

<b><u>Acronym/Defined Term</u></b>	<b><u>Meaning</u></b>
SCADA	Supervisory Control and Data Acquisition
ROW	Right-of-Way
RTU	Remote Terminal Unit
RWT	Reliability Warning Threshold
URD	Underground Residential Distribution
WAPA	Western Area Power Administration
WMP	Wildfire Mitigation Plan
XES	Xcel Energy Services Inc.
Xcel Energy	Xcel Energy Inc.
XLPE	Cross Linked Polyethylene cable

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**DIRECT TESTIMONY AND ATTACHMENTS OF BETTY L. MIRZAYI**

1 I. **INTRODUCTION, QUALIFICATIONS, PURPOSE OF TESTIMONY, AND**  
2 **RECOMMENDATIONS**

3 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

4 A. My name is Betty L. Mirzayi. My business address is 1123 West 3<sup>rd</sup> Avenue,  
5 Denver, CO 80223.

6 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?**

7 A. I am employed by Xcel Energy Services Inc. ("XES") as Manager, Distribution  
8 System Planning and Strategy South. XES is a wholly owned subsidiary of Xcel  
9 Energy Inc. ("Xcel Energy"), and provides an array of support services to Public  
10 Service Company of Colorado ("Public Service" or the "Company") and the other  
11 utility operating company subsidiaries of Xcel Energy on a coordinated basis.

12 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THE PROCEEDING?**

13 A. I am testifying on behalf of Public Service.

1 **Q. PLEASE SUMMARIZE YOUR RESPONSIBILITIES AND QUALIFICATIONS.**

2 A. As the Manager, Distribution System Planning and Strategy South, I provide an  
3 array of support services to Public Service and other utility operating company  
4 subsidiaries of Xcel Energy. I am responsible for providing strategic direction for  
5 building a five-year distribution plan to ensure a reliable and cost-effective electric  
6 distribution system. A description of my qualifications, duties, and responsibilities  
7 is set forth in my Statement of Qualifications at the conclusion of my Direct  
8 Testimony.

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

10 A. The purpose of my Direct Testimony is to support Distribution's plant additions and  
11 operation and maintenance ("O&M") expenses that are allocated to Public Service  
12 retail electric and included in the 2022 Future Test Year ("FTY") cost of service  
13 that is presented by Company witness Ms. Deborah A. Blair.

14 The Company's last electric rate case was Proceeding No. 19AL-0268E  
15 (the "2019 Electric Phase I"), in which a Current Test Year ending August 31, 2019  
16 was approved. I therefore provide support for capital additions placed into service  
17 since the Company's 2019 Electric Phase I, from September 1, 2019, through the  
18 year-end 2022 FTY. The Company's Distribution plant additions since the 2019  
19 Electric Phase I total \$1.21 billion through December 31, 2022. These amounts  
20 do not include any plant additions associated with the Company's Advanced Grid  
21 Intelligence and Security ("AGIS") initiative or the Wildfire Mitigation Program  
22 ("WMP").



1           Company witness Mr. Chad S. Nickell supports Distribution’s capital  
2 additions and O&M costs related to the AGIS initiative and Company witness Ms.  
3 Sandra L. Johnson supports Distribution’s capital additions and O&M costs related  
4 to the WMP. Company witness Ms. Laurie J. Wold has calculated the monthly  
5 plant balances to develop the plant-related roll forward, which is in turn used by  
6 Ms. Blair to incorporate the 13-month average plant in service balances into the  
7 2022 FTY cost of service.

8           I also support the \$113.1 million in Distribution’s O&M included in the 2022  
9 FTY. Distribution’s O&M in this rate case is based on 2020 actual O&M, with  
10 forecasted adjustments for the 2022 FTY. Company witnesses Mr. Steve P.  
11 Berman and Ms. Blair support the Company’s overall FTY development.

12           Further, in Section VI, I discuss the Company’s proposed adjustment to  
13 increase the amount of Distribution and Transmission equipment that is held in  
14 inventory for 2022.

15           Finally, in Section VII, I discuss the Company’s distribution reliability  
16 achievements to date and the Company’s request to extend its current Quality of  
17 Service Plan (“QSP”) for an additional three years (i.e., from 2022 through 2024).

18 **Q. ARE YOU SPONSORING ANY ATTACHMENTS AS PART OF YOUR DIRECT**  
19 **TESTIMONY?**

20 **A.** Yes, I am sponsoring Attachments BLM-1 through BLM-6, which were prepared  
21 by me or under my direct supervision. The attachments are as follows:

- 22           • Attachment BLM-1: Distribution Capital Additions from September 1,  
23           2019 to December 31, 2020;

- 1 • Attachment BLM-2: Distribution Capital Additions from January 1, 2021  
2 to December 31, 2022;
- 3 • Attachment BLM-3C: Confidential Community Resilience Initiative  
4 Project Costs;
- 5 • Attachment BLM-4C: Confidential High Point Substation Project Costs;
- 6 • Attachment BLM-5: Distribution O&M Expenses by Cost Element; and
- 7 • Attachment BLM-6: Distribution O&M Expenses by Federal Energy  
8 Regulatory Commission (“FERC”) Account.

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

11 A. As part of approving the FTY cost of service developed by Ms. Blair, I recommend  
12 that the Colorado Public Utilities Commission (“Commission”) approve the  
13 September 1, 2019 to December 31, 2022 Distribution Business Area capital  
14 additions and Distribution’s 2020 O&M expenses, which are included in the  
15 Company’s 2022 FTY cost of service and are described in detail below. I also  
16 recommend the Commission approve the Company’s request related to recovery  
17 of Vegetation Management expenses for Distribution and Transmission, Damage  
18 Prevention, Distribution System Planning Internal Labor, and Mutual Aid as  
19 forecasted adjustments to 2020 actual O&M expenses. Further, I recommend that  
20 the Commission approve the Company’s proposed adjustment to increase the  
21 amount of Distribution and Transmission assets held in inventory for 2022. Finally,  
22 I recommend that the Commission approve the Company’s request to extend its  
23 current QSP for an additional three years.

1                    **II.     DISTRIBUTION FUNCTIONS AND ACTIVITIES**

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

3   A.     In this section, I provide an overview of Public Service's distribution system and  
4   describe the Distribution Business Area, including its key functions and services.

5   **Q.     PLEASE PROVIDE AN OVERVIEW OF PUBLIC SERVICE'S DISTRIBUTION**  
6   **SYSTEM.**

7   A.     To reliably and efficiently serve our approximately 1.5 million Colorado customers,  
8   Public Service owns and operates an extensive electric distribution system. Our  
9   electric distribution system has assets in 25 counties throughout Colorado and  
10   provides electric service to both rural and urban customers. The distribution  
11   system consists of approximately 151 distribution-level substations that support a  
12   network of 785 distribution feeders necessary to serve our customers. These  
13   distribution feeders include approximately 9,600 circuit miles of overhead  
14   distribution lines, 13,200 circuit miles of underground distribution lines, and over  
15   450,000 poles.

16   **Q.     PLEASE PROVIDE AN OVERVIEW OF THE DISTRIBUTION BUSINESS AREA.**

17   A.     The Distribution Business Area is responsible for the construction and operation  
18   of Public Service's distribution system, which is the portion of its electric system  
19   that delivers electricity to the vast majority of our customers. There are a total of  
20   approximately 963 Public Service and XES Distribution employees assigned to  
21   provide services to the Public Service's electric distribution system. Of those  
22   employees, approximately 747 are Public Service employees.

1 **Q. PLEASE DESCRIBE THE KEY FUNCTIONS AND SERVICES OF THE**  
2 **DISTRIBUTION BUSINESS AREA.**

3 A. The Distribution Business Area is responsible for constructing, operating,  
4 maintaining, and repairing the portion of the electric system that directly connects  
5 to customers' homes and businesses. The key services provided by the  
6 Distribution Business Area include performing regular maintenance, repairs, and  
7 replacement of poles, wires, underground cables, metering, and transformers,  
8 extending service to new customers or increasing the capacity of the system to  
9 accommodate new or increased load, repairing facilities damaged during severe  
10 weather to quickly restore service to customers, and interconnecting new  
11 Distributed Energy Resources ("DER") to the distribution system. To deliver these  
12 services, the Distribution Business Area is structured around five key functions:

- 13 • *Operations:* Responsible for the design, construction, and maintenance  
14 of the distribution system, as well as monitoring and operating the  
15 distribution system from the Electric Control Center, responding to  
16 electric distribution trouble calls, and coordinating emergency response.
- 17 • *Engineering:* Provides technical support and system planning, including  
18 design, construction, and material standardization, reliability planning,  
19 and addressing distribution-related customer load, resource, and  
20 service issues.
- 21 • *Business Operations:* Responsible for vegetation management, outdoor  
22 lighting, facility attachments, and the builder's call line.
- 23 • *AGIS and Metering.* Responsible for implementing the AGIS initiative  
24 and metering.
- 25 • *Planning and Performance:* Provides business planning, consulting,  
26 analytical services, and performance governance and management.

1 **Q. HOW DOES THE DISTRIBUTION BUSINESS AREA SUPPORT THE**  
2 **FUNCTIONS DESCRIBED ABOVE?**

3 A. Distribution makes capital investments and incurs O&M costs to maintain and  
4 improve the reliability of the system, modernize the distribution system, improve  
5 functionality, extend service to new customers, and relocate facilities in response  
6 to road construction or other governmental projects. I will discuss Distribution's  
7 capital investments and O&M trends in more detail below.

1     **III.     DISTRIBUTION CAPITAL BUDGET, PROJECT SELECTION, AND FUNDING**

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 provide an overview of the  
4           Distribution Business Area’s capital budgeting process, project development, and  
5           budget management processes.

6     **A.     Overview of Distribution’s Capital Investments**

7     **Q.     HOW DOES DISTRIBUTION CATEGORIZE THEIR CAPITAL ADDITIONS?**

8     A.     The Distribution Business Area has a well-defined process for identifying and  
9           determining electric distribution investments within five capital budget groupings  
10          encompassing our business area responsibilities. These categories include:

11           •     *Asset Health and Reliability:* Projects classified as Asset Health and  
12                 Reliability are related to infrastructure that is reaching the end of its  
13                 useful life and is experiencing higher failure rates – and that, as a result,  
14                 negatively impact reliability of service while increasing O&M expenses.  
15                 Distribution assets are monitored to ensure that they provide reliable  
16                 service throughout the year. When poor-performing assets are  
17                 identified, projects that will improve asset performance are included in  
18                 the budget. Examples of these types of projects include replacing  
19                 underground tap and feeder cables, wood poles, overhead lines,  
20                 substation equipment, transformers, and switchgear that have reached  
21                 the end of their lives. This category also captures asset replacements  
22                 due to storms and public damage.

23           •     *Capacity:* This category includes capital investments associated with  
24                 upgrading or increasing distribution system capacity to handle load  
25                 growth on the system and to serve load when other elements of the  
26                 distribution system are out of service. This category also allows the  
27                 system to support the interconnection of additional DER, including  
28                 rooftop solar, and greater electric vehicle (“EV”) adoption, both of which  
29                 are key to achieving the Company’s and Colorado’s emission-reductions  
30                 goals. This additional capacity is provided by constructing new  
31                 substations and installing new or upgraded substation transformers and  
32                 distribution feeders. Capacity projects generally span multiple years

1 and are necessitated by increased load from either existing or new  
2 customers.

- 3 • *New Business:* This work includes new overhead and underground  
4 extensions and services associated with extending service to new  
5 customers. Capital projects required to provide service to new  
6 customers include the installation or expansion of feeders, primary and  
7 secondary extensions, service laterals that bring electrical service from  
8 an existing distribution line to a new home or business, installation of  
9 street lighting, and converting existing street lights to light-emitting diode  
10 (“LED”) lights.

- 11 • *Mandates:* This category includes projects to relocate utility  
12 infrastructure in public rights-of-way (“ROW”) when mandated to do so  
13 to accommodate public works projects such as a road widening or  
14 realignment project. These projects are normally identified during  
15 planning meetings with local communities. Examples of these projects  
16 include utility relocations for state and local governments such as the  
17 Central 70 project, which involves utility relocation in the I-70 corridor.

- 18 • *Tools and Equipment:* This category includes tools, ROW,  
19 communications equipment, and locate costs associated with  
20 modifications or additions to the distribution system or supporting  
21 assets.

22 **Q. ARE FLEET CAPITAL INVESTMENTS INCLUDED IN THESE GROUPINGS?**

23 A. No. Fleet capital, which is associated with the necessary replacement of vehicles  
24 and construction equipment that have reached their end of life, is addressed in the  
25 Direct Testimony of Company witness Mr. Adam R. Dietenberger for all of the  
26 Company’s business units.

27 **B. Distribution’s Budget Development and Management**

28 **Q. HOW DOES DISTRIBUTION ESTABLISH A REASONABLE CAPITAL BUDGET**  
29 **FOR A GIVEN YEAR?**

30 A. The Distribution business area budgets for work by identifying the necessary  
31 investments that are needed each year to maintain reliable service to existing

1 customers and to extend service to new customers. Distribution identifies specific  
2 projects that are needed and forecasts appropriate funding for our routine  
3 investments. Distribution utilizes a comprehensive capital forecasting system to  
4 budget for and track these costs.

5 Distribution's annual capital budget is also dependent on the Company's  
6 overall finances and other business area needs. Company witness Mr.  
7 Dietenberger explains how the Company establishes overall business area capital  
8 spending guidelines and budgets based on financing availability, specific needs of  
9 business areas, and overall needs of the Company.

10 **Q. CAN YOU PROVIDE A SUMMARY OF HOW THE DISTRIBUTION BUSINESS**  
11 **AREA DEVELOPS ITS CAPITAL BUDGET?**

12 A. Distribution prioritizes, funds, and undertakes those capital projects that are  
13 necessary to maintain Public Service's distribution system to enable Public Service  
14 to provide safe and reliable electric service to our existing customers. As noted  
15 above, Public Service's distribution system is extensive and it is necessary to make  
16 regular investments that support the continued health and reliability of the system.

17 Distribution begins its budgeting process in October by reviewing the recent  
18 summer peak loads to identify new or increased risks on the distribution system.  
19 In addition, Distribution's capital budget is dependent on the state of the economy,  
20 which has a significant impact on the development of new and expanded business,  
21 conditions that drive new housing, commercial load increases, and road work  
22 projects that affect distribution facilities. To obtain an accurate gauge of this work,



1 our budgeting process begins with economic forecasting and analysis of historical  
2 spending trends to assess likely new business needs and required replacement or  
3 upgrade of existing assets. In addition, to accommodate road construction projects  
4 planned by state and local governments in our service territory, we also budget for  
5 the necessary relocation of distribution facilities to accommodate these road  
6 construction projects. Distribution also assesses the impacts of system growth on  
7 our capacity needs, including the risk of overloads and the system's ability to  
8 handle single contingency events.

9 Although economic factors drive part of our budget, Distribution also must  
10 ensure that the existing system remains reliable. This includes proactively  
11 replacing assets near the end of their lives as well as budgeting for replacement  
12 of facilities due to unanticipated failure or damage such as those facilities damaged  
13 during storms. To budget for proactive replacements, Distribution evaluates the  
14 age and condition of facilities and determines the amount of replacement or  
15 refurbishments that are needed in a particular year. To budget for unanticipated  
16 failures, Distribution forecasts the likely costs of replacing assets that will fail or be  
17 damaged based on historical trends. This analysis results in identification of  
18 capital projects that are needed for routine work necessary to maintain our existing  
19 system and the work required to support new customers or new construction.

1 **Q. HOW DOES DISTRIBUTION BUDGET FOR ROUTINE WORK THAT MUST BE**  
2 **PERFORMED EACH YEAR?**

3 A. Routine work consists of common capital additions that occur year over year to  
4 replace aging assets, support new business growth, and includes system  
5 reinforcements, or rebuilds. This routine work can also include material upgrades  
6 to the distribution network, such as reconductoring a line, upgrading a transformer,  
7 or replacing a substation regulator. The two largest categories of routine capital  
8 additions are cable replacements and transformer purchases.

9 For routine work orders that address asset health issues or relocations,  
10 Distribution uses historical averages escalated by the inflation rate to determine  
11 expected levels of spend. This total expected routine work order budget is then  
12 allocated to each service area using the average historical ratio of the past five  
13 years. The allocation is adjusted to ensure unique, one-time projects in a service  
14 area do not impact the calculation of the average five-year historical expenditures.

15 The budget for routine work orders for new service extensions is developed  
16 using a cost-per-meter methodology. This process relies on the forecast for the  
17 number of new meter sets for each local operating area. Inputs and assumptions  
18 are also developed that reflect inflation factors used in determining the assumed  
19 increase or decrease in the components that comprise the new service costs.  
20 These factors include labor, non-labor, contractor, material, equipment, and  
21 bargaining labor increases.

1 **Q. HOW DOES THE DISTRIBUTION BUSINESS AREA ESTABLISH BUDGETS**  
2 **FOR NON-ROUTINE PROJECTS?**

3 A. In addition to routine work orders, the Distribution business area also budgets for  
4 and implements certain discrete projects that are identified to address a particular  
5 system need that does not reoccur each year. At a high level, the identification  
6 and assessment of problems or “risks” along with their related solutions or  
7 “mitigations” is integral to identifying larger projects Distribution must fund in  
8 addition to the routine work I described above.

9 Risks are issues that can result in negative consequences to the Company’s  
10 ability to provide safe and reliable service. Mitigations are solutions that address  
11 the risks. To help ensure that each risk is being addressed by the most efficient  
12 solution, Distribution assesses all mitigation alternatives and selects the one that  
13 provides the best value to our customers and our Company.

14 Funding for capital projects is not unlimited, and typically the cost for  
15 identified individual projects exceeds available funding. In addition, the volume  
16 and diverse types of risks require utilization of a systematic process to perform  
17 specific risk assessment of the asset’s overall future performance expectations.  
18 Therefore, it is important to rank or prioritize proposed individual projects before  
19 authorizing a project to move forward. This is accomplished by ranking the  
20 assessment of each project against each other. Highest priority is given to projects  
21 that Distribution must complete within a given budget year to ensure that we meet

1 regulatory and environmental compliance obligations and to connect new  
2 customers.

3 **Q. HOW DOES THE DISTRIBUTION BUSINESS AREA MANAGE AND CONTAIN**  
4 **ITS CAPITAL COSTS?**

5 A. The engineering department within the Distribution Business Area monitors all  
6 Distribution capital dollars to ensure that authorized projects align with the  
7 established budget. Distribution performs a monthly project forecasting exercise  
8 to ensure we have a steady and dependable flow of financial information regarding  
9 capital expenditures. Distribution then compares our monthly expenditures to our  
10 budgets, and any variances are addressed. Any project that may be outside of  
11 allowed variances is reevaluated, and may be escalated to management or the  
12 corporate level for review as appropriate. Reviews are also performed to compare  
13 year-to-date actual performance with year-to-date and year-end forecasts.  
14 Deviations are identified and recommendations to meet financial targets are  
15 reviewed and approved.

16 There is often emergent work in the distribution area due to storm damage  
17 or other unforeseeable circumstances such as new customer loads connecting to  
18 the Distribution system. Given that, it is important that we have the flexibility to  
19 shift funding to meet changing circumstances that arise each year. When  
20 Distribution has unexpected projects that require completion in a certain year, we  
21 fund these projects by deferring less urgent projects. This allows us to stay within

our annual capital budget, while ensuring the safety and reliability of the distribution system – which is a top priority.

**C. Overview of 2019-2022 Capital Additions**

**Q. CAN YOU SUMMARIZE DISTRIBUTION’S CAPITAL ADDITIONS AFFECTING PUBLIC SERVICE’S RATE BASE FROM 2019-2022?**

A. Yes. Table BLM-D-1 summarizes Distribution’s capital additions (i.e., plant in service) from 2019 to 2022 (excluding AGIS and WMP). Throughout my Direct Testimony, capital additions data from 2019 and 2020 represent actual costs, while 2021 capital additions include actual plant in service for January 2021 and budgeted data for the remainder of 2021 and all of 2022.

**TABLE BLM-D-1:  
 Distribution’s 2019-2022 Capital Additions  
 Public Service (Total Company) (Dollars in Millions)**

<b>Budget Category</b>	<b>9/1/2019 through 12/31/2019 Actual</b>	<b>2020 Actual</b>	<b>2021 Forecast</b>	<b>2022 Forecast</b>	<b>Total</b>
<b>Asset Health and Reliability</b>	\$45.2	\$125.2	\$175.3	\$149.4	\$495.1
<b>Capacity</b>	\$23.9	\$50.2	\$39.1	\$103.1	\$216.3
<b>New Business</b>	\$45.3	\$106.2	\$101.0	\$103.4	\$355.9
<b>Mandates</b>	\$8.1	\$35.1	\$30.8	\$33.9	\$107.9
<b>Tools and Equipment</b>	\$4.3	\$8.6	\$13.1	\$10.0	\$36.1
<b>Total**</b>	\$126.8	\$325.3	\$359.4	\$399.9	\$1,211.3

\* This table does not include Distribution's AGIS or WMP capital additions which are discussed separately by Company witnesses Mr. Nickell and Ms. Johnson, respectively.

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

1 These figures are stated on a Total Company (Public Service) basis, meaning that  
2 they include both electric utility-specific projects and common electric/gas projects  
3 stated at the total Public Service level.

4 **Q. PLEASE PROVIDE AN OVERVIEW OF DISTRIBUTION'S CAPITAL**  
5 **INVESTMENTS SINCE THE 2019 ELECTRIC PHASE I.**

6 A. Since the 2019 Electric Phase I, Distribution has been making increasing  
7 investments in its Asset Health and Reliability category, which is Distribution's  
8 largest capital budget category. Public Service's distribution system is aging as  
9 many components were constructed in the 1950s and 1960s and have a typical  
10 life expectancy of 50 years or longer (dependent upon equipment type). Further,  
11 unlike practically all of the transmission system, the distribution system is not fully  
12 redundant – so individual system component failures can directly impact a  
13 customer's reliability. As a result, Distribution needs to make continuous  
14 investments to replace its aging and worn infrastructure to ensure continued  
15 reliable service for Public Service's customers. In particular, Distribution has been  
16 making large investments in its cable replacement programs which identify and  
17 replace underground cable that is aging and in poor condition. It is important to  
18 replace cables that are aging and in poor condition to help avoid outages for  
19 customers served by our underground cable system.

20 In addition to the age and condition of our Distribution assets, Distribution's  
21 investments in Asset Health and Reliability are also being triggered by changes in  
22 the way that Public Service's customers use the distribution system. The

1 distribution system is moving from exclusively one-way power flows to two-way  
2 power flows as customers are installing DER (e.g., rooftop solar) on their homes  
3 and businesses and the number of community solar gardens that are  
4 interconnected continues to grow. Accommodating these distributed resources  
5 requires that Public Service's distribution equipment be robust enough to maintain  
6 proper voltage levels when these new resources come online. In addition, these  
7 distributed resources will accelerate the wear on our already aging facilities and  
8 can also prompt the need for changes to protection schemes and equipment. A  
9 distribution system that is able to accommodate increasing amounts of DER will  
10 contribute to Public Service meeting its emission-reductions-goals.

11 Another key driver of Distribution's capital additions in recent years has  
12 been load growth on certain portions of the distribution system. Over the past 10  
13 years, Colorado has experienced tremendous population growth that has resulted  
14 in load on certain portions of Public Service's distribution's system, outpacing the  
15 system's current capabilities. In addition, the anticipated increase in adoption of  
16 EVs is expected to further stretch, and in some cases, exceed the capacity of the  
17 existing system. As a result, Distribution has completed several Capacity projects  
18 in recent years to build new substations, install larger transformers, and to  
19 construct new feeders to serve this load growth. For instance, in 2019 Distribution  
20 completed the Rosedale Project that involved replacing an existing transformer at  
21 the Rosedale Substation in Greeley, Colorado with a larger, 50 MVA capacity,

1 transformer to provide additional capacity to serve future load growth in this rapidly  
2 developing area and to support the decommissioning of another substation.

3 Since the 2019 Electric Phase I, Distribution has also been making steady  
4 investments in New Business projects to accommodate new residential and  
5 commercial developments, new data centers, and oil and gas development in  
6 Colorado. These investments include new service extensions and new transformer  
7 purchases.

8 To accommodate road construction and expansion projects by federal,  
9 state, and local government entities, Distribution has also been making  
10 investments in Mandate projects. For example, Public Service has been working  
11 on relocated its distribution facilities to facilitate the new alignment of I-70 as part  
12 of Central 70 project.

13 Distribution's construction of new substations to serve load growth on the  
14 system has also resulted in increases in Tools and Equipment investments as new  
15 substation construction requires new communication equipment to be installed to  
16 enable the Company to obtain load and other system data from these new  
17 substation assets.

18 **Q. HAS THE COMPANY CONSIDERED NON-WIRES ALTERNATIVES TO ANY OF**  
19 **THESE CATEGORIES OF CAPITAL INVESTMENTS?**

20 A. Yes, as part of our budget development process and pursuant to requirements of  
21 House Bill No. 18-1270, the Company considers a variety of non-wires alternatives  
22 (NWAs) to meet the system needs identified by Distribution planning. The budget



1 category where an NWA is typically feasible is for our Capacity or New Business  
2 Projects. This is because these projects typically have enough lead time in the  
3 planning process (i.e., 3+ years) for the Company to evaluate (and if proven cost  
4 effective - procure and implement) an NWA in relationship to a traditional utility  
5 infrastructure. Conversely, Asset Health and Reliability investments are frequently  
6 immediate (e.g., emergency replacements of assets) or near-term needs which  
7 must be met expediently to minimize customer impacts. This category of  
8 investments generally does not provide sufficient lead time to consider NWAs.  
9 That said, many of the Capacity and New Business projects that have been  
10 considered for NWAs have not been suitable for technical and economic feasibility  
11 reasons. For example, in the 2020 distribution planning cycle, a battery-based  
12 NWA was considered as an alternative to the construction of a new substation  
13 (Dove Valley) to serve approximately 80 MVA of new load. However, the battery  
14 was not pursued given that it was expected to cost six times as much as  
15 constructing the new substation to serve the equivalent load.

16 **Q. HAS THE COMPANY BEEN ABLE TO SUCCESSFULLY IMPLEMENT ANY**  
17 **NON-WIRES ALTERNATIVES?**

18 A. Yes. For example, at the Kendrick Substation the Company is deferring a  
19 substation transformer and feeder upgrades through geo-targeted energy-  
20 efficiency and demand response measures.

21

1                   **IV.    DISTRIBUTION 2019-2022 CAPITAL ADDITIONS**

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 describe Distribution's  
4        capital additions since the Company's 2019 Electric Phase I through the 2022 FTY.  
5        I discuss Distribution's September 1, 2019 to December 31, 2020 capital additions,  
6        totaling \$452.1 million as shown in Attachment BLM-1.  I also address  
7        Distribution's capital additions planned to be placed into service in 2021-2022,  
8        totaling \$759.2 million as shown in Attachment BLM-2.  Distribution's AGIS and  
9        WMP capital additions are discussed by Company witnesses Mr. Nickell and Ms.  
10       Johnson, respectively.  In this section of my Direct Testimony, I discuss these  
11       capital additions by Distribution's five budget categories: (1) Asset Health and  
12       Reliability; (2) Capacity; (3) New Business; (4) Mandates; and (5) Tools and  
13       Equipment.

14       **A.    Asset Health and Reliability**

15   **Q.    WHAT TYPES OF ASSET HEALTH AND RELIABILITY PROJECTS HAS THE**  
16       **COMPANY PLACED IN SERVICE SINCE ITS 2019 ELECTRIC PHASE I AND**  
17       **WILL PLACE IN SERVICE THROUGH THE 2022 FTY?**

18   A.    The Company's capital additions in the Asset Health and Reliability budget  
19        category are projects that address the age and condition of our distribution  
20        facilities.  To determine which facilities need replacement or repair each year we  
21        track the age of our major distribution assets and use age as a proxy for asset

1 health. We also analyze reliability data and work to address those components  
2 that have poor reliability performance.

3 Distribution's investments in Asset Health and Reliability fall into two  
4 categories – routine projects and larger discrete projects. Routine projects are  
5 those that are performed each year to replace various aging and worn distribution  
6 facilities based on the age profile and overall reliability performance of these  
7 facilities. This includes replacement of underground cable, poles, and substation  
8 equipment which have reached the end of their life. This category also captures  
9 replacements due to storms and public damage.

10 In addition to these routine projects that we perform each year, Distribution  
11 also undertakes non-routine discrete Asset Health and Reliability projects that  
12 relate to asset renewal (addressing aging infrastructure with specific conversion or  
13 upgrade projects) or reliability (where the age of facilities impacts failures,  
14 reliability, and customer outages). Projects are identified based on system needs  
15 and are scored based on our standard budgeting processes and evaluated for  
16 funding based on risk score, need, and available funding.

17 Within the Asset Health and Reliability budget category, capital additions  
18 can be further classified into the following categories: Cable Replacement,  
19 Overhead Rebuilds and Underground Conversions, Pole Replacements,  
20 Substation Renewals, and Restoration/Failure Reserves. Table BLM-D-2 provides  
21 a breakdown of our Asset Health and Reliability capital additions from September  
22 1, 2019 to December 31, 2022 by these subcategories.

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**TABLE BLM-D-2**  
**Asset Health and Reliability Capital Additions from**  
**September 1, 2019 through December 31, 2022**  
**(Total Company)**  
**(Dollars in Millions)**

<b>Asset Health and Reliability</b>	<b>9/1/2019 through 12/31/2019 Actual</b>	<b>2020 Actual</b>	<b>2021 Forecast</b>	<b>2022 Forecast</b>	<b>Total</b>
Cable Replacement Programs	\$11.4	\$28.1	\$59.0	\$56.2	\$154.7
Rebuilds and Conversions Programs	\$15.2	\$52.2	\$64.8	\$58.1	\$190.2
Pole Replacement Program	\$2.1	\$22.6	\$24.2	\$18.5	\$67.4
Substation Renewal Program	\$4.2	\$13.6	\$25.4	\$16.6	\$59.8
Restoration/Failure Reserves	\$12.4	\$8.8	\$1.9	\$(0.01)	\$23.0
<b>Total</b>	<b>\$45.2</b>	<b>\$125.2</b>	<b>\$175.3</b>	<b>\$149.4</b>	<b>\$495.1</b>

6 **Q. WHAT IS DRIVING THE INCREASE IN ASSET HEALTH AND RELIABILITY**  
 7 **CAPITAL ADDITIONS BETWEEN 2020 AND 2021?**

8 A. As shown in the table above, this trend is driven by greater investments in several  
 9 of Distribution’s key Asset Health and Reliability programs. In particular, starting  
 10 in 2021, Distribution is investing more in Public Service’s cable replacement  
 11 program and substation renewal program as compared to 2020. These  
 12 investments are needed to address the condition of aging infrastructure that is key  
 13 to maintaining the reliability and resiliency of the distribution system.

14 As discussed in greater detail below, Distribution’s investments in its cable  
 15 replacement program in 2021 and 2022 are needed to bring these investments in  
 16 line with the level of historical spending that Public Service has determined is

1 needed to maintain or lower the current number of annual cable failures. As I noted  
2 earlier, cable failures in older parts of the system are a primary cause of outages  
3 for customers served by these underground facilities so it is important to address  
4 the aging and worn cables to maintain the reliability of the system.

5 The increase in substation renewal investments in 2021 is primarily related  
6 to the replacement of key facilities at the California Substation located in downtown  
7 Denver including the replacement of three metal-clad switchgear that have  
8 reached the end of their useful life. The California Substation serves the downtown  
9 Denver network, as well as customers outside of the Denver network, and is a  
10 critical facility for maintaining power quality and reliability for the more than 8,300  
11 customers served by this substation. Forecasted peak load for California  
12 Substation in 2021 is estimated to be 76.2 MVA.

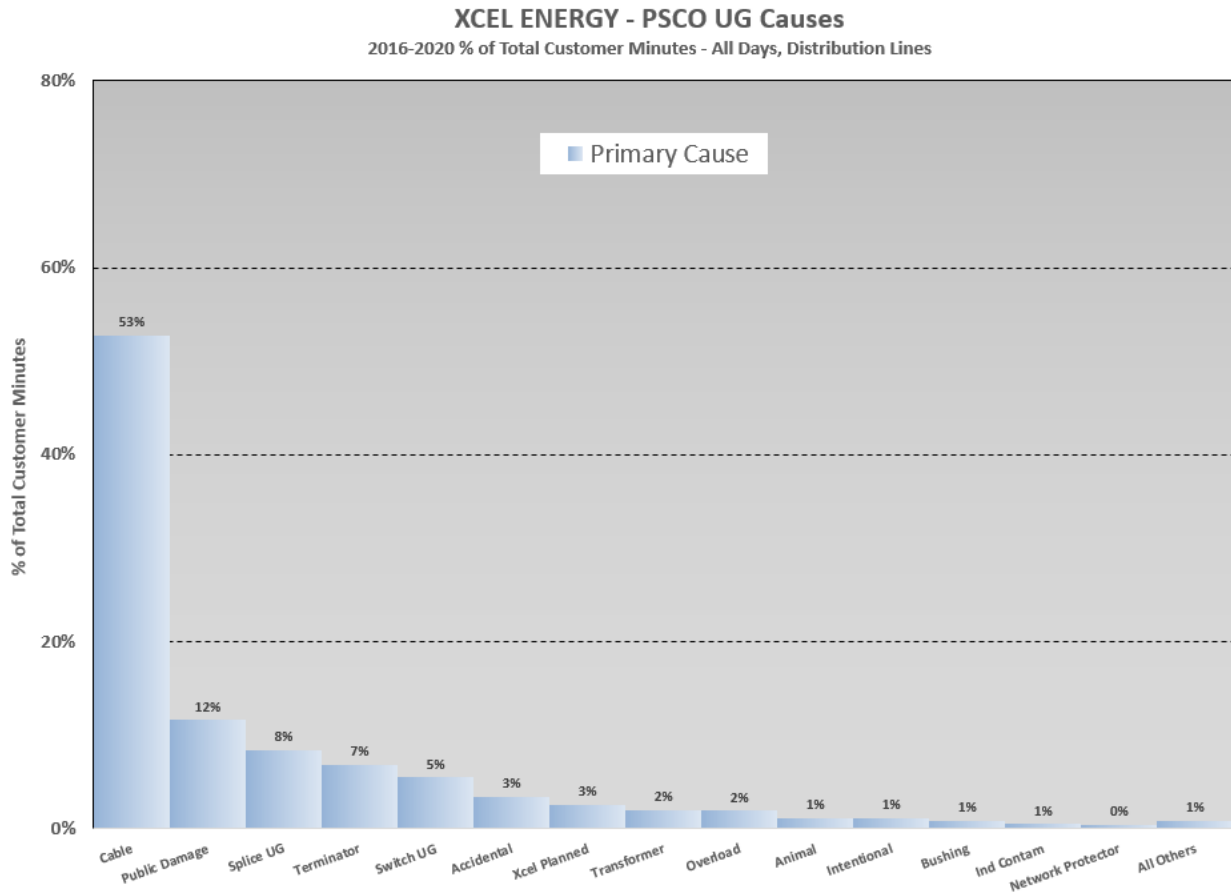
13 **1. Cable Replacement Programs**

14 **Q. PLEASE FURTHER DESCRIBE PUBLIC SERVICE'S CABLE REPLACEMENT**  
15 **PROGRAM.**

16 **A.** Public Service's distribution system has over 13,000 miles of total tap and mainline  
17 underground cable. As shown in the figure below, cable failures are a main cause  
18 of outages for customers who are served by underground distribution facilities.

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**FIGURE BLM-D-1: Underground Outage Causes**



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In order to minimize these types of outages, the Company has two cable replacement programs: (1) underground residential distribution (“URD”) cable or tap level cable replacement; and (2) mainline cable replacements. Within these two programs, Public Service performs both the proactive replacement of the tap level or mainline cable and the emergency replacement of tap level or mainline cable. Proactively replacing means that a cable is replaced prior to failure. The specific sections of cable selected for replacement is based on reliability date, failure history, and in some cases, by historical performance of similar types and vintages of cable. Proactively replacing cable allows Public Service to avoid a

1 potential outage caused by a cable failure and utilize a systematic approach in the  
2 replacement of this asset.

3 Table BLM-D-3 provides a summary of the capital additions for cable  
4 replacements from September 1, 2019 to December 31, 2022.

5 **TABLE BLM-D-3:**  
6 **Cable Replacement Programs Capital Additions**  
7 **Public Service (Total Company)**  
8 **(Dollars in Millions)**

<b>Asset Health and Reliability</b>	<b>9/1/2019 through 12/31/2019 Actual</b>	<b>2020 Actual</b>	<b>2021 Forecast</b>	<b>2022 Forecast</b>	<b>Total</b>
Cable Replacement Programs	\$11.4	\$28.1	\$59.0	\$56.2	\$154.7

9 **Q. WHAT HAS BEEN THE FOCUS OF PUBLIC SERVICE'S CABLE**  
10 **REPLACEMENT PROGRAMS?**

11 A. Public Service has been working on replacing all non-jacketed cross-linked  
12 polyethylene ("XLPE") cable on its system. This non-jacketed XLPE cable was  
13 installed prior to 1990 beginning in the early 1970s, and is more prone to failures  
14 and has a shorter useful life (approximately 45 years) than newer jacketed cable  
15 types that Public Service currently installs. To address this issue, since 2000  
16 Public Service has been replacing both URD and mainline non-jacketed XLPE  
17 cable that has failed or reached the end of its life with newer jacketed cable. Even  
18 with these investments, there is still approximately 250 miles of non-jacketed XLPE  
19 mainline cable in Colorado that needs to be replaced. Based on current

1 replacement rates, it is anticipated that this non-jacketed XLPE cable replacement  
2 program will be in effect for approximately another 20 years.

3 Public Service has also been focusing on replacing non-jacketed XLPE  
4 cable in entire half loops as opposed to single cable segments. By way of  
5 background, an underground residential distribution system is comprised of an  
6 underground circuit, in a loop arrangement, segmented by distribution  
7 transformers. Once a failure occurs on a segment, replacing the entire half loop  
8 benefits customers on that entire half loop by avoiding future failures of other  
9 segments of that half loop. This is because the cables in these half loops are of  
10 similar vintage and type of cable (they were installed at the same time originally)  
11 and once repeated failures have occurred within that loop, it is only a matter of  
12 time before additional failures occur, affecting customer reliability, repair costs, and  
13 customer experience. Once a half loop has experienced a fault for a second time  
14 and that half loop is not replaced, the average number of days between failures  
15 decreases substantially with each subsequent fault resulting in more customer  
16 outages and more repairs.

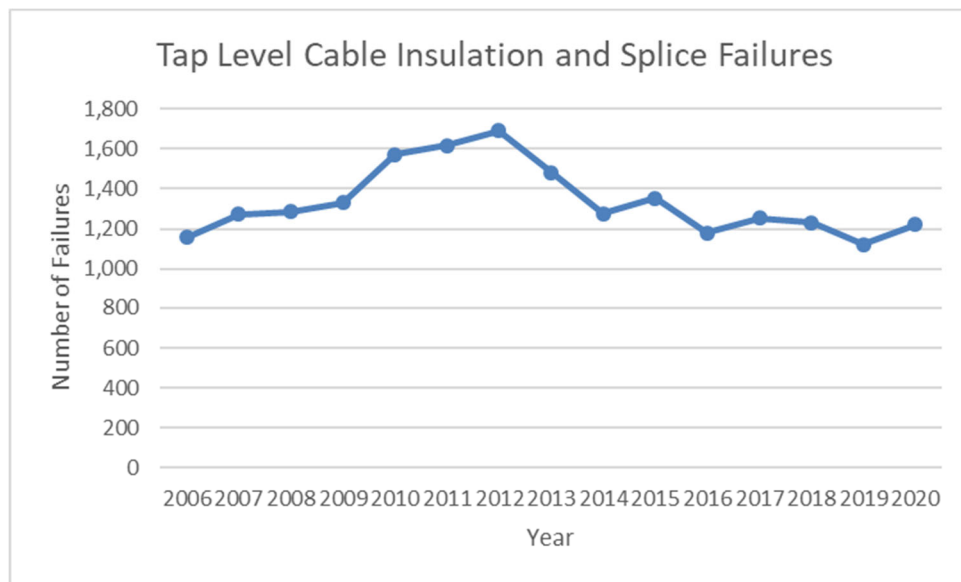
17 **Q. HOW WAS THE BUDGET FOR THE ROUTINE CABLE REPLACEMENT**  
18 **PROGRAM DEVELOPED?**

19 A. The budget for routine cable replacements is developed based upon historical  
20 trends of failure/fault rates and reliability needs. The specific sections of cable  
21 selected for replacement based on reliability data, and in some cases, selections  
22 are influenced by historical performance of the types and vintages of cable. Given



1 the disruptive impact that an underground cable failure can have, Public Service  
2 invests in our cable replacement programs with the aim of maintaining or lowering  
3 the number of cable failures from year to year. As shown in the figure below, Public  
4 Service's investment strategy has resulted in relatively steady reductions in tap  
5 level cable failures from 2012 forward.

6 **FIGURE BLM-D-2: Tap Level Cable and Splice Failures**



7 **Q. WHAT IS DRIVING THE INCREASE IN CABLE REPLACEMENT**  
8 **INVESTMENTS FROM 2020 TO 2021 AND 2022?**

9 A. In 2019 and 2020, Public Service had lower amounts of investment in cable  
10 replacements due to more pressing investment needs in other areas. For  
11 example, capital expenditures for cable replacements from 2015 to 2018 averaged  
12 \$48.4 million per year whereas the capital expenditures for 2019 and 2020 were  
13 \$33.5 million and \$32.9 million, respectively. This lower level of investment in 2019  
14 and 2020 is not sustainable given reliability impacts and the large amount of aging

1 cable on the system that needs to be replaced in the coming years. In 2021 and  
2 2022, Public Service will refocus investments in cable replacements given the  
3 critical nature of this infrastructure and its direct impact on customer reliability. A  
4 small portion of the increased investment in cable replacements in 2021 and 2022  
5 is also due to increased costs for cable materials.

6 **Q. CAN YOU PROVIDE AN EXAMPLE OF A CABLE REPLACEMENT PROJECT**  
7 **THAT PUBLIC SERVICE HAS COMPLETED SINCE THE 2019 ELECTRIC**  
8 **PHASE I?**

9 A. Yes. An example of one of these cable replacement projects is the Greeley Zone  
10 “C” South URD Modification project that was completed in 2020 with \$2.5 million  
11 in capital additions. This project involved the installation of new URD cable to allow  
12 Public Service to break up the existing, radially fed customer taps into four  
13 separate looped customer taps in the City of Greeley. This project was needed to  
14 address reliability issues with the existing URD cable that had been in place since  
15 the 1970s as well as the design of the system that resulted in a high number of  
16 customers being impacted by a single cause outage event.

17 **2. Overhead Rebuilds and Underground Conversions**

18 **Q. WHAT TYPES OF PROJECTS ARE INCLUDED IN THE REBUILD AND**  
19 **UNDERGROUND CONVERSION CATEGORY?**

20 A. The rebuild category refers to the replacement, rebuild, and refurbishment of  
21 feeder, tap and secondary lines that have or are reaching their end of life to  
22 improve service and reliability to our customers. This may include replacing a

1 single pole or cross-arm, or completely rebuilding a section of line. The specific  
 2 rebuild projects are determined by an engineering review of previous line  
 3 performance and reliability measures, as well as visual inspection by qualified line  
 4 personnel to evaluate the condition of the equipment. This category also includes  
 5 rebuilds necessitated by severe weather events.

6 Underground conversion projects relate to undergrounding overhead lines.  
 7 The need for underground conversions may be driven by customer request,  
 8 redevelopment requirements, franchise requirements, or the condition of the  
 9 equipment. This category also includes work to upgrade and replace underground  
 10 equipment based on the age, performance, and condition. Table BLM-D-4  
 11 provides a summary of the capital additions for Rebuilds and Conversions from  
 12 September 1, 2019 to December 31, 2022.

13 **TABLE BLM-D-4:**  
 14 **Rebuilds and Conversions Capital Additions**  
 15 **Public Service (Total Company)**  
 16 **(Dollars in Millions)**

<b>Asset Health and Reliability</b>	<b>9/1/2019 through 12/31/2019 Actual</b>	<b>2020 Actual</b>	<b>2021 Forecast</b>	<b>2022 Forecast</b>	<b>Total</b>
Rebuilds and Conversions Programs	\$15.2	\$52.2	\$64.8	\$58.1	\$190.2

1 **Q. CAN YOU PROVIDE AN EXAMPLE OF AN OVERHEAD REBUILD PROJECT**  
2 **THAT PUBLIC SERVICE HAS COMPLETED SINCE THE 2019 ELECTRIC**  
3 **PHASE I?**

4 A. An example of one of these rebuild projects is the Copper Mountain Rebuild project  
5 that was completed in 2020 with \$4.3 million in capital additions. In March 2019,  
6 an avalanche occurred along Highway 91 near Copper Mountain that damaged or  
7 destroyed portions of the 25 kV distribution feeder that serves the town of Copper  
8 Mountain. This project involved replacing these damaged sections of feeders  
9 (both overhead and underground) to ensure reliable service to Copper Mountain.

10 Another example of a rebuild project is the HLP/Greeley/CR 74&47 Rebuild  
11 project. This project involved upgrading the conductor size on the existing  
12 distribution feeder and rebuilding a portion of the distribution feeder in Greeley,  
13 Colorado near County Road 47.

14 **Q. CAN YOU PROVIDE AN EXAMPLE OF OTHER TYPES OF PROJECTS THAT**  
15 **ARE INCLUDED IN THE REBUILD AND CONVERSION CATEGORY THAT**  
16 **PUBLIC SERVICE HAS COMPLETED SINCE THE 2019 ELECTRIC PHASE I?**

17 A. Yes. One example is Public Service's replacement of aged network protectors and  
18 isolation boxes that have reached the end their useful life in our downtown Denver  
19 underground network system. Proactively replacing these pieces of equipment  
20 helps maintain safe working conditions for our employees, and also avoids  
21 reliability risk to network customers. Another program within this category is the

1 replacement of switch cabinets. These cabinets typically serve customer load in  
 2 residential areas, and failure may result in extended outages to many customers.

3 **3. Pole Replacement Program**

4 **Q. CAN YOU DESCRIBE THE COMPANY’S POLE REPLACEMENT PROGRAM IN**  
 5 **MORE DETAIL?**

6 **A.** Yes. Public Service owns over 450,000 distribution poles in the State of Colorado.  
 7 Pole longevity can vary widely based on the wood species, treatment and the  
 8 environment where it is placed but poles have a useful life, on average, of  
 9 approximately 60-70 years. As part of the pole replacement program, Distribution  
 10 inspects poles, treats deteriorating poles, and replaces poles that have reached  
 11 the end of their life. The goal is to replace poles prior to failure at or near the end  
 12 of their useful life. Table BLM-D-5 provides a summary of the capital additions for  
 13 pole replacements from September 1, 2019 to December 31, 2022.

14 **TABLE BLM-D-5:**  
 15 **Pole Replacement Capital Additions**  
 16 **Public Service (Total Company)**  
 17 **(Dollars in Millions)**

<b>Asset Health and Reliability</b>	<b>9/1/2019 through 12/31/2019 Actual</b>	<b>2020 Actual</b>	<b>2021 Forecast</b>	<b>2022 Forecast</b>	<b>Total</b>
Pole Replacement Program	\$2.1	\$22.6	\$24.2	\$18.5	\$67.4

1 **Q. HOW DOES PUBLIC SERVICE DETERMINE WHAT POLES TO REPLACE**  
2 **EACH YEAR?**

3 A. Distribution inspects its poles in order to determine which ones need to be replaced  
4 or repaired in compliance with the National Electrical Safety Code. The inspection  
5 process includes a visual, sound and bore, and/or excavation inspection (i.e., hand  
6 digging around the base of pole). Depending on the results of this inspection,  
7 poles will either be treated or replaced as appropriate. The determination of  
8 whether or not a pole needs to be treated or replaced depends on the remaining  
9 strength of the pole and existence of any above ground deterioration (i.e., insulator  
10 decay).

11 If a pole has less than 70 percent of its initial strength left or exhibits above  
12 ground deterioration, the pole is replaced. If a pole needs to be replaced, we  
13 typically plan to replace the pole the following year unless the pole is in such poor  
14 condition that it requires immediate replacement. While we plan to replace poles  
15 within one year of a failed inspection, in certain years, other budgetary pressures  
16 may mean that certain poles are not replaced in the following year. Distribution  
17 prioritizes pole replacement based on a pole's likelihood of failure using the  
18 percentage of original strength left in the pole as the guide. Based on this  
19 prioritization, Distribution replaces those poles with the lowest percentage of  
20 remaining strength before those poles with a higher percentage of remaining  
21 strength.

1 **Q. HOW OFTEN DOES DISTRIBUTION INSPECT ITS POLES?**

2 A. Public Service aims to tests its poles on a 12-year inspection cycle and inspects  
3 approximately 42,000 distribution poles each year. However, the actual number  
4 of poles inspected each year varies as budget pressures may result in the need to  
5 reduce funds allocated to pole inspections to fund higher priority needs within  
6 Distribution or other business areas.

7 **Q. HOW DOES PUBLIC SERVICE DETERMINE THE BUDGET FOR POLE**  
8 **REPLACEMENTS?**

9 A. Public Service budgets for pole replacements based on the number of poles that  
10 will be inspected each year and the rolling 3-year average of the pole rejection rate  
11 (i.e., the number of poles that will fail inspect and need to be replaced). The current  
12 rolling 3-year average of the pole rejection rate is 8.3 percent. Pole replacement  
13 costs are estimated on a per-pole basis, using historical data and any known  
14 changes in labor and material costs.

15 **4. Substation Renewal Program**

16 **Q. PLEASE DESCRIBE THE COMPANY'S SUBSTATION RENEWAL**  
17 **INVESTMENTS.**

18 A. The substation renewal category refers to the replacement of transformers,  
19 breakers, switchgear, and other substation equipment that has either failed or has  
20 reached the end of its useful life. The specific equipment that is selected to be  
21 proactively replaced is managed by our Substation System Performance group  
22 based on the age, condition, and by historical performance of similar types of

1 equipment. Replacing substation equipment that has reached the end of its useful  
2 life can mitigate some of the greatest reliability risks to our customers. For  
3 instance, while the failure of a substation transformer is not a common occurrence,  
4 when it does fail, it can result in between 5,000 to 15,000 customers losing service.  
5 Table BLM-D-6 provides a summary of the capital additions for substation  
6 renewals from September 1, 2019 to December 31, 2022.

7 **TABLE BLM-D-6:**  
8 **Substation Renewal Capital Additions**  
9 **Public Service (Total Company)**  
10 **(Dollars in Millions)**

<b>Asset Health and Reliability</b>	<b>9/1/2019 through 12/31/2019 Actual</b>	<b>2020 Actual</b>	<b>2021 Forecast</b>	<b>2022 Forecast</b>	<b>Total</b>
Substation Renewal Program	\$4.2	\$13.6	\$25.4	\$16.6	\$59.8

11 **Q. HOW DOES PUBLIC SERVICE DETERMINE WHICH SUBSTATION ASSETS**  
12 **REQUIRE REPLACEMENT?**

13 A. To identify those substation assets in need of replacement, Public Service  
14 evaluates the age and condition of these assets. For instance, Public Service  
15 monitors the condition of its substation transformers by performing a dissolved gas  
16 analysis (“DGA”) of the transformer fleet on a regular basis. All substation  
17 transformers are tested annually. Transformer readings that indicate the unit is at  
18 risk of imminent failure may cause the transformer to be proactively taken out of  
19 service and replaced.



1           Public Service also considers the average useful life and age of individual  
2 assets. The average useful life of a distribution substation transformer is  
3 approximately 40 years; beyond 40 years, the probability of failure begins to  
4 increase. Distribution has approximately 380 substation transformers and  
5 approximately 90 of these transformers are over 50 years old and approximately  
6 50 transformers are over 40 years old.

7 **Q. PLEASE EXPLAIN THE INCREASE IN CAPITAL ADDITIONS IN THE**  
8 **SUBSTATION RENEWAL CATEGORY FROM 2020 TO 2021?**

9 A. The increase in capital additions in 2021 for the substation renewal category is  
10 primarily related to the California Substation renewal project that will begin in 2021.  
11 This project is a multi-year project to replace key facilities within the California  
12 Substation that are reaching the end of their useful life. The first phase of this  
13 project that will be completed in 2021 involves the installation of three new metal  
14 clad switchgear units to replace the existing units (one for each transformer) and  
15 the replacement of one transformer. The metal clad switchgear at the California  
16 Substation is amongst some of the oldest on Public Service's system and was  
17 constructed in such a way that there is a risk of cascading failure if one of the units  
18 were to experience a fault. The new switchgear equipment will be installed to  
19 mitigate the cascading failure risk. The existing transformer at the California  
20 Substation also required replacement as routine transformer testing revealed that  
21 the unit was "gassing" – this is an indicator that the transformer had experienced  
22 an internal fault and increases the likelihood of unit failure. The California

1 Substation renewal project will result in approximately \$16.4 million in capital  
2 additions in 2021 with an additional \$4.2 million in 2022.

3 **Q. CAN YOU PROVIDE OTHER EXAMPLES OF SUBSTATION RENEWAL**  
4 **PROJECTS SINCE THE COMPANY'S 2019 ELECTRIC PHASE I?**

5 A. Yes. In 2020, Public Service replaced a transformer at the Oil Shale Substation  
6 that was showing signs of failing that resulted in \$2.0 million in capital additions.  
7 Also in 2020, Public Service replaced a transformer that failed at the Gilcrest  
8 Substation that resulted in \$2.0 million in capital additions in 2020.

9 **5. Restoration/Failure Reserves**

10 **Q. DESCRIBE THE RESTORATION/FAILURE RESERVE BUDGET CATEGORY.**

11 A. This category includes investments required to repair facilities that are damaged  
12 during storm events. Public Service has a strong track record related to storm  
13 restoration and these investments are key to our ability to restore power quickly  
14 and safely after a severe weather event.

15 In terms of budgeting for storm restoration, due to its significant variability  
16 from year-to-year, we budget dollars in a working capital fund. This storm  
17 restoration budget is not assigned to a specific project or program. When  
18 emergent circumstances, such as storm restoration arise, we reallocate budgeted  
19 dollars to address the circumstance while remaining in balance with our overall  
20 annual budget. Table BLM-D-7 provides a summary of the capital additions for  
21 restoration/failure reserves from September 1, 2019 to December 31, 2022.

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**TABLE BLM-D-7:  
Restoration/Failure Reserves Capital Additions  
Public Service (Total Company)  
(Dollars in Millions)**

<b>Asset Health and Reliability</b>	<b>9/1/2019 through 12/31/2019 Actual</b>	<b>2020 Actual</b>	<b>2021 Forecast</b>	<b>2022 Forecast</b>	<b>Total</b>
Restoration/Failure Reserves	\$12.4	\$8.8	\$1.9	\$(0.01)	\$23.0

5 **B. Capacity**

6 **Q. PLEASE DISCUSS THE PRIMARY DRIVERS OF DISTRIBUTION CAPITAL**  
7 **ADDITIONS RELATED TO CAPACITY SINCE THE COMPANY'S 2019**  
8 **ELECTRIC PHASE I THROUGH THE 2022 FTY.**

9 A. Over the past decade, Colorado has experienced tremendous growth in population  
10 that has spurred new residential and commercial development in Public Service's  
11 service territory. In certain areas, these new developments have led load growth  
12 that exceeds the current capacity and capabilities of the existing distribution  
13 system. To provide additional capacity on the distribution system to support these  
14 growing customer demands, Public Service has invested in new Capacity projects  
15 which include construction of new substations, expanding existing substations,  
16 adding new feeders, and upgrading existing distribution equipment.

17 Capacity projects tend to be fewer in number each year, as compared to  
18 other budget categories, but each of these projects is typically more costly. As a  
19 result, there is variation year over year in the capital additions amount for Capacity

1 projects based on the cost and magnitude of projects that go in-service. For  
 2 instance, in 2022, there is a significant increase in the forecasted capital additions  
 3 for Capacity projects due to the fact that three large projects, Community  
 4 Resiliency Initiative projects, High Point Substation Project, and the Timnath  
 5 (Avery) Substation Project, will be placed in service that year. Table BLM-D-8  
 6 summarizes Public Service’s investments in Capacity projects for September 1,  
 7 2019 to December 31, 2022.

**TABLE BLM-D-8**  
**Capacity Capital Additions from September 1, 2019**  
**through December 31, 2022**  
**(Total Company)**  
**(Dollars in Millions)**

<b>Budget Category</b>	<b>9/1/2019 through 12/31/2019 Actual</b>	<b>2020 Actual</b>	<b>2021 (January Actual + Forecast)</b>	<b>2022 Forecast</b>	<b>Total</b>
Capacity	\$23.9	\$50.2	\$39.1	\$103.1	\$216.3

13 **Q. PLEASE DESCRIBE KEY CAPACITY PROJECTS DISTRIBUTION PLACED IN**  
 14 **SERVICE FROM SEPTEMBER 1, 2019 THROUGH DECEMBER 31, 2019.**

15 A. From September 1, 2019 through December 31, 2019, Distribution placed in  
 16 service Capacity projects totaling \$23.9 million in capital additions. Below are  
 17 descriptions of Capacity projects with capital additions over \$3 million that were  
 18 placed in-service during this time period:

- *Rosedale Project:* This project involved replacing an existing transformer at the Rosedale Substation in Greely, Colorado with a larger, 50 MVA capacity, transformer to provide additional capacity to serve future load growth and to support the removal and decommissioning of a 44 kV substation in the City of Evans. After the new transformer and associated substation equipment was installed, the

1 existing transformer unit was placed on ready standby to provide  
2 additional backup capacity at the substation. This project was placed in  
3 service in 2019 with total plant additions of approximately \$8.4 million.

- 4 • *Back-up Transformer:* This project involved purchasing a new 230/13.8  
5 kV transformer. Given the long lead times required to obtain new  
6 transformers, it is important to have a back-up transformer available in  
7 case an existing transformer fails. By having a back-up transformer on  
8 hand, Public Service is able to minimize the outage times for customers.  
9 This project was placed in service in 2019 with total plant additions of  
10 approximately \$6.7 million.

- 11 • *Underground Reinforcement Projects:* This project is a multi-year project  
12 that includes upgrading cable and installing new underground cable to  
13 provide additional capacity to increase the load serving capability of  
14 certain portions of the system. These reinforcement projects are  
15 identified by planning engineers based on an analysis of load data and  
16 existing system capabilities. Public Service in-serviced \$1.2 million and  
17 \$4.1 million in underground reinforcement projects in 2019 and 2020  
18 respectively, and plans to in-service an additional \$3.8 million in 2022.

19 **Q. PLEASE DESCRIBE KEY CAPACITY PROJECTS DISTRIBUTION**  
20 **COMPLETED IN 2020.**

21 A. In 2020, Distribution placed in service \$50.2 million in capital additions. Below are  
22 descriptions of Capacity projects with capital additions over \$3 million that were  
23 placed in-service in 2020:

- 24 • *Pleasant Valley #1 Project:* This project is part of the Northern Greeley  
25 Area Transmission Plan Project that received a Certificate of Public  
26 Convenience and Necessity (“CPCN”) from the Commission in 2018 in  
27 Proceeding No. 17A-0146E. The Northern Greeley Area Transmission  
28 Plan Project includes: (1) the construction of two new substations  
29 (Husky and Graham Creek) and modifications to an existing substation  
30 (Cloverly); and (2) the construction a new double-circuit 115/230 kV  
31 transmission line from the Western Area Power Administration’s  
32 (“WAPA”) Ault Substation northwest of Greeley, Colorado to Public  
33 Service’s existing Cloverly Substation. This project is needed to  
34 increase the reliability and load serving capacity of the existing 115 kV  
35 transmission system in and around the City of Greeley and to provide  
36 additional capacity to support future load growth. This project is also

1 needed to support the decommissioning of three existing substations:  
2 Pleasant Valley, Ault, and Eaton. This project is a multi-year project and  
3 in 2020, approximately \$6.4 million in capital additions were placed in  
4 service related to a new 115/12.47 kV substation transformer and  
5 associated substation equipment at the Cloverly Substation. The work  
6 at the Cloverly Substation was delayed due to delays in receiving local  
7 land use permitting. There is also an additional \$1.1 million in capital  
8 additions in 2021 related to the construction of new feeders from the  
9 Cloverly Substation.

10 **Q. PLEASE DESCRIBE KEY CAPACITY PROJECTS FOR 2021.**

11 A. In 2021, Distribution plans to place in service \$39.1 million in Capacity capital  
12 additions. Below are descriptions of Capacity projects with capital additions over  
13 \$3 million that were or will be placed in-service in 2021:

- 14 • *Boulder Hydro Substation Project:* This project involves the installation  
15 of a second 115/24.9 kV substation transformer rated at 28 MVA at the  
16 Boulder Hydro Substation. This additional transformer is needed to  
17 provide back-up capacity to restore power to customers in the event of  
18 a failure of the first transformer at the Boulder Hydro Substation. This  
19 project is scheduled to be placed in service in 2021 with total plant  
20 additions of approximately \$4.5 million.
- 21 • *16<sup>th</sup> Network Cap. Hill to 18<sup>th</sup>:* Construction of a new section of network  
22 feeders installed in underground duct will connect two existing feeder  
23 networks in downtown Denver to allow for load switching and to enhance  
24 reliability on this portion of the system. This project is currently under  
25 construction and part of this project (\$1.3 million in capital additions) was  
26 placed in service in 2020 and the remainder (\$4.3 million in capital  
27 additions) will be placed in service in 2021.
- 28 • *Picadilly Feeder Project:* This project involves the extension of several  
29 new feeders from the Picadilly Substation in the City of Aurora. This  
30 project is needed to provide additional capacity to serve future load  
31 growth. This project is scheduled to be placed in service in 2021 with  
32 total plant additions of approximately \$5.0 million.

1 **Q. PLEASE DESCRIBE KEY CAPACITY PROJECTS FOR 2022.**

2 A. Total capital additions for Capacity projects in 2022 will be \$103.1 million which is  
3 an increase from 2021 when Capacity projects will total \$39.1 million. This  
4 increase from 2021 is due to the fact that there are three large Capacity projects  
5 that will be placed in service in 2022 with a total of \$56 million in capital additions.  
6 These three large Capacity projects are: (1) the Community Resiliency Initiative  
7 projects, (2) the High Point Substation Project, and (3) the Timnath (Avery)  
8 Substation Project. The remaining Capacity project costs are comprised of smaller  
9 projects and those over \$3 million are discussed later in my Direct Testimony.

10 **Q. PLEASE DESCRIBE THE COMMUNITY RESILIENCY INITIATIVE PROJECTS.**

11 A. During extreme weather events such as severe storms, wildfires or floods, it is vital  
12 that there is a secure, reliable power supply for critical infrastructure, such as  
13 evacuation centers. Installing onsite energy storage systems and generation  
14 allows these critical sites to operate independently from the electric grid in the  
15 event of an emergency resulting in grid outage and they also provide grid benefit  
16 during normal operation.

17 The Colorado legislature recognized the importance of these energy  
18 storage systems and in 2018 enacted the Energy Storage Procurement Act ("HB  
19 18-1270," codified at § 40-2-201, et seq., C.R.S.) HB 18-1270 allowed investor-  
20 owned electric utilities to file applications for rate-based energy storage system  
21 projects up to 15 MW of capacity on or before May 1, 2019.

1           On May 1, 2019, Public Service filed a Verified Application and the  
2 supporting Direct Testimony of three witnesses requesting approval of its proposed  
3 Community Resiliency Initiative in Proceeding No. 19A-0225E. The Community  
4 Resiliency Initiative sought to fulfill the intent of HB 18-1270 through seven  
5 targeted battery-based microgrid projects designed to enhance the Company's  
6 resource diversity as well as the safety, reliability, and resiliency of the electric grid.

7           On October 15, 2019, the Commission approved the Unopposed and  
8 Unanimous Comprehensive Settlement Agreement signed by the parties to the  
9 case that granted the Company's Verified Application.<sup>1</sup> Following the  
10 Commission's approval, Public Service has moved forward with six of the seven  
11 microgrid projects at the following locations: (1) the Denver International Airport;  
12 (2) the National Western Center; (3) the Denver Rescue Mission Lawrence Street  
13 Community Center; (4) the City of Arvada Center for the Arts and Humanities; (5)  
14 the Town of Nederland Community Center; (6) Alamosa Family Recreation  
15 Center.<sup>2</sup> As required by the Settlement Agreement, Public Service files semi-  
16 annual reports providing status updates on these projects. The most recent semi-  
17 annual report was filed by Public Service on June 15, 2021.

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<sup>1</sup> Decision No. R-20-0732.

<sup>2</sup> Public Service informed the Commission and stakeholders in its initial Compliance Report filed on December 15, 2020 that local administrators of the Summit Middle School project in Frisco, Colorado decided not to move forward with the seventh approved project.



1 **Q. WHAT IS THE CURRENT STATUS OF THE COMMUNITY RESILIENCY**  
2 **INITIATIVE PROJECTS?**

3 A. These six projects have commenced permitting research, site evaluation, and early  
4 design and engineering. Construction is expected to commence later this year with  
5 all six of these projects being placed in service by the second quarter of 2022.

6 **Q. DID THE SETTLEMENT AGREEMENT REQUIRE ANY ADDITIONAL**  
7 **INFORMATION BE PROVIDED WHEN PUBLIC SERVICE SEEKS COST**  
8 **RECOVERY FOR THESE PROJECTS?**

9 A. Yes, the Settlement Agreement provides that: “the project capital costs incurred  
10 for the seven CRI projects shall be entitled to a rebuttable presumption of prudence  
11 when these projects are brought forward for recovery . . . When Public Service  
12 proposes to recover these project costs through base rates or an appropriate cost  
13 recovery mechanism, the Company bears the burden of going forward and shall  
14 present robust testimony with appropriate accompanying exhibits to justify the  
15 expenditures: (1) at or below the amounts set forth in Updated Table CAG-SD-3;  
16 and (2) if applicable, amounts in excess of the amounts set forth in Updated Table  
17 CAG-SD-3.”<sup>3</sup>

18 **Q. IS PUBLIC SERVICE’S CURRENT CAPITAL EXPENDITURE FORECAST FOR**  
19 **THE COMMUNITY RESILIENCY INITIATIVE PROJECTS CONSISTENT WITH**  
20 **COSTS PRESENTED IN UPDATED TABLE CAG-SD-3 IN THE SETTLEMENT**  
21 **AGREEMENT?**

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<sup>3</sup> Settlement Agreement at II.

1 A. Yes. Attachment H to Public Service's June 15 report provided a summary of  
2 current cost estimates for all six projects as compared to the costs included in  
3 Table CSG-SD-3 in the Settlement Agreement. I note that the cost estimates  
4 provided in Attachment H are in capital expenditures rather than capital additions  
5 which is consistent with how these costs were presented in the Settlement  
6 Agreement. In the Settlement Agreement, Public Service estimated \$20.9 million  
7 in capital expenditures and \$0.1 million in annual O&M costs for these six projects  
8 (excluding the costs for the Summit Middle School Project). As stated in Public  
9 Service's June 15 report, the total estimated capital expenditures to complete  
10 these Community Resiliency Initiative projects remains unchanged from the  
11 amount included in the Settlement Agreement while the annual O&M has been  
12 reduced by \$0.086 million. This reduction in O&M is based on the manufacturer  
13 warranties for the battery energy storage system ("BESS"). Attachment I to the  
14 June 15 semi-annual report also provided a summary of current expenditures to  
15 date for the six projects. Copies of Confidential Attachment H and Confidential  
16 Attachment I from Public Service's June 15 semi-annual report are provided as  
17 Attachment BLM-3 to my Direct Testimony.

1 **Q. PLEASE EXPLAIN ANY DIFFERENCES BETWEEN THE CURRENTLY**  
2 **FORECASTED CAPITAL EXPENDITURES AND THE ESTIMATES PROVIDED**  
3 **IN THE SETTLEMENT AGREEMENT.**

4 A. While the total of the currently forecasted capital expenditures are the same as  
5 what was presented in the Settlement Agreement, there have been some updates  
6 to these cost estimates. These updates include:

- 7 • Removing forecasted expenditures related to the Summit Middle School  
8 project to reflect the cancellation of that project;
- 9 • Updating the BESS budget forecast to be in line with actual contracted  
10 pricing for all six projects;
- 11 • Moving budget forecasts for vendor integration for the BESS and  
12 Microgrid controller expenditures from the Medium Voltage category to  
13 the BESS category;
- 14 • Moving budget forecasts related to equipment and services for  
15 communications from Systems Integration to Medium Voltage to align  
16 the budget with the Company's procurement plan;
- 17 • Reducing the contingency forecast to reflect the contracting activities  
18 that have taken place to date; and
- 19 • Reducing the expected annual O&M for the CRI based upon  
20 manufacturer warranties for the BESS.

21 **Q. IS PUBLIC SERVICE SEEKING RECOVERY OF THE COSTS FOR THE**  
22 **COMMUNITY RESILIENCY PROJECTS IN THIS RATE CASE PROCEEDING?**

23 A. Yes. However, the rate case budget is based on the February capital forecast  
24 which had slightly higher capital cost estimates than what Public Service is  
25 currently estimating for these six projects. As a result, Public Service will make an  
26 adjustment of approximately \$2.2 million in Rebuttal Testimony in this proceeding

1 to update the capital costs for these projects to be consistent with the costs filed in  
2 the June 15, 2021 report in Proceeding No. 19A-0225E.

3 **Q. NEXT, PLEASE DESCRIBE THE HIGH POINT PROJECT.**

4 A. The High Point Project has both distribution and transmission components for a  
5 new greenfield substation. The distribution portion of the High Point Project  
6 includes the construction of the new 230/13.8 kV, 50 MVA High Point Substation  
7 in the City of Aurora and the construction of five new distribution feeders. The  
8 transmission portion of the project involves the construction of 3.5 miles of new  
9 230 kV double-circuit transmission line to connect the new High Point Substation  
10 to the Company's existing 5277 Spruce – Green Valley 230 kV transmission line.

11 The High Point Project is needed to serve projected new load growth in the  
12 City of Aurora, south of the Denver International Airport. There are several large  
13 residential and commercial developments being planned in the City of Aurora  
14 between Pena Boulevard and Powhaton Road, which include the following: Pena  
15 Station, High Point, Painted Prairie, Harvest Mile, Porteos, Aurora Highlands, and  
16 others. These developments will include approximately 24 million square feet of  
17 commercial space, 5,000 hotel rooms, and 22,000 residential dwelling units and  
18 will have a projected load of over 100 MVA. The Company filed a CPCN  
19 application for the High Point Project on March 2, 2020 in Proceeding No. 20A-  
20 0082E and the CPCN was granted on October 12, 2020 by Decision No. R20-0725  
21 (exceptions denied in Decision No. C20-0886).

1 **Q. IN ITS CPCN DECISION, DID THE COMMISSION REQUEST THAT ANY**  
2 **ADDITIONAL INFORMATION BE PROVIDED IN FUTURE RATE CASES FOR**  
3 **THE HIGH POINT PROJECT?**

4 A. Yes. In Decision No. R20-0725, Public Service was directed “to specifically identify  
5 the actual costs for the Project, individually and in total, in at least as much detail  
6 as provided in this proceeding.”<sup>4</sup>

7 **Q. WHAT COST INFORMATION DID PUBLIC SERVICE PROVIDE IN THE CPCN**  
8 **PROCEEDING FOR THE HIGH POINT PROJECT?**

9 A. In the CPCN Proceeding, Public Service provided cost estimates as confidential  
10 attachment BLM-4 to my Direct Testimony in Proceeding No. 20A-0082E and  
11 provided additional cost estimates in response to discovery that were attached to  
12 the Answer Testimony Commission Staff witness Mr. Adam Gribb as Confidential  
13 Attachments AMG-2C and AMG-3C.

14 **Q. IS PUBLIC SERVICE PROVIDING THE SAME LEVEL OF DETAILED COST**  
15 **INFORMATION FOR THE HIGH POINT PROJECT IN THIS PROCEEDING?**

16 A. Yes. Attachment BLM-4 provides detailed cost estimates for the High Point Project  
17 and also includes a comparison of these cost estimates to the costs estimates  
18 provided by Public Service in the CPCN proceeding. I note that the cost estimates  
19 provided in Attachment BLM-4 are in capital expenditures rather than capital  
20 additions. However, work order numbers are provided in Attachment BLM-4 that  
21 correlate to the work orders included in Attachment BLM-2 to my Direct Testimony

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<sup>4</sup> Decision No. R20-0725, at 12.

1 and to Attachment CLP-2 to the Direct Testimony of Company witness Ms. Connie  
2 L. Paoletti for the transmission portion of the project. In total, Public Service is  
3 requesting recovery of \$31.6 million in capital additions for the High Point Project  
4 in this rate case (\$20.8 million for Distribution and \$10.8 million for Transmission).

5 **Q. ARE THE COSTS THAT THE COMPANY IS SEEKING RECOVERY FOR IN**  
6 **THIS RATE CASE CONSISTENT WITH THE COST ESTIMATES PRESENTED**  
7 **IN THE CPCN PROCEEDING?**

8 A. As shown in Attachment BLM-4 the capital costs that the Company is seeking  
9 recovery for in this case are slightly higher than the costs that the Company  
10 presented during the CPCN proceeding. In the CPCN proceeding, the Company  
11 estimated \$28.3 million in capital expenditures for the High Point Project plus or  
12 minus a contingency of 8 percent.<sup>5</sup> Public Service's current capital expenditure  
13 forecast is \$31.3 million or a \$3 million increase as compared to the estimate  
14 provided in the CPCN proceeding.

15 **Q. WHY ARE THE CURRENT COST ESTIMATES FOR THE HIGH POINT**  
16 **PROJECT HIGHER THAN THE COST ESTIMATES PROVIDED DURING THE**  
17 **CPCN PROCEEDING?**

18 A. The increase in the forecasted capital expenditures for the High Point Project is  
19 primarily due to the increase in steel commodity prices since the CPCN filing in  
20 February 2020. The COVID-19 pandemic forced many steel manufacturers to shut  
21 down production which has reduced the supply of steel. These steel

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<sup>5</sup> Decision No. R20-0725 at 15.

1 manufacturers have been slow to restart production, even though construction  
2 demand for steel has remained steady and even increased in 2021 as the  
3 economy begins to reopen. This imbalance between steel supply and demand  
4 has led to steel prices that are 50 percent higher today than they were in February  
5 2020 when the CPCN was filed for the High Point Project. As steel is needed for  
6 the infrastructure at the High Point Substation, the increase in steel prices have  
7 resulted in higher material risk reserves<sup>6</sup> and escalation costs in the forecasted  
8 costs.

9 **Q. IS THE CURRENT PROJECTED IN-SERVICE DATE FOR THE HIGH POINT**  
10 **PROJECT THE SAME AS WHAT WAS PRESENTED IN THE CPCN**  
11 **PROCEEDING?**

12 A. In the CPCN Proceeding, Public Service anticipated that the High Point Project  
13 would be in service by June 2022. Public Service currently anticipates that the  
14 High Point Project will be in service in October 2022 due to delays associated with  
15 local permitting for the project.

16 **Q. PLEASE DESCRIBE THE TIMNATH (AVERY) SUBSTATION PROJECT.**

17 A. This project involves the construction of the new 230/13 kV, 50 MVA Avery  
18 Substation in the Town of Windsor in northern Colorado. The substation will  
19 include a three-breaker ring design and a single 230/13.8 kV, 28 MVA transformer  
20 but built to accommodate two 230/13.8kV, 28 MVA transformers for future load

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<sup>6</sup> As explained in the CPCN proceeding, a risk reserve accounts for anticipated risks related to specific components of a project – or known unknowns – that are incorporated into the cost estimate. The Company assigns a risk reserve amount to specific cost components based on the Company's assessment of identified risks. Decision No. C20-0886 at 4-5.

1 growth. This project will also require the construction of new distribution feeders  
2 from the new Avery Substation and upgrades to existing distribution feeders near  
3 the towns of Windsor, Severance, and Timnath, Colorado. This project also  
4 includes the construction of a three-mile long double-circuit 230 kV transmission  
5 line to connect the new Avery Substation to the existing Ault – Timberline 230 kV  
6 transmission line. The transmission portion of the project is discussed in greater  
7 detail by Ms. Paoletti.

8 This project is needed to provide additional capacity to serve new load  
9 growth in this fast-growing area of Northern Colorado and to provide back-up  
10 service to the Cobb Lake and Windsor substations. The distribution portion of this  
11 project started construction in January 2021 and is planned to be in service in 2022  
12 with \$16.0 million in capital additions for the Distribution components. A CPCN  
13 was granted for this project in Decision No. C15-0461 in Proceeding No. 15A-  
14 0159E.

15 **Q. PLEASE DESCRIBE THE OTHER CAPACITY PROJECTS THAT ARE**  
16 **PLANNED FOR 2022.**

17 A. The other Capacity projects that are planned for 2022 that have more than \$3  
18 million in capital additions include:

- 19 • *Stock Show Substation Project:* This project involves the purchase of  
20 land for a new Stock Show Substation. The new Stock Show Substation  
21 is needed to serve new load growth associated with the development of  
22 the I-70 corridor east of Downtown Denver and the redevelopment of the  
23 Stock Show Complex which includes construction of several new  
24 buildings.



- 1                   • *Poncha Junction T5 Project:* This project involves the installation of a  
2                   new 115/25kV, 28 MVA transformer at the Poncha Junction Substation  
3                   located near the town of Poncha Springs, Colorado. This new  
4                   transformer is needed to resolve overload and contingency issues with  
5                   the existing transformers and feeders that have resulted from load  
6                   growth in this area. This project is will be placed in service in 2022 with  
7                   \$5.3 million in capital additions.
- 8                   • *Colorado Electric Vehicle-Grid:* This project involves improvements to  
9                   the distribution system to provide additional capacity to accommodate  
10                  increased adoption of EV. These improvements include upgrades to  
11                  service transformers and secondary conductors to handle the increased  
12                  load associated with new EV charging at customer homes and  
13                  businesses. The total plant additions for this project are \$4.3 million.
- 14                  • *Extension of Louisville Feeders:* This project involves the construction  
15                  of a new feeder and the extension of an existing feeder from the  
16                  Louisville Substation in the City of Louisville. This project is needed as  
17                  existing feeders in this area are overloaded and are unable to  
18                  accommodate future load growth. This project will be placed in service  
19                  in 2022 with \$5.4 million in capital additions.

20  
21                  **C.     New Business**

22                  **Q.     WHAT TYPES OF CAPITAL PROJECTS ARE INCLUDED IN THE NEW**  
23                  **BUSINESS CATEGORY?**

- 24                  A.     Projects in this category are related to extending electric service to new customers  
25                  or to support increased loads from existing customers. To serve a new customer,  
26                  we must generally, at a minimum, extend our distribution system from the nearest  
27                  practical point and install a transformer, a service extension, and meter(s). Our  
28                  capital investments in this category fall into five main categories – extensions/  
29                  contribution in aid of construction (“CIAC”), new services, transformer purchases,  
30                  meter purchases, and street lighting. Table BLM-D-9 provides a breakdown of the  
31                  capital additions within the New Business category.

1 **TABLE BLM-D-9:**  
2 **New Business Sept. 1, 2019 to December 31, 2022 Capital Additions**  
3 **Public Service (Total Company)**  
4 **(Dollars in Millions)**

<b>New Business</b>	<b>9/1/2019 through 12/31/2019 Actual</b>	<b>2020 Actual</b>	<b>2021 Forecast</b>	<b>2022 Forecast</b>	<b>Total</b>
Extensions/CIAC	\$19.9	\$52.2	\$49.2	\$52.6	\$174.0
New Services	\$2.6	\$9.6	\$7.1	\$8.6	\$28.0
Meter Purchases	\$2.4	\$9.5	\$4.9	\$2.2	\$19.1
Transformer Purchases	\$7.9	\$27.2	\$26.7	\$29.5	\$91.2
Street Lighting	\$12.5	\$7.6	\$13.0	\$10.5	\$43.6
<b>Total</b>	<b>\$45.3</b>	<b>\$106.2</b>	<b>\$101.0</b>	<b>\$103.4</b>	<b>\$355.9</b>

5 **Q. PLEASE DISCUSS THE PRIMARY DRIVERS OF DISTRIBUTION'S CAPITAL**  
6 **ADDITIONS RELATED TO NEW BUSINESS SINCE THE COMPANY'S 2019**  
7 **ELECTRIC PHASE I.**

8 A. New Business needs are highly dependent on the state of the economy which, in  
9 turn, drives the number of requests for new service. Over the past several years,  
10 our New Business investments have remained steady despite the economic  
11 impacts from the COVID-19 pandemic. In fact, Public Service has actually seen  
12 an increase in new customer service requests for 2021 as compared to 2020.  
13 Through May of 2021, new customer service requests have increased nearly 40  
14 percent as compared to 2020. This is due to new housing construction,  
15 construction of new data centers, and oil and gas development in Colorado.

16 New meter purchases are decreasing starting in 2021 due to the  
17 deployment of new Advanced Meter Infrastructure ("AMI") meters as part of the

1 AGIS initiative. Company witness Mr. Nickell discusses Public Service's  
2 installation of new AMI meters in greater detail.

3 **Q. PLEASE DESCRIBE THE COMPANY'S CAPITAL ADDITIONS RELATED TO**  
4 **EXTENSIONS AND NEW SERVICE.**

5 A. New housing growth and new commercial developments necessitate construction  
6 of new overhead and underground line extensions, transformers, service laterals,  
7 and meters to serve these new customers. In recent years, extensions and  
8 requests for new service have remained steady despite the COVID-19 pandemic  
9 in 2020. There has also been an increase in service extension requests for new  
10 data centers within our service territory. In 2020, Public Service extended service  
11 to one large data center development and in 2021, Public Service will extend  
12 service to two additional data centers. In 2022, Public Service will extend service  
13 to yet another data center in Englewood, Colorado. These data centers have large  
14 loads with a high-capacity factor and require construction of multiple feeders.

15 **Q. ARE THERE OTHER ITEMS THAT ARE IMPACTING PUBLIC SERVICE'S**  
16 **EXTENSION AND NEW SERVICE CAPITAL ADDITIONS?**

17 A. Yes. For all service extensions constructed prior to October 1, 2019, new  
18 customers had the opportunity to receive refundable construction payments for a  
19 period of 10 years whenever other new customers connect to the original service  
20 extension. While Public Service instituted a new Distribution extension policy in  
21 2019 that eliminated these refunds in favor of an upfront credit,<sup>7</sup> there are still

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<sup>7</sup> Proceeding No. 18AL-0852E; Decision No. C19-0634.

1 customers who may be eligible for refunds under the prior extension policy. At the  
2 end of the 10-year period, any remaining open extensions that are not credited  
3 back to customers are credited back to Distribution capital and offset investments  
4 the Company makes on an annual basis. In 2019, these credits decreased as  
5 there were fewer service extensions 10 years prior, i.e., 2009, due to the global  
6 recession and economic downturn starting in 2008. However, in 2020, there was  
7 an increase in credits for expiring extensions and Public Service expects this trend  
8 will continue in 2021 and 2022.

9 **Q. PLEASE DESCRIBE THE COMPANY'S CAPITAL ADDITIONS RELATED TO**  
10 **TRANSFORMERS.**

11 A. The transformers category includes the purchase and installation costs of any  
12 distribution service transformer and voltage regulator necessary to serve new or  
13 existing customers. Transformer purchases are primarily needed to serve new  
14 customers. However, transformers purchases are also needed to serve increased  
15 customer load, or in the event an existing transformer fails, malfunctions, or  
16 reaches end of life.

17 **Q. PLEASE DESCRIBE THE COMPANY'S CAPITAL ADDITIONS RELATED TO**  
18 **METERS.**

19 A. The meters category includes the purchase and installation costs of distribution  
20 meters necessary to serve new or existing customers. Meter purchases are  
21 primarily for new customers in order to measure demand and energy at the point  
22 of delivery. Meters in some instances require replacement due to increased

1 customer demand, load, or in the event an existing meter fails or malfunctions.

2 This category does not include the installation of AMI meters that are being  
3 installed starting in 2021 as part of the AGIS initiative. Public Service's AMI  
4 installation is discussed by Mr. Nickell.

5 **Q. PLEASE DESCRIBE DISTRIBUTION'S CAPITAL ADDITIONS RELATED TO**  
6 **STREET LIGHTING.**

7 A The street lighting category includes any new street or area lights placed into  
8 service, as well as the reconstruction or rebuilding of street or area lights.  
9 Streetlight reconstruction or rebuilds includes street lights that require replacement  
10 due to adverse weather impacts, public damage, or failed equipment. This  
11 category also includes conversion of streetlights to light-emitting diode ("LED")  
12 fixtures which are more energy efficient and have better lighting quality. Public  
13 Service completed a number of streetlight conversions to LED in 2019 which led  
14 to an increase in streetlight investments in 2019.

15 **D. Mandates**

16 **Q. PLEASE DISCUSS THE PRIMARY DRIVERS OF DISTRIBUTION'S CAPITAL**  
17 **ADDITIONS RELATED TO MANDATES SINCE THE COMPANY'S 2019**  
18 **ELECTRIC PHASE I THROUGH THE 2022 FTY.**

19 A. The primary drivers of the Company's capital additions related to Mandate projects  
20 generally fall into two main categories – relocating existing utility infrastructure to  
21 accommodate public projects such as road widening or realignment and  
22 undergrounding facilities pursuant to franchise agreements with municipalities.

1 Table BLM-D-10 provides a summary of the capital additions for Mandate projects  
2 from September 1, 2019 to 2022.

3 **TABLE BLM-D-10:**  
4 **Mandates 2019-2022 Capital Additions**  
5 **Public Service (Total Company)**  
6 **(Dollars in Millions)**

Budget Category	9/1/2019 through 12/31/2019 Actual	2020 Actual	2021 Forecast	2022 Forecast	Total
Mandates	\$8.1	\$35.1	\$30.8	\$33.9	\$107.9

7 **Q. PLEASE DESCRIBE RELOCATION PROJECTS IN GREATER DETAIL.**

8 A. These projects include relocating facilities that are in direct conflict with street  
9 expansions within public right-of-way. Relocation projects tend to trend higher with  
10 a favorable economy as cities and counties have additional tax revenues for road  
11 improvement projects. In addition, during 2020, Public Service also saw an  
12 increase in relocation projects as cities and counties took advantage of the fact  
13 that there were fewer cars on the road due to the COVID-19 pandemic.

14 **Q. PLEASE PROVIDE AN EXAMPLE OF A RECENT RELOCATION PROJECT.**

15 A. An example is Public Service's relocation of distribution facilities, in coordination  
16 with the Colorado Department of Transportation ("CDOT"), to facilitate the new  
17 alignment of I-70 as part of CDOT's Central 70. A portion of this relocation project  
18 (\$1.6 million in capital additions) will be placed in service in 2021 with the  
19 remainder (\$1.7 million) going in service in 2022. Another example is the  
20 relocation of overhead distribution facilities to accommodate the 144<sup>th</sup> Avenue to

1 York Street widening project in Thornton, Colorado. This project was placed in  
2 service in 2020 with \$1.1 million in capital additions.

3 **Q. ARE THERE ANY MAJOR RELOCATION PROJECTS PLANNED FOR 2022?**

4 A. One major relocation project that is planned for 2022 is related to the 16<sup>th</sup> Street  
5 Mall improvement project in downtown Denver. Denver is reconstructing the 16<sup>th</sup>  
6 Street Mall to make safety, mobility and accessibility improvements. The 16<sup>th</sup>  
7 Street Mall improvement project will require the relocation of Public Service's  
8 existing underground cables, duct lines, and manholes that are in conflict with the  
9 redesign of the 16<sup>th</sup> Avenue Mall as well as vault top restoration and feeder  
10 extensions for tying into existing system where necessary. This project will be  
11 placed in service in 2022 with \$3.0 million in capital additions.

12 **Q. WHAT ARE UNDERGROUNDING PROJECTS?**

13 A. Through franchise agreements the Company signs with local jurisdictions, the  
14 Company will underground existing overhead lines at the request of the local  
15 jurisdiction. Along with meeting our franchise requirements, these projects provide  
16 benefits to our customers in the form of a more reliable, resilient system, renewal  
17 of existing assets, and improved aesthetics. For instance, in 2020 Distribution  
18 completed an overhead to underground conversion of just under one mile of  
19 distribution feeders along 32nd Street and Youngsfield Street in the City of  
20 Wheatridge that resulted in \$1.5 million in capital additions.

**E. Tools and Equipment**

**Q. PLEASE DISCUSS THE PRIMARY DRIVERS OF DISTRIBUTION CAPITAL ADDITIONS RELATED TO TOOLS AND EQUIPMENT SINCE THE COMPANY'S 2019 ELECTRIC PHASE I.**

A. This category includes various expenditure types required to support Distribution's overall operations. The primary drivers of the Company's capital additions related to Tools and Equipment since the Company's 2019 Electric Phase I generally fall into five categories: (1) tools, (2) substation communication equipment, (3) electric locates, and (4) acquisition of right-of-way for distribution facilities. Table BLM-D-11 provides a summary of the capital additions for Tool and Equipment from September 1, 2019 to December 31, 2022.

**TABLE BLM-D-11:  
 Tools and Equipment 2019-2022 Capital Additions  
 Public Service (Total Company)  
 (Dollars in Millions)**

<b>Budget Category</b>	<b>9/1/2019 through 12/31/2019 Actual</b>	<b>2020 Actual</b>	<b>2021 Forecast</b>	<b>2022 Forecast</b>	<b>Total</b>
<b>Tools and Equipment</b>	\$4.3	\$8.6	\$13.1	\$10.0	\$36.1

**Q. CAN YOU PROVIDE AN EXAMPLE OF A RECENT INVESTMENT IN TOOLS AND EQUIPMENT?**

A. An example of one of our Tools and Equipment investments is the installation of substation communication equipment in new substations such as the recently completed Cloverly Substation. In that substation, Distribution installed a Remote



1 Terminal Unit (“RTU”) and a Human Machine Interface (“HMI”)/annunciator for  
2 Supervisory Control and Data Acquisition (“SCADA”) as well as our Local Area  
3 Network (“LAN”) suite of equipment featuring a firewall and ethernet switch. This  
4 is standard equipment that is typically installed with each new substation to allow  
5 our substations to communicate with our control center.

6 **Q. HOW CAN THE COMMISSION BE CONFIDENT THE COMPANY WILL**  
7 **MANAGE ITS DISTRIBUTION-RELATED CAPITAL PROJECTS INCLUDED IN**  
8 **THE TEST YEAR TO ENSURE THE FINAL, ACTUAL COSTS ARE**  
9 **REASONABLE AND PRUDENT?**

10 A. As discussed in my Direct Testimony, the Distribution’s capital additions presented  
11 in Attachment BLM-1 and Attachment BLM-2 are reasonable and necessary to  
12 provide safe and reliable service to Public Service’s retail customers. The rigorous  
13 processes that are followed in evaluating, selecting, and monitoring the execution  
14 and implementation of capital projects ensure that the additions are reasonable  
15 and necessary and that the costs are prudently incurred to provide safe and  
16 reliable service to Public Service’s customers.

1 **V. DISTRIBUTION 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 discuss Distribution's non-  
4 AGIS and non-WMP 2020 O&M expenses, which the Company proposes to utilize  
5 as the primary basis for establishing Distribution O&M levels included in the 2022  
6 FTY. I also describe the drivers of O&M cost increases since the 2019 Electric  
7 Phase I, which was based off a 2018 HTY for O&M purposes. Finally, I discuss  
8 the forecast adjustments that Public Service proposes to make to the 2020 O&M  
9 expenses for the 2022 FTY. I note that Distribution's AGIS O&M is discussed by  
10 Mr. Nickell and Distribution's WMP O&M is discussed by Ms. Johnson.

11 **Q. WHAT ARE THE TYPES OF COSTS THAT THE DISTRIBUTION BUSINESS**  
12 **AREA INCURS FOR O&M?**

13 A. To support the Company's Distribution assets, a variety of O&M work is performed  
14 by the Distribution Business Area. Distribution's O&M expenses includes labor  
15 costs associated with maintaining, inspecting, installing, and constructing  
16 distribution facilities such as cables, poles, wires, transformers, and underground  
17 electric facilities. It also includes labor costs related to programs that include  
18 vegetation management, pole inspection, cable repairs, and damage prevention.  
19 Finally, it includes transportation costs and miscellaneous materials and minor  
20 tools necessary to build out, operate and maintain our electric distribution system.  
21 Distribution's transportation costs include annual fuel costs plus the allocation of

1 fleet support to O&M based on the proportion of the distribution fleet utilized for  
2 O&M activities as compared to capital projects.

3 Distribution's O&M expenses can be further broken down into the following  
4 six categories:

- 5 • *Internal Labor*: Internal labor costs are the employee costs associated with  
6 maintaining, inspecting, installing, and construction distribution  
7 facilities such as poles, wires, transformers, and underground electric  
8 facilities.
- 9 • *Contract Labor*: Contract labor costs are the costs associated with the  
10 use of contractors to support more specialized or seasonal tasks such  
11 as tree trimming, pole inspections, storm response, and underground  
12 facility location.
- 13 • *Materials*: Material costs are the material costs for maintaining and  
14 operating the distribution system such as braces, insulators, cross-arms,  
15 and splices.
- 16 • *Transportation*: Transportation costs are the costs associated with the  
17 use and maintenance of our fleet vehicles that is necessary to operate  
18 and maintain our electric distribution system.
- 19 • *Other*: Other costs include costs associated with employee expenses  
20 and miscellaneous expenses.
- 21 • *First Set Credits*: First set credits are O&M labor, transportation, and  
22 miscellaneous material credits associated with the installation of meters  
23 and line transformers. Because of the way meters and transformers are  
24 accounted for (fully installed costs are capitalized upon purchase  
25 instead of installation), the actual labor, transportation and  
26 miscellaneous materials used to install this equipment is expensed to  
27 O&M, and an equal and opposite credit is then applied upon purchase  
28 to offset these actual installation costs that are expensed to O&M to  
29 avoid accounting for these expenses twice.

30 As I describe in more detail below, approximately 94 percent of the 2020  
31 Distribution O&M expenses are related to employee and contract labor. The

1 remaining portions are comprised of fleet, materials, tools, employee expenses,  
2 and first set credits as explained above.

3 **Q. WHAT WERE DISTRIBUTION'S ACTUAL 2020 O&M COSTS?**

4 A. Our actual O&M expenses for 2020 totaled \$105.6 million (excluding AGIS and  
5 WMP). Table BLM-D-12 below breaks down the amount of overall O&M costs by  
6 the categories I discussed above. Attachments BLM-5 and BLM-6 provide an  
7 accounting of these expenses by Cost Element and FERC account, respectively,

8 **TABLE BLM-D-12:**  
9 **Distribution 2020 Actual O&M Expenses**  
10 **Public Service Electric**  
11 **(Dollars in Millions)**

<b>Cost Category</b>	<b>2020</b>
Internal Labor	\$39.1
Contract Labor	\$60.7
Materials	\$8.8
Transportation	\$7.8
Other	\$4.1
First Set Credits	\$(14.9)
<b>Total</b>	<b>\$105.6</b>

12 **Q. IS THE \$105.6M (PRE-ADJUSTMENTS AND EXCLUDING AGIS AND WMP) IN**  
13 **2020 O&M COSTS IN TABLE BLM-D-12 ABOVE REFLECTED IN THE COST**  
14 **OF SERVICE PRESENTED BY MS. BLAIR?**

15 A. Yes.

1 **Q. WHAT ARE THE MAJOR DRIVERS BETWEEN DISTRIBUTION'S 2018 O&M**  
2 **COSTS USED IN THE 2019 ELECTRIC PHASE I AND THE 2020 O&M COSTS**  
3 **THAT WILL BE REFLECTED IN THE 2022 FTY?**

4 A. The major drivers are shown in Table BLM-D-13 below.

5 **TABLE BLM-D-13:**  
6 **Drivers of Distribution O&M Expenses from 2018 HTY to 2020 Actuals**  
7 **Public Service Electric**  
8 **(Dollars in Millions)**

<b>Driver</b>	<b>2018 HTY</b>	<b>Driver Amount</b>	<b>2020 Actuals</b>
Internal Labor	\$39.2	\$(0.1)	\$39.1
Contract Labor	\$60.7	\$0.0	\$60.7
Materials	\$7.4	\$1.4	\$8.8
Transportation	\$8.3	\$(0.5)	\$7.8
First-Set Credits	(\$15.0)	\$0.1	(\$14.9)
Other	\$4.9	\$(0.8)	\$4.1
<b>Total</b>	<b>\$105.4</b>	<b>\$0.2</b>	<b>\$105.6</b>

9 **Q. CAN YOU PROVIDE MORE INFORMATION REGARDING THE SPECIFIC**  
10 **DRIVERS SHOWN IN TABLE BLM-D-13?**

11 A. As shown in Table BLM-D-13 above, material costs are the only O&M cost  
12 category that increased between 2018 HTY and 2020 Actuals. Material costs tend  
13 to fluctuate year over year depending on the type of O&M activities and associated  
14 materials for each year. In addition to this year over year fluctuation, approximately  
15 \$0.84 million of the increase in 2020 actuals compared to 2018 was driven by  
16 material write-offs, primarily due to obsolete materials in our electric distribution  
17 inventory in Colorado. This material write-off net increase from 2018 to 2020 is

1 specifically due to a \$0.4 million credit in our obsolete material account in 2018 vs.  
2 a \$0.28 million positive write-off that occurred in 2020. The remaining additional  
3 \$0.16 million balance is the additional material O&M costs from capital work orders  
4 that are ultimately determined to not be eligible for capital treatment. When these  
5 situations occur, we transfer those material costs to O&M.

6 **Q. CAN YOU ALSO DISCUSS ANY OTHER CHANGES TO O&M COSTS FROM**  
7 **THE 2018 HTY TO 2020 ACTUALS?**

8 A. A summary of the differences between 2018 HTY and 2020 actuals for the other  
9 O&M cost categories is provided below:

- 10 • Internal Labor: These costs decreased by \$0.1 million from 2018 to  
11 2020. The average annual internal labor wage increase has been  
12 approximately 3 percent. However, through internal controls on full-time  
13 employee replacements as well as better reporting on labor financial  
14 splits and limiting employee overtime, Public Service was able to keep  
15 our 2020 overall labor essentially flat despite the annual merit increases.
- 16 • Contract Labor: These costs stayed flat at \$60.7 million from 2018 HTY  
17 to 2020 actuals. Storm and mutual aid pressures caused an incremental  
18 \$8.3 million increase in “weather related” O&M expenditures in 2020 as  
19 compared to 2018. This increase was partially offset by a \$4.5 million  
20 reduction in Vegetation Management in 2020. The balance of the  
21 remaining increase in Contract Labor “weather-related” 2020 O&M costs  
22 was then largely offset by sustainable continuous improvement  
23 initiatives implemented in 2020.
- 24 • Transportation: These costs decreased by \$0.5 million from the 2018  
25 HTY to 2020. Transportation costs tend to fluctuate year over year  
26 depending on the cost of fuel and maintenance of fleet vehicles that is  
27 required in a given year. The primary driver of the decrease in  
28 Transportation costs from the 2018 HTY to 2020 actuals is an increase  
29 in the number of hours Distribution’s construction and operations fleet  
30 units were utilized on capital construction jobs in 2020 as compared to  
31 2018.

- 1                   • Other: These costs decreased by \$0.8 million from the 2018 HTY to  
 2                   2020 actuals and includes costs for employee expenses, safety  
 3                   equipment, and miscellaneous costs. The primary driver of this  
 4                   decrease is a reduction in employee expenses due to reduced travel and  
 5                   meals during 2020 due to the COVID-19 pandemic.
- 6                   • First Set Credits: These costs were essentially flat from 2018 to 2020.  
 7                   First Set credits were \$15 million in the 2018 HTY and were slightly lower  
 8                   (\$14.9 million) in 2020.

9   **Q.    IS THE COMPANY PROPOSING ANY FORECAST ADJUSTMENTS TO ITS**  
 10 **TEST YEAR COST OF SERVICE?**

11 A.    Yes, the Company is proposing four forecast adjustments to Distribution’s O&M  
 12 expenses for 2020: (1) Vegetation Management; (2) Damage Prevention; (3)  
 13 Distribution System Planning Internal Labor; and (4) Mutual Aid. These forecast  
 14 adjustment amounts are shown in Table BLM-D-14 below.

**TABLE BLM-D-14:  
 Forecast Adjustments to Distribution’s 2020 O&M  
 Public Service Electric  
 (Dollars in Millions)**

O&M Expense	2020 Actuals	Forecast Adjustment	2022 FTY Requested Amount
Vegetation Management	\$13.9	\$3.6	\$17.5
Damage Prevention	\$10.9	\$3.9	\$14.8
DSP Internal Labor (Incremental to 2020 Internal Labor costs)	N/A	\$0.6	\$0.6
Mutual Aid	\$0.7	\$(0.7)	\$0.0

1 **Q. PLEASE EXPLAIN WHY A FORECAST ADJUSTMENT IS NEEDED FOR**  
2 **VEGETATION MANAGEMENT.**

3 A. Vegetation management expenses are those costs associated with the pruning,  
4 removal, mowing, and application of herbicide to trees and tall-growing brush on  
5 and adjacent to Public Service's rights-of-way to limit preventable vegetation-  
6 related service interruptions. The Company is proposing a forecast adjustment of  
7 \$3.6 million for Vegetation Management O&M expenses for both Distribution and  
8 Transmission to reflect the appropriate level of expenses needed to complete  
9 necessary line clearance work when rates are in effect. The amount of vegetation  
10 management expenses can vary from year-to-year depending on the line miles of  
11 vegetation management that is performed in a particular year. In 2020, Vegetation  
12 Management expense (not including WMP) for both Transmission and Distribution  
13 was \$13.9 million which is lower than the five-year average for this expense of  
14 \$15.9 million. This lower 2020 expense amount is also not representative of the  
15 actual Vegetation Management work that will be required going forward to maintain  
16 the reliability of Distribution's and Transmission's overhead facilities. Table BLM-  
17 D-15 provides a summary of the Company's Vegetation Management expenses  
18 for the last five years.



1  
2  
3  
4  
5  
**TABLE BLM-D-15:  
Vegetation Management for Distribution and Transmission  
(Excludes WMP)  
Public Service Electric  
(Dollars in Millions)**

<b>O&amp;M Expense</b>	<b>2016 Actuals</b>	<b>2017 Actuals</b>	<b>2018 Actuals</b>	<b>2019 Actuals</b>	<b>2020 Actuals</b>	<b>5-Year Average</b>
Vegetation Management	\$16.2	\$16.6	\$19.2	\$13.8	\$13.9	\$15.9

6 **Q. HOW DOES PUBLIC SERVICE PROPOSE TO CALCULATE THE FORECAST**  
7 **ADJUSTMENT FOR VEGETATION MANAGEMENT?**

8 A. Due to variability in annual vegetation management expenses, the Company  
9 proposes to calculate this forecast adjustment on the Company's average annual  
10 Vegetation Management expenditures for both Distribution and Transmission over  
11 the most recent five-year historical period (2016 – 2020), with each historical year  
12 adjusted to an equivalent value, and then applying a 2.7 percent increase per year  
13 for the period 2021-2022 to account for expected annual cost-of-living adjustment  
14 for contract labor expenses. This results in an additional \$3.6 million for Vegetation  
15 Management expenses over the 2020 actual expenditures of \$13.9 million, for a  
16 total Vegetation Management expense of \$17.5 million.

17 **Q. NEXT, PLEASE EXPLAIN WHY A FORECAST ADJUSTMENT IS NEEDED FOR**  
18 **DAMAGE PREVENTION O&M EXPENSES.**

19 A. The Company is proposing a forecast adjustment of \$3.9 million for Damage  
20 Prevention O&M to reflect increases in both the costs of contractors who perform  
21 this work and the number of locates. The Company relies on a combination of

1 contractors and internal labor for the Damage Prevention program, which helps  
2 excavators and customers locate underground electric infrastructure to avoid  
3 accidental damage and safety incidents. The proposed Damage Prevention  
4 forecast adjustment reflects the new contract labor rates effective as of February  
5 2021, which are not reflected in the actual 2020 O&M expenses for Damage  
6 Prevention. The proposed adjustment also reflects an increase in the number of  
7 locates per year, a trend that has been continuing for a number of years. As shown  
8 in the table below, the number of electric locates performed each year increased  
9 by over 125,000 between 2016 and 2020. In addition, year-to-date electric locates  
10 through April 2021 are three percent higher than the same period in 2020.

11 **TABLE BLM-D-16:**  
12 **Public Service Electric Locates**

<b>Year</b>	<b>Number of Electric Locates</b>
2016	439,748
2017	462,717
2018	509,391
2019	520,220
2020	565,627
2021 YTD	243,560

13 **Q. PLEASE EXPLAIN WHY A FORECAST ADJUSTMENT IS NEEDED FOR**  
14 **DISTRIBUTION SYSTEM PLANNING LABOR COSTS.**

15 A. The Company is proposing a forecast adjustment of \$0.6 million to reflect internal  
16 labor costs for four additional Distribution employees that will be needed to comply  
17 with the Commission's proposed DSP rules in Proceeding No. 20R-0516E. The  
18 implementation of the Commission's proposed DSP rules will require significant

1 incremental engineering analyses and evaluation of potential capital projects,  
2 pilots, and/or programs. These additional efforts include collecting, consolidating,  
3 validating, and publishing information both within the Company's DSP application  
4 as well as on the proposed DSP website. The Company will also be required to  
5 routinely update the DSP website (including the models and load forecasts which  
6 underlie this information). As noted in the Company's January 29, 2021 initial  
7 comments in Proceeding 20R-0516E, based upon our experiences developing  
8 similar Integrated Distribution Plans ("IDPs") through our Minnesota operating  
9 company, Northern States Power Minnesota ("NSPM"), Public Service estimates  
10 that the preparation of the Colorado DSP filing alone will require approximately  
11 1,600 person hours. In addition to the report preparation represented by this 1,600  
12 hour for the filing, there is significant data scrubbing and analysis, model building,  
13 and other work that are required to comply with the requirements that extend  
14 beyond just the regulatory filing. These include for example, hosting capacity  
15 analysis and mapping updates, DER forecasting, data compliance preparation,  
16 and NWA analysis.

17 Due to the additional work required to comply with these new DSP rules,  
18 Distribution will need to add four additional employees: one Distribution Planner,  
19 one Principal Engineer, one Project Manager, and one Senior Engineer. As these  
20 four additional employees were not included in Distribution's 2020 actual O&M  
21 costs, a forecast adjustment is appropriate to reflect Distribution's O&M costs when  
22 rates from this proceeding are in effect. The labor costs for these four new

1 employees will be classified as O&M costs until a capital project develops from the  
2 DSP process. At that time, a portion of these labor costs may be capitalized to  
3 that future project.

4 **Q. FINALLY, PLEASE EXPLAIN WHY A FORECAST ADJUSTMENT IS NEEDED**  
5 **FOR MUTUAL AID EXPENSES INCURRED IN 2020.**

6 A. The Company is proposing a forecast adjustment to reduce Distribution O&M  
7 expense by \$0.7 million to eliminate the incremental expenses associated with  
8 specific Mutual Aid activities in 2020. In 2020, the Company provided Mutual Aid  
9 assistance to Iowa utilities due to severe summer storms, such as the August 2020  
10 derecho, to east coast utilities due to Hurricane Laura in August 2020, as well as  
11 to Texas utilities due to Winter Storm Billy in October 2020. These expenditures  
12 included employee expenses, materials, and fleet as part of the Company's effort  
13 to help restore electric service to the customers of the host utilities we assisted.  
14 The Company proposes this reduction to Distribution O&M because the weather  
15 is not predictable, and these specific Mutual Aid activities in 2020 are not  
16 necessarily reflective of costs that will be incurred going forward.

17 **Q. HAVE THESE FOUR FORECAST ADJUSTMENTS BEEN INCORPORATED**  
18 **INTO THE 2022 FTY REVENUE REQUIREMENT?**

19 A. Yes. These four forecast adjustments have been incorporated into the 2022 FTY  
20 revenue requirement as discussed by Ms. Blair in her Direct Testimony.

1 **Q. IS THE 2020 DISTRIBUTION O&M, SUBJECT TO ADJUSTMENTS YOU**  
2 **IDENTIFIED, A REASONABLE BASIS ON WHICH TO ESTABLISH O&M**  
3 **COSTS FOR THE 2022 FTY?**

4 A. Yes.

5 **Q. ARE THESE O&M EXPENSES REASONABLE AND NECESSARY TO CARRY**  
6 **OUT THE DISTRIBUTION BUSINESS AREA'S KEY FUNCTIONS YOU**  
7 **DESCRIBED ABOVE?**

8 A. Yes. These O&M expenses are necessary to ensure that the Distribution Business  
9 Area is able to deliver safe and reliable electric service to our Colorado customers.

10 **Q. IN TOTAL, WHAT IS THE REQUEST OF THE COMMISSION FOR THE 2022**  
11 **FTY FOR DISTRIBUTION O&M EXPENSE?**

12 A. The following table captures the base 2020 actual Distribution O&M Expense as  
13 well as the proposed adjustments as laid out in my testimony above.

14 **TABLE BLM-D-17:**  
15 **Distribution O&M with Forecasted Adjustments**  
16 **Public Service Electric**  
17 **(Dollars in Millions)**

2020 Actual Distribution O&M	\$105.6
Vegetation Management	\$3.6
Damage Prevention	\$3.9
Distribution System Planning	\$0.6
Mutual Aid	\$(0.7)
<b>Total Distribution O&amp;M in 2022 FTY</b>	<b>\$113.1</b>

1           **VI. DISTRIBUTION AND TRANSMISSION EQUIPMENT RESERVE**

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

3           A. In this section of my Direct Testimony, I discuss the Company's proposal to  
4           increase the amount of Distribution and Transmission equipment that is held in  
5           reserve or inventory.

6           **Q. FOR WHAT PURPOSES DOES PUBLIC SERVICE HAVE DISTRIBUTION AND  
7           TRANSMISSION ASSETS IN INVENTORY?**

8           A. Public Service holds Distribution and Transmission equipment in inventory for use  
9           in future capital projects that include both construction of new facilities and the  
10          replacement of existing facilities that fail due to age or condition or are damaged  
11          during weather events or by the public such as when a car hits a distribution pole.  
12          Currently, Public Service has approximately, \$30 million in Distribution and  
13          Transmission assets in inventory and proposes to increase this amount to  
14          approximately \$38 million.

15          **Q. WHY DOES PUBLIC SERVICE NEED TO INCREASE THE AMOUNT OF  
16          DISTRIBUTION AND TRANSMISSION ASSETS HELD IN INVENTORY IN  
17          2022?**

18          A. There are several reasons why Public Service needs to increase the amount of  
19          Distribution and Transmission assets held in inventory in 2022. As discussed  
20          earlier in my testimony, Distribution will be undertaking more capital projects in  
21          2022 to replace aging infrastructure and to provide sufficient capacity for growing  
22          areas of the Public Service system. In order to complete those projects,

1 Distribution will need to have sufficient materials in inventory to complete these  
2 projects. Moreover, having more capital assets out in the field also means that  
3 there is greater risk that these assets will be damaged as a result of weather events  
4 or other events (i.e., public damage). It is also important to have sufficient  
5 inventory on hand to replace assets when these unanticipated circumstances  
6 arise.

7 While Distribution and Transmission need to have sufficient inventory for  
8 both planned and emergency capital projects, these materials are becoming  
9 harder to procure in a timely manner. As discussed by Mr. Berman, materials are  
10 becoming more difficult to procure in a timely manner due to supply chain issues  
11 related to extreme weather events like winter storm Uri, continuing disruptions from  
12 the COVID-19 pandemic, and executive orders that restrict the import of certain  
13 supplies from foreign countries.

14 **Q. CAN YOU PROVIDE ANY EXAMPLES OF HOW THE SUPPLY CHAIN ISSUES**  
15 **DISCUSSED BY MR. BERMAN HAVE IMPACTED DISTRIBUTION?**

16 A. Yes. For instance, Public Service used to be able to purchase voltage regulators  
17 with 20-weeks advance notice to our manufacturers. Currently, the purchase of  
18 voltage regulators requires more than one-year advance notice to our  
19 manufacturers.

20 In addition, supply chain challenges have led to a shortage of cable that is  
21 used on Public Service's underground electric distribution system. Specifically,  
22 million copper and million aluminum cable are not available in full supply due to a

1 shortage of raw material used in the manufacturing of these cables. These  
2 shortages have forced Public Service to prioritize work in 2021 and have led to  
3 short delays in replacement projects and new extensions.

4 By increasing the Company's inventory of these cables, Public Service will  
5 be better able to manage any future supply shortages as Public Service will be  
6 able to rely on its existing inventory rather than relying solely on  
7 manufacturers/suppliers.

8 **Q. PLEASE SUMMARIZE HOW PUBLIC SERVICE CALCULATED THE**  
9 **PROPOSED DISTRIBUTION AND TRANSMISSION EQUIPMENT RESERVE**  
10 **ADJUSTMENT.**

11 A. The proposed adjustment was developed by correlating material usage to Public  
12 Service's capital budget. In 2019 and 2020, materials comprised approximately  
13 12 to 13 percent of Public Service's overall capital budget. Inventory has  
14 comprised approximately 22 to 25 percent of that material usage from 2017 to  
15 2020. To ensure that Distribution has sufficient inventory needed to complete its  
16 planned projects in 2022, Public Service needs to increase the amount of materials  
17 held in inventory. Public Service calculated the proposed adjustment by taking 12  
18 percent of the forecasted capital budgets and then taking 22 percent of that total  
19 as the projected inventory amount. This calculation resulted in an approximately  
20 \$8 million increase in inventory for 2022.

21 In addition, the inventory adjustment includes a 5 percent pricing increase  
22 for our Distribution inventory in 2022. One of Public Service's main supplier of



1 materials has forecasted prices increases of 3 to 7 percent in 2021 and 2022 due  
2 to continued supply issues resulting from the COVID-19 pandemic. Public Service  
3 elected to use 5 percent as this is the middle of the range of the price increase  
4 provided by our supplier. In total, Public Service proposes an approximately \$8.0  
5 million increase in inventory as compared to 2021.

1                                   **VII.    QUALITY OF SERVICE PLAN EXTENSION**

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

3   A.    In this section of my Direct Testimony, I discuss the Company’s recent electric  
4        service reliability and service quality performance results and provide support for  
5        extending the term of the Company’s current Quality of Service Plan (“QSP”). The  
6        Company’s current QSP is in effect until December 31, 2021 and, as explained by  
7        Company witness Mr. Berman, the Company proposes to extend the current QSP  
8        for an additional three years from 2022 through the end of 2024.

9   **Q.    IS THE COMPANY PROPOSING ANY CHANGES TO THE QSP?**

10  A.    No. Public Service is not proposing any changes to the current QSP performance  
11        metrics or reporting requirements.

12  **Q.    PLEASE PROVIDE A HIGH-LEVEL OVERVIEW OF HOW PUBLIC SERVICE  
13        PROVIDES RELIABLE ELECTRIC SERVICE TO ITS CUSTOMERS.**

14  A.    As discussed in the previous sections of my Direct Testimony, Distribution makes  
15        capital and O&M investments to maintain reliable electric service for our  
16        customers. These investments generally either help to mitigate future outages,  
17        improve our ability to limit any outages to the smallest number of customers for the  
18        shortest possible duration, or support Distribution’s prompt response to restoring  
19        power when outages do occur. Due to these continued investments, Public  
20        Service continues to be a leader in terms of reliability performance. The Company  
21        is consistently in the 1<sup>st</sup> or 2<sup>nd</sup> quartile and, on average, customers have electric  
22        service more than 99.9 percent of the time.

1 **Q. HOW DOES THE COMPANY TRACK AND MEASURE ELECTRIC SERVICE**  
2 **RELIABILITY?**

3 A. The Company tracks reliability metrics and measures performance through  
4 benchmarking with other utilities as well as internally reviewing annual changes in  
5 performance. The QSP has several electric service reliability performance  
6 thresholds and if the Company's performance falls below those thresholds, the  
7 QSP specifies the consequences that follow such as additional reporting and  
8 payment of bill credits under certain circumstances. Public Service files annual  
9 QSP reports with the Commission by April 1 of each year in Proceeding No. 05A-  
10 288E. Public Service filed its most recent QSP report on April 1, 2021.

11 **Q. WHAT ARE THE QSP'S RELIABILITY METRICS?**

12 A. The QSP has two types of reliability measurements: system level and customer  
13 level. For the system level measurement, the QSP utilizes a system average  
14 interruption duration index ("SAIDI") for a selected set of data. SAIDI is the  
15 average duration of service interruptions customers experience during a year  
16 quantified in number of minutes. This data is normalized to focus on the  
17 performance of distribution lines only, and specifically excludes impacts due to  
18 public damage, properly planned outages, and outages deliberately caused in the  
19 interest of public safety. Annual performance targets are defined based on  
20 historical performance within nine service territory regions. Public Service pays its  
21 customers performance penalties if the Company does not meet its target for any  
22 region for two years or more in a row.

1 For the customer level reliability metrics, the QSP has monitoring and  
2 penalty structures so that customers receive compensation if they either  
3 experience multiple outage events within a given time frame, or if they experience  
4 outage events that last longer than 24 hours in a given year.

5 **Q. PLEASE DESCRIBE THE COMPANY'S SAIDI RELIABILITY PERFORMANCE**  
6 **IN 2020.**

7 A. In 2020, the Company has performed relatively well in relation to the QSP reliability  
8 metrics. For each of the nine QSP reporting regions, SAIDI penalties are paid if  
9 the region's Reliability Warning Threshold ("RWT") is exceeded two years in a row.  
10 In 2020, there were four regions, Front Range, Greeley, San Luis Valley, and  
11 Western, that exceeded their RWT. Two regions, Front Range and Greeley,  
12 exceeded their RWT in 2019 therefore triggering the RWT penalty in 2020. Severe  
13 weather events were the primary cause of these two regions missing their RWT.  
14 The Company provided additional details about these outage events in its 2020  
15 QSP report filed with the Commission on April 1, 2021 along with Company's plans  
16 to continue to enhance the reliability for these regions.

17 **Q. HOW DOES THE COMPANY'S SAIDI PERFORMANCE COMPARE TO ITS**  
18 **PEERS?**

19 A. The Company utilizes the Institute of Electrical and Electronics Engineers ("IEEE")  
20 Distribution Reliability Working Group large utility group benchmarking to compare  
21 its SAIDI performance against similar sized electric utilities. The Company  
22 compares itself to other large utilities—that is, utilities with over one million

1 customers. The IEEE survey is voluntary. In 2020, 89 entries were received  
2 (reporting 2019 data), of which, 34 were included in the large utilities group. SAIDI  
3 performance results for 2020 will not be available until late July 2021.

4 The Company typically ranks at upper second quartile to 1st quartile of  
5 SAIDI reliability benchmark performance. For the most recent survey year  
6 available (2020 survey for 2019 data), Public Service ranked in the second quartile  
7 for 2019 with a SAIDI value of 92.7 minutes.

8 **Q. HOW DID PUBLIC SERVICE PERFORM RELATIVE TO ITS QSP CUSTOMER**  
9 **LEVEL RELIABILITY METRICS IN 2020?**

10 A. There are two customer level reliability metrics, one for multiple outages and one  
11 for extended outages. With regard to multiple outages, in 2020, the number of  
12 customers who exceeded the Electric Continuity Threshold (“ECT”) of more than  
13 five sustained electric service interruptions, excluding Major Event Day  
14 interruptions and public damage interruptions,<sup>8</sup> decreased from 2019. Under this  
15 multiple outage metric, the maximum penalty is \$1 million/year, with a \$50  
16 maximum paid to any customer. For 2020, Public Service will pay approximately  
17 \$254,150 as \$50 bill credits to 5,083 customers who exceeded the ECT of more  
18 than five sustained electric service interruptions in the performance year.

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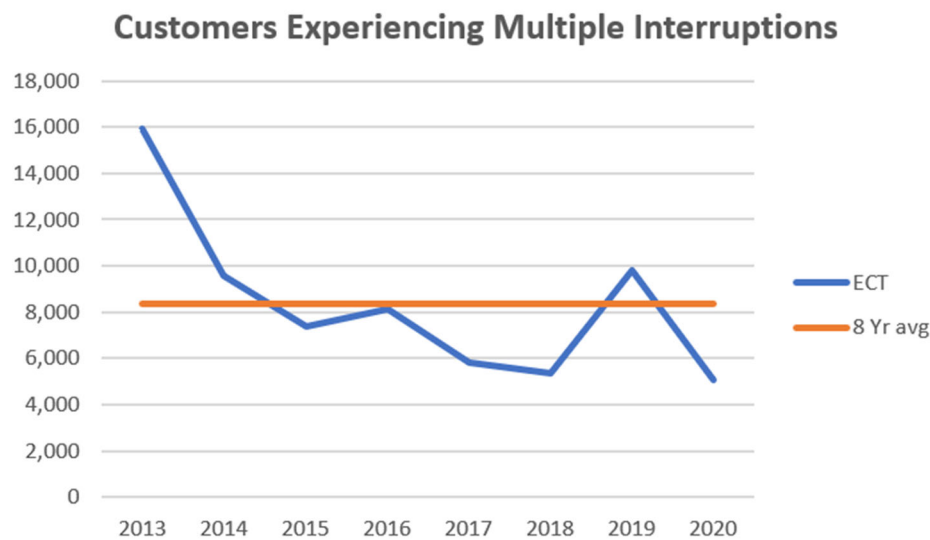
<sup>8</sup> Major Event Days are defined in Public Service’s Electric Service Tariff in accord with the definition provided by IEEE Standard 1366-2033. In general, Major Event Days are days when a catastrophic event occurs which exceeds the reasonable design or operational limits of the electric system and during which at least 10 percent of the customers within an operating area experience a sustained interruption during a 24-hour period.

1 For customers experiencing long interruptions, a \$50 bill credit is paid  
2 anytime the Electric Restoration Threshold (“ERT”) of 24 hours is exceeded. In  
3 2020, 37 customers will receive penalty payments for a total of \$3,750 in bill credits  
4 which is lower than 2019 when 105 customers received bill credits.

5 **Q. HOW DOES THE COMPANY’S 2020 CUSTOMER LEVEL RELIABILITY**  
6 **PERFORMANCE COMPARE TO PRIOR YEARS?**

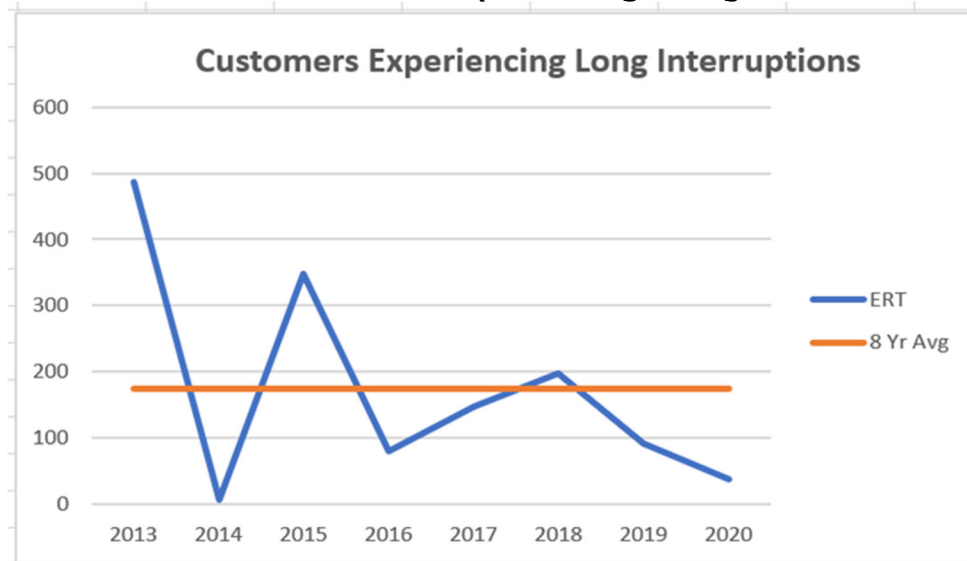
7 A. With regard to the number of customers experiencing multiple outages, the  
8 Company’s reliability performance has generally continuously improved from 2013  
9 to 2020 as shown in the figure below. The one exception is in 2019, when there  
10 was an increase in the number of customers experiencing multiple service  
11 interruptions due to a number of severe weather events in that year that impacted  
12 reliability.

13 **FIGURE BLM-D-3: Customers Experiencing Multiple Outages**  
14



1 With regard to customers experiencing long duration outages (i.e., more than 24-  
2 hours), this number tends to fluctuate year to year from a low of six customers in  
3 2014 to a high of 486 customers in 2013 as shown in Figure BLM-D-3. In 2020,  
4 37 customers experienced outages longer than 24-hours which was the second  
5 lowest number of customers over the past eight years.

6 **FIGURE BLM-D-4: Customers Experiencing Outages Over 24-Hours**



7 While Public Service had a strong reliability performance in 2020, Public  
8 Service is always looking for opportunities to improve its reliability performance.  
9 Public Service's development and the implementation of various reliability  
10 programs is discussed in greater detail in the Company's annual QSP report.

1

**VIII. CONCLUSION**

2 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.**

3 A. In summary, as part of approving the cost of service developed by Ms. Blair, I  
4 recommend the Commission approve the 2019-2022 Distribution capital additions  
5 and 2020 Distribution O&M expenses, with the Company's proposed forecast  
6 adjustments for 2022, which are included in the Company's 2022 FTY cost of  
7 service presented in this rate case, and as described above.

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

9 A. Yes, it does.



## **Statement of Qualifications**

### **Betty L. Mirzayi**

Betty Mirzayi is the Manager of Distribution System Planning and Strategy South for Xcel Energy. Betty's role includes providing strategic direction for building a 5-year distribution plan for ensuring a reliable and cost-effective electric distribution system.

Betty joined Xcel Energy in 1998. Prior to assuming her current position in November 2019, Betty was the Manager of Transmission Planning West from 2014 through October 2019. From early 2011 through the end of 2014, Betty was the manager of Strategic Transmission Development. In that role, she worked on transmission projects involving participation with other utilities including project scoping and joint agreements, and was also involved in stakeholder outreach. In January 2008, Betty began work in the Transmission Business Area as a project manager. Prior to that time and through December 2007, Betty worked in the Distribution Capacity Planning department. In this position, Betty's responsibilities included developing load forecasts and working as part of a larger team to develop capital budgets for projects and to monitor implementation and adherence to these budgets. From 1995 to 1998, Betty was employed by Merrick Company in their Power Systems department. Between 1985 and 1990, Betty was employed by Public Service in the Electric Distribution Engineering, Planning and Special Studies departments.

Betty graduated from the University of Colorado at Denver in 1980 with a Bachelor of Arts degree in German. In 1984, Betty received a Bachelor of Science in Electrical Engineering from the University of Colorado at Denver.

Betty has previously testified before the Colorado Public Utilities Commission.

BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF COLORADO

\* \* \* \* \*

IN THE MATTER OF ADVICE LETTER )  
NO. 1857-ELECTRIC OF PUBLIC )  
SERVICE COMPANY OF COLORADO )  
TO REVISE ITS COLORADO PUC NO. )  
8-ELECTRIC TARIFF TO REVISE )  
JURISDICTIONAL BASE RATE ) PROCEEDING NO. 21AL-\_\_\_\_\_E  
REVENUES, IMPLEMENT NEW BASE )  
RATES FOR ALL ELECTRIC RATE )  
SCHEDULES, AND MAKE OTHER )  
PROPOSED TARIFF CHANGES )  
EFFECTIVE AUGUST 2, 2021 )

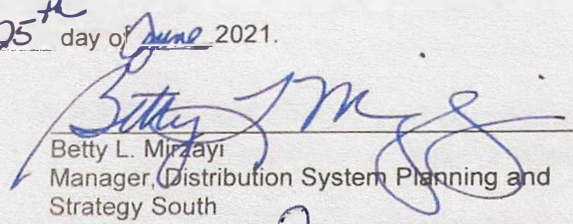
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AFFIDAVIT OF BETTY L. MIRZAYI  
ON BEHALF OF  
PUBLIC SERVICE COMPANY OF COLORADO

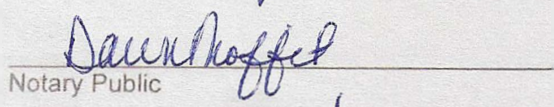
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I, Betty L. Mirzayi, being duly sworn, state that the Direct Testimony and attachments were prepared by me or under my supervision, control, and direction; that the Direct Testimony and attachments are true and correct to the best of my information, 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 25<sup>th</sup> day of June, 2021.

  
Betty L. Mirzayi  
Manager, Distribution System Planning and  
Strategy South

Subscribed and sworn to before me this 25<sup>th</sup> day of June, 2021.

  
Notary Public

My Commission Expires 4.22.2024

DAWN MOFFIT  
NOTARY PUBLIC  
STATE OF COLORADO  
NOTARY ID 20084013859  
MY COMMISSION EXPIRES APRIL 22, 2024

NOTARY PUBLIC  
STATE OF COLORADO  
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