BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

*** * * * ***

IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF COLORADO FOR APPROVAL OF WILDFIRE MITIGATION PLAN AND WILDFIRE PROTECTION RIDER	**)**	**PROCEEDING NO. 20A-____E**

DIRECT TESTIMONY AND ATTACHMENTS OF SANDRA L. JOHNSON

ON

BEHALF OF

PUBLIC SERVICE COMPANY OF COLORADO

July 17, 2020

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym/Defined Term	Meaning
2019 WMP	WMP presented in the Company's 2019 Electric Rate Case
ACSR	Aluminum Conductor Steel-Reinforced
ADMS	Advanced Distribution Management System
AFUDC	Allowance for Funds Used During Construction
AGIS	Advanced Grid Intelligence & Security
AGL	Above Groundline
CAL FIRE	California Department of Forestry and Fire Protection
California PUC	California Public Utilities Commission
CEC	Colorado Energy Consumers
CO-WRAP	Colorado Wildfire Risk Assessment Portal
Commission	Colorado Public Utilities Commission
CPCN	Certificate of Public Convenience and Necessity
DOE	Department of Energy
DSAP	Defensible Space Around Poles
EEI	Edison Electric Institute
EPRI	Electric Power Research Institute
FERC	Federal Energy Regulatory Commission
GIS	Geographic Information System
GPS	Global Positioning System
HIF	High-Impedance Fault

IR	Infrared Inspections
LiDAR	Light Detection and Ranging
LTE	Long-Term Evolution
MHT	Mountain Hazard Tree
NESC	National Electric Safety Code
OCC	Office of Consumer Counsel
OHSI	Overhead Safety Inspection
O&M	Operations and Maintenance
PSPS	Public Safety Power Shut-Offs
Public Service or the Company	Public Service Company of Colorado
ROW	Right-of-Way
SCADA	Supervisory Control and Data Acquisition
SCE	Southern California Edison
SDG&E	San Diego Gas & Electric
Staff	Trial Staff of the Colorado Public Utilities Commission
TCA	Transmission Cost Adjustment
UAS	Unmanned Aerial Systems
Wildfire Settlement Agreement	Unopposed Partial Settlement Agreement
WMP or Plan	Wildfire Mitigation Plan
WPR	Wildfire Protection Rider
WRA	Western Resource Advocates
WRZ	Wildfire Risk Zone
WUI	Wildland Urban Interface

Xcel Energy	Xcel Energy Inc.
XES	Xcel Energy Services Inc.

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I. INTRODUCTION, QUALIFICATIONS, PURPOSE OF TESTIMONY, AND RECOMMENDATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Sandra L. Johnson. My business address is 1123 West 3rd Avenue, Denver, Colorado 80223.

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

A. I am employed by Xcel Energy Services Inc. ("XES") as Wildfire Mitigation Project Director. XES, which is a wholly-owned subsidiary of Xcel Energy Inc. ("Xcel Energy"), provides an array of support services to Public Service Company of Colorado ("Public Service" or the "Company") and the other utility operating company subsidiaries of Xcel Energy on a coordinated basis.

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

A. I am testifying on behalf of Public Service.

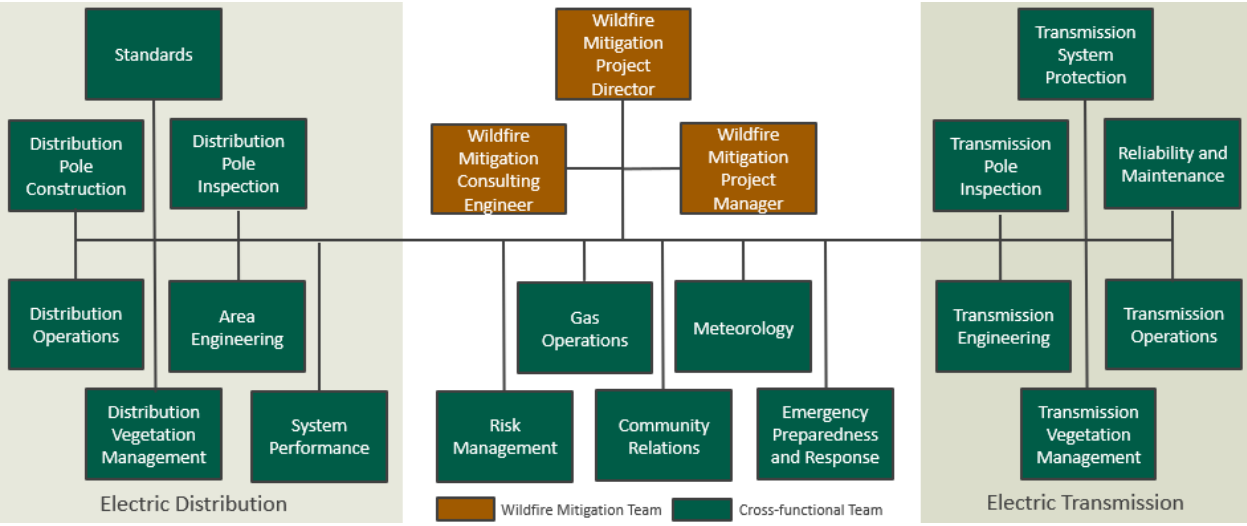
Q. PLEASE SUMMARIZE YOUR RESPONSIBILITIES AND QUALIFICATIONS.

A. My role is to provide oversight, direction, and execution of Public Service's Wildfire Mitigation Program. My background is in the electric utility industry and I hold both Bachelor of Science and Master of Science electrical engineering degrees. My utility career began with Public Service. My previous roles involved the planning, execution, and provision of overall leadership and strategic vision of multiple complex, multi-year, and capital-intensive stakeholder-driven projects and programs. In my previous role with XES I served as the Director of Transmission Asset Management.

Q. PLEASE EXPLAIN YOUR DUTIES AND RESPONSIBILITIES.

A. As Wildfire Mitigation Project Director, I am responsible for all aspects of Public Service's Wildfire Mitigation Program and Wildfire Mitigation Plan ("WMP" or "Plan") development, capital and expense management, and execution. I lead a cross-functional, Company-wide team of subject matter experts from the Distribution Engineering and Operations, Transmission Engineering and Operations, Gas Operations, and Corporate functional areas. The subject matter experts from their respective areas are responsible for individual projects and activities that together comprise the Company's Wildfire Mitigation group. Figure SLJ-D-1 below depicts how the Company's Wildfire Mitigation cross-functional team is resourced. A description of my qualifications, duties, and responsibilities is set forth after the conclusion of my Direct Testimony in my Statement of Qualifications.

Figure SLJ-D-1: Wildfire Mitigation Organizational Chart



Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my Direct Testimony is to describe the activities leading up to this updated, comprehensive WMP filing, sponsor Public Service's WMP, and present and explain the costs the Company proposes to recover through its proposed Wildfire Protection Rider ("WPR"). First, I provide background, including the origins of the WMP and the Company's wildfire mitigation efforts. I then describe the procedural background related to Public Service's 2019 WMP filing, including the Unopposed Partial Settlement Agreement ("Wildfire Settlement Agreement") that resolved issues that were raised with respect to wildfire mitigation in the Company's 2019 Electric Rate Case in Proceeding No. 19AL-0268E. I summarize the actions the Company has taken since filing its 2019 WMP and entering into the Wildfire Settlement Agreement. I then present the Company's updated WMP and describe the various components of the Plan, including the purpose, the objectives, and the various programs within the Plan.

Finally, I present costs associated with this WMP that Public Service seeks to recover through the WPR.

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

A. I recommend that the Colorado Public Utilities Commission ("Commission") approve the WPR. I also recommend the Commission approve the Company's WMP, finding it to be reasonable and in the public interest.

Q. COULD YOU DEFINE SOME OF THE KEY TERMINOLOGY YOU USE IN YOUR DIRECT TESTIMONY?

A. Yes. For purposes of my Direct Testimony, the table below explains some of the terminology I use in my testimony:

Table SLJ-D-1: Wildfire Mitigation Terminology

Wildfire Mitigation Program	The Wildfire Mitigation Program refers to the collection of individual projects that comprise the Plan.
Wildfire Mitigation Plan (WMP)	The WMP refers to both the 2019 Plan and the Company's planned wildfire mitigation efforts over the next five years, which are synthesized into the Plan attached to my Direct Testimony as Attachment SLJ-1.
Wildfire Risk Zone (WRZ)	As explained in the Wildfire Mitigation Plan, the Wildfire Risk Zone ("WRZ") is the geographic area of focus where the Company will execute its WMP. We developed the WRZ based on data from the Colorado Wildfire Risk Assessment Portal ("CO-WRAP"). A map of the Xcel Energy WRZ is provided as Attachment SDR-3 to Mr. Steve D. Rohlwing's Direct Testimony and further discussed in the WMP.

Wildfire Protection Rider (WPR)	The WPR is the Company's proposed annual rider through which it would recover the eligible costs associated with implementing its approved WMP.
Wildfire Mitigation Team	The WMT consists of those employees who work in the Wildfire Mitigation department and does not include the extended cross-functional team members.

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

A. Yes, I am sponsoring the following attachments, which were prepared by me or under my direct supervision:

- Attachment SLJ-1: Public Service's updated WMP;
- Attachment SLJ-2: Public Service's detailed WMP budget forecasts;
- Attachment SLJ-3: 2019 WMP Metrics Reporting; and,
- Attachment SLJ-4: Technical terms and definitions.

II. BACKGROUND

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

A. In this section of my Direct Testimony, I provide background information about the Company's wildfire mitigation efforts to date, including the Wildfire Settlement Agreement approved as part of the Company's 2019 Electric Rate Case, Proceeding No. 19AL-0268E. I summarize the Company's progress and accomplishments, lessons learned, completed and planned activities, and identify industry emerging technologies and best practices. Finally, I describe the Company's community and stakeholder engagement processes and discuss how the Company is tracking and reporting on the metrics that we agreed to in the Wildfire Settlement Agreement.

Q. COULD YOU DESCRIBE THE PROCESS THAT RESULTED IN THE 2019 WMP?

A. Customer safety has always been a central focus of the Company. Since the devastating California wildfires in 2017, utilities outside of California, including Public Service, have been taking a renewed and very serious look at how their own utilities could contribute to the risk of fires. In early 2018 the Company began to study what types of additional or accelerated projects could further mitigate the risks of utility-caused ignitions.

Through its efforts, the Company determined that accelerated and incremental actions in three main categorical areas can further promote public safety and systematically mitigate the risk of ignition from electrical infrastructure. Those three categories include:

- ***Engagement*** - increased engagement with local, county, and state entities to facilitate more coordinated planning and mitigation efforts across organizations and ensure our customers, communities, and emergency response responders are aware and informed of the Company's operations, existing procedures, and WMP;

- ***Technology*** - equipment upgrades and increased use of technology, including extreme wind loading conditions analyses involving an increased collection of Light Detection and Ranging ("LIDAR") data, to enable the Company to systematically mitigate the risk of electrical infrastructure starting a wildfire, as well as the use of Unmanned Aerial Systems to provide detailed pole top inspections;

- ***Acceleration*** - accelerating certain utility practices that mitigate wildfire risk, like routine pole inspections and replacements for example, in areas designated as Public Service's WRZ based on data from the Colorado State Forest Service, from traditional timeframes to shorter cycles presented a prudent measure to undertake to promote public safety and environmental stewardship in light of increasing intensity and frequency of wildfires in the state and expanding WUI exposure.

In July of 2019, the Company formally assembled a Wildfire Mitigation Team, which I now lead, to execute plans and continue to explore the various options Public Service could undertake in Colorado to mitigate wildfires. The Wildfire Mitigation Team now includes an engineer and project manager and provides direction with respect to the wildfire projects to the Company's Electric Distribution Standards, Performance, and Area Engineering groups, as well as the Transmission and Gas, Vegetation Management Experts, Risk Management, Community Relations, Sighting and Land Rights, Transmission Operations, Distribution Operations, and Pole Management groups.

We filed our first WMP as part of our 2019 Electric Rate Case (the "2019 WMP"), placing an emphasis on public safety, environmental stewardship, and

stakeholder engagement. The Company's updated, comprehensive WMP continues to build deeper on these concepts.

Q. WHY WAS THE WMP INCLUDED IN THE 2019 ELECTRIC RATE CASE?

A. The 2019 WMP was provided to support the Company's proposed cost recovery request associated with its planned wildfire mitigation efforts from 2019 through 2023. As part of its direct case, the Company included distribution capital additions and distribution and transmission O&M for its wildfire mitigation and WMP activities for 2019. The Company also sought deferred accounting treatment for 2020-2023 distribution capital costs and 2020-2023 distribution and transmission O&M related to its WMP above the 2019 incremental O&M levels included in the Company's cost of service.

Q. WHAT WAS THE RESULT OF THE FILING?

A. In November 2019, parties to the 2019 Electric Rate Case reached agreement on the Wildfire Settlement Agreement, which resolved issues raised in the 2019 Electric Rate Case with respect to wildfire mitigation. The Settling Parties agreed to recovery of incremental 2019 wildfire mitigation costs, which included $5.7 million in 2019 distribution capital additions and $5.0 million in 2019 distribution and transmission O&M. The Company relinquished its request for deferred accounting treatment for 2020-2023 distribution capital costs and 2020-2023 distribution and transmission O&M related to its WMP, and parties agreed the Company would a file a new Plan on or before August 1, 2020. My Direct Testimony supports the Company's updated WMP and supports the Company's associated cost recovery request.

Q. WHAT OTHER ACTIONS HAS THE COMPANY TAKEN SINCE ENTERING INTO THE WILDFIRE SETTLEMENT AGREEMENT?

A. The Company has continued to execute its WMP outlined in the 2019 Electric Rate Case, by both complying with the requirements of the Wildfire Settlement Agreement and continuing to implement the programs described in that proceeding, as well as introducing a number of new programs, which I discuss later in my testimony. Some of the significant activities include:

- Stakeholder engagement;
- Refining the WMP;
- Detailed analysis of inspections and studies;
- Hiring a Wildfire Consultant;
- Initiating new targeted studies and programs; and,
- Initiating new replacement programs.

Q. WHAT HAS THE COMPANY DONE WITH REGARD TO STAKEHOLDER ENGAGEMENT SINCE FILING THE WILDFIRE SETTLEMENT AGREEMENT IN 2019?

A. Public Service remains committed to keeping its customers and key stakeholders informed of its wildfire mitigation activities. Since the 2019 Electric Rate Case filing, the Company has completed numerous community and stakeholder activities with multiple groups. First, we have continued to meet with the county governments where wildfire mitigation activities are currently taking place to provide an overview of our related activities and provide an open forum for information exchange. As of the time of this filing, we have met with fourteen

counties this year. Second, we have actively participated in several local community wildfire preparedness and response committees' coalitions and task forces. Those meetings are summarized in the following table, Table SLJ-D-2.

Table SLJ-D-2: 2020 Community Outreach Meetings

Date	Meetings through July 15, 2020
3/2/20	Boulder Multi-Agency (MAC)
3/3/20	Clear Creek County Board of County Commissioners
3/5/20	Gilpin County Commissioners Meeting
3/13/20	Boulder County Sheriff's Office Wildland Firefighting Training
3/17/20	Summit County Board of County Commissioners
3/19/20	Jefferson County Wildfire Risk Reduction Task Force
3/30/20	Lake County Board of County Commissioners
4/7/20	Summit County Board of County Commissioners
4/16/20	Conejos County Board of County Commissioners
4/20/20	Rio Grande County Board of County Commissioners
4/21/20	Jefferson County Board of County Commissioners
5/11/20	Chaffee County Board of County Commissioners
5/11/20	Garfield County Board of County Commissioners
5/13/20	Alamosa County Board of County Commissioners
6/2/20	Costilla County Board of County Commissioners
6/3/20	Xcel Energy Virtual Town Hall
6/4/20	Boulder County Forest Collaborative
6/8/20	Xcel Energy Virtual Town Hall
7/7/20	Upper Clear Creek Watershed Association
7/7/20	Saguache County Board of County Commissioners
7/9/20	Upper Clear Creek Watershed Association

In addition, the Company is leading the state's utility wildfire mitigation efforts through the formation of a wildfire mitigation Colorado utility group with seven other electric facility owners and operators in Colorado. These entities

include Tri-State Generation and Transmission, Western Area Power Administration, Platte River Power Authority, Intermountain Rural Electric Association, United Power, Holy Cross Energy, Black Hills Energy and Colorado Springs Utilities, referred to jointly as the "Colorado Utilities". The Company hosted its initial meeting of the Colorado Utilities in January of this year in which overall WMP initiatives were shared by all participants. A second meeting was held in May to continue discussions and the sharing of plans, best practices, and lessons learned. Next, the Company has directly engaged with the public at large through two virtual town hall meetings in early June 2020 where we shared our updated WMP and fielded multiple questions from the participants. Additionally, the Company engaged with Commission Staff in February of 2020 to provide a more in-depth program description and brought multiple subject matter experts to answer any questions posed by Commission Staff.

Finally, in accordance with the terms of the Wildfire Settlement Agreement, the Company met in April and June of this year with the various parties to the Wildfire Settlement Agreement, including Commission Staff, the Colorado Office of Consumer Counsel, the American Association of Retired Persons, Colorado Energy Consumers, the City and County of Boulder, the Department of Energy/Federal Executive Agencies, Vote Solar, the International Brotherhood of Electrical Workers, and Western Resource Advocates, who are collectively referred to as the "Settling Parties". At that meeting, representatives from the Company provided a summary of its 2019 activities and proposed 2020 activities, as well as an overview of the updated WMP, program spend, and the

Company's filing plan. The following table, Table SLJ-D-3, summarizes by date the meetings held with the various stakeholder groups.

Table SLJ-D-3: 2020 Stakeholder Group Meetings

Date	Meeting
1/10/20	Colorado Utilities Wildfire Mitigation Summit
2/7/20	Staff of the Commission
4/6/20	Settling Parties- Stakeholder Meeting #1 (Virtual)
4/20/20	Colorado Utilities-Wildfire Mitigation Summit (Virtual)
6/3/20	Town Hall Meeting #1 (Virtual)
6/8/20	Town Hall Meeting #2 (Virtual)
6/10/20	Settling Parties- Stakeholder Meeting #2 (Virtual)

Q. WHAT OTHER PROGRESS HAS THE COMPANY MADE WITH RESPECT TO ITS WILDFIRE MITIGATION EFFORTS SINCE FILING ITS 2019 ELECTRIC RATE CASE?

A. The Company has been actively implementing all programs as outlined in the 2019 Electric Rate Case and has either met or exceeded nearly all of its goals included in the 2019 WMP. In 2019, the Company accomplished the following:

- 2,900 miles of transmission line inspected via ground and aerial patrol (100 percent of circuits in the WRZ);
- 2,900 miles of transmission line and equipment infrared ("IR") inspected;
- Four transmission circuits with 511 transmission structures analyzed for extreme wind loading conditions;
- 72 transmission defects corrected;
- 2,851 transmission wood poles intrusively inspected;
- 66,681 distribution wood poles intrusively inspected;
- 2,305 distribution wood poles replaced due to groundline inspection rejects;
- Began replacements of fuses and arresters;

- System protection study completed, and engineering initiated for 85 additional reclosers;
- Removed or mitigated hazard trees from an additional 20 circuits;
- Collected LIDAR data via helicopter for 20 distribution segments and began wind loading analysis;
- Completed IR inspections on 430 distribution feeder miles;
- Completed initial study for enhanced above groundline ("AGL") inspections on 792 distribution poles; and,
- Engaged with 14 counties and three community organizations as part of Public Service's wildfire community outreach efforts.

Q. WHAT NEW PROGRAMS ARE PLANNED UNDER THE COMPANY'S UPDATED WMP?

A. Public Service initiated several new distribution replacement programs that will begin in 2021. These include:

- Covered conductor program (2021);
- Bare secondary conductor replacement (2021-2022); and
- Small conductor replacement (2021-2025)

In addition, is the Company has added one new transmission program as a result of the 2019 Wind Strength Analysis Program called the Major Line Rebuild (conditions-based) program.

I describe each of these in more detail below.

Q. DID THE COMPANY ALSO INITIATE OR DOES IT HAVE PLANS TO INITIATE ANY NEW PROGRAMS IN 2020?

A. Yes, the Company has initiated the following two targeted distribution programs in 2020:

- Enhanced AGL inspection program utilizing unmanned aerial systems ("UAS"): A System Protection study that will allow Engineering, Operations, and Construction an opportunity to test the planned and budgeted System Protection programs; and,

- Risk Model Behavior Modeling program: A new study utilizing wildfire risk behavior modeling software to further analyze areas of highest wildfire risk.

I describe each of these in more detail below.

Q. PLEASE EXPLAIN THE COMPANY'S DECISION TO ENGAGE A PROFESSIONAL FIRE CONSULTANT.

A. In the 2019 Electric Rate Case, Staff recommended that we have the 2019 WMP reviewed by a utility wildfire professional. As mentioned in my Rebuttal Testimony in that proceeding, the Company did engage with a former San Diego Gas & Electric Company ("SDG&E") utility fire expert to advise on its 2019 Plan. However, we agree that having additional input and guidance from a wildfire professional would be valuable. In early 2020, the Wildfire Mitigation Team began seeking additional outside utility wildfire expertise to inform this updated WMP. In May of 2020, the Company retained Randy Lyle, a recently retired SDG&E Fire Science and Coordination Program Manager, who is currently providing consulting services to Public Service through EDM International, Inc. As Mr. Lyle explains in his Direct Testimony, he began his employment with SDG&E just prior to the catastrophic 2007 San Diego wildfires that led to the development of the first wildfire mitigation plan in the utility industry. Mr. Lyle also spent 32 years with the California Department of Forestry and Fire Protection ("CAL FIRE"), where he retired as Division Chief. His full qualifications are provided in his Direct Testimony in this proceeding.

The Company has retained Mr. Lyle to review and provide input to all aspects of its updated WMP. Mr. Lyle has met with multiple Company subject matter experts to discuss details of the program methodologies and initiatives including: risk assessment, inspections, system hardening, vegetation, operational practices and response plans. Mr. Lyle summarizes his experience and findings in his Direct Testimony.

III. PUBLIC SERVICE'S 2020 WILDFIRE MITIGATION PLAN (WMP)

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

A. In this section of my Direct Testimony, I walk through the Company's updated WMP, provided as Attachment SLJ-1 to my Direct Testimony. I will identify key components of the Plan and explain the various programs and projects included in the Plan. I also discuss how this Plan builds on and differs from our 2019 Plan.

Q. PLEASE PROVIDE AN OVERVIEW OF THE COMPANY'S UPDATED WMP.

A. Our WMP continues to include basic, good utility practice and builds on the 2019 WMP. The number one objective of the Plan is to protect public safety through minimizing the risk of the Company's equipment being the potential source of a wildfire ignition. The Plan will accomplish this through enhanced system inspections, incremental vegetation management programs, infrastructure or system hardening, situational awareness, training, stakeholder engagement, evaluation of new technologies, and operational practices. These initiatives enhance overall system reliability and resiliency by reducing the likelihood of outages. The Plan also includes the proactive exploration of existing and emerging wildfire mitigation tools through the implementation of programs in targeted parts of the system. Through these efforts, we are actively gathering copious amounts of data about our system so that we can measure our performance and evaluate, track, and mitigate wildfire risk going forward.

In developing the Plan, the Company's Wildfire Mitigation Team has conducted exhaustive research, analysis, and engagement. We have

collaborated with leading utilities, consultants, fire professionals, and local and federal government agencies. We have engaged with trade groups, reviewed academic and industry research, and worked across virtually every division within the Company to understand our vulnerabilities when it comes to wildfire.

The WMP includes new, accelerated, and enhanced programs that will be carried out through 2025. Below is a summary of the core components of the Plan:

- **Repair and Replacement Programs.** These include: Bare secondary conductor replacement (new), covered conductor installation (new), distribution pole repair/replacement (accelerated), equipment upgrades (cutouts, arresters, etc.) (new), overhead rebuilds of small conductor (new), high priority defect correction (accelerated), and major line rebuilds (accelerated).

- **Inspection, Modeling, and Asset Data Gathering**. This includes the following subcategories of work: AGL inspections (enhanced), IR inspections (new), overhead secondary open wire quantification (new), overhead inspection (new), pole inspection (distribution) (accelerated), risk modeling development (new), situational awareness tools, structure wind strength reviews, and annual visual inspections (new).

- **Protection Programs.** These include the following subcategories of work: Advanced Distribution Management System ("ADMS") enhanced system protection (new), protection study for feeders (new), recloser communications network (new), substation relay communications upgrade (new), substation relay upgrade for remote non-reclosing (new), and design and install revised protection schemes (new).

- **Expanded Vegetation Management.** This includes: incremental Mountain Hazard Tree Program actions (enhanced), creating a defensible space around poles ("DSAP") or pole brushing on equipment poles (new), secondary voltage line clearance (new), and right-of-way ("ROW") vegetation type conversion (enhanced).

- **Metrics, Tracking, and Reporting.** To measure WMP performance over time, the Company will track and measure multiple metrics. These will include plan and cost performance metrics in addition to a set of metrics designed to measure plan efficacy, or wildfire risk reduction, over time as

programs are implemented.

- **Ongoing Assessment of Other Activities for Future Consideration.** In addition to the core components of the Plan described above, the Company will continue to study new, emerging, and evolving technologies and practices that it will consider for future implementation in conjunction with the Plan. For example, the Company is considering how or when Public Safety Power Shut-Offs ("PSPS") should be considered within Public Service's service territory. The Company is also actively studying potential applications for technologies like microgrids, storage, and additional use of drones in strategic locations throughout the WRZ. While the Company is not proposing to implement any of these particular practices or technologies at this time, it may bring them forward for future inclusion in the WPR.

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

Q. HOW DOES THE PLAN TAKE RESILIENCY AND SYSTEM HARDENING INTO ACCOUNT?

A. System hardening has become a common term in wildfire mitigation and can cover a broad spectrum of programs that improve the strength of the electrical grid. In the context of wildfire mitigation, system hardening involves all activities focused on preventing Company facilities from causing an ignition as well as those that improve overall system reliability and resiliency. It incorporates activities to safeguard the electric system against extreme conditions. In addition to ensuring public safety, companion goals of the WMP are to ensure the electric transmission and distribution systems possess the structural integrity to

withstand hazardous environmental conditions, to be able to further sectionalize the grid providing additional operational flexibility, and to prevent interference of vegetation onto energized facilities. Multiple elements of the WMP address aspects of system hardening, and the Plan's programs are synchronized to provide a comprehensive approach to an ignition resistant infrastructure. Within our Plan, we have two primary initiatives that will focus on system hardening. One is the repair and replacement of equipment identified through inspection or system studies. The other is-enhanced vegetation management.

Q. YOU MENTIONED THAT CALIFORNIA'S EXPERIENCE HAS INFLUENCED THE COMPANY'S WILDFIRE MITIGATION EFFORTS. CAN YOU BRIEFLY EXPLAIN HOW PUBLIC SERVICE HAS CONSIDERED CALIFORNIA'S EXPERIENCE IN CRAFTING ITS WMP?

A. Over the past couple years, the Company has actively monitored proceedings, events, and plans related to wildfire issues. This includes monitoring the various rulemakings and regulatory actions, legislative actions, and utility plan submissions, along with engagement on a technical level with several California utilities and stakeholders. Public Service has taken all of these experiences into consideration in developing its updated WMP. While Public Service's WMP compares favorably to ongoing California programs, as Mr. Lyle explains, there is no one-size-fits-all approach for utilities, and we have therefore scaled our WMP to the threat and likely consequence of a utility-equipment-caused wildfire in Colorado. In addition to adopting many of the technical and programmatic

approaches that are being employed by California utilities, a couple of the key takeaways we have gleaned from California include:

- The extreme importance of advance planning and preparation;
- The importance of intelligently designing and standardizing appropriate WMP metrics, to ensure the various programs included in the Company's WMP are effectively working to reduce wildfire risk in a cost-effective manner;
- Development of advanced risk assessment and situational awareness tools;
- The benefits of operational protocols to effectively minimize risk of equipment caused ignitions; and,
- The importance of regulator, utility, and stakeholder engagement and alignment on utility wildfire mitigation initiatives.

With this backdrop in mind, I will now turn to the WMP, and discuss the key programs and activities included in our updated WMP. For reference, Attachment SLJ-4 contains a list of some of the technical terms and definitions used in the Plan and throughout the Company's Direct Case.

IV. INSPECTION, MODELING, AND ASSET DATA GATHERING PROGRAM

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

A. The purpose of this section of my testimony is to describe the various inspections that are included in the Plan, which are incremental to current ongoing work. There are three categories: new inspection programs, enhancements to existing inspection programs, and accelerated existing inspection programs compared to those programs already conducted as part of normal course of business. In addition, I will describe some of the modeling and system studies included in the WMP that inform the replacement programs.

Q. PLEASE SUMMARIZE THE COMPANY'S INSPECTION, MODELING AND ASSET DATA GATHERING PROGRAM INCLUDED IN THE WMP.

A. The Company has added comprehensive inspection, modeling, and data collection programs that provide data and allow it to understand the condition of its assets, especially within the WRZ. This data provides the basis for various repair and replacement programs, which I discuss in Section V. below. The data includes identification of deficiencies *via* the various inspections we are undertaking, and classification of assets by age, size, type of construction, and strength. Many types of inspections are included in the Company's normal course of business, but enhanced or accelerated inspection programs for wildfire mitigation include: AGL Inspection (Distribution), IR Inspection (Distribution and Transmission), Overhead Secondary Open Wire Quantification (Distribution), Overhead Inspection (Distribution), Pole Inspection (Intrusive Groundline Pole Inspection) (Distribution and Transmission), Risk Modeling Development

(Distribution), Situational Awareness Tools (Distribution), Wind Strength Review (Distribution and Transmission), and Annual Visual Inspection (Transmission).

Q. CAN YOU INDICATE WHICH INSPECTION PROGRAMS ARE INCREMENTAL OR ACCELERATED FROM ROUTINE WORK?

A. Yes. The following table depicts which inspection programs are categorized as transmission and distribution, as well as which are incremental to (i.e., new or in addition to) routine, ongoing work.

Table SLJ-D-4: WMP Inspection and Modeling Programs

Public Service - Electric WMP Transmission and Distribution Inspection and Modeling Programs			
Project	**Incremental**	**Transmission**	**Distribution**
AGL Inspection	x		x
Infrared	x	x	x
Overhead Safety Inspection	x		x
Open Wire Quantification	x		x
Overhead Inspection	x		x
Intrusive Pole Inspection	*Accelerated for Distribution*	x	x
Risk Modeling Development	x		x
Situational Awareness Tools	x		x
Wind Strength Review	x	x	x
Annual Visual Inspection	*Accelerated*	x	

Q. PLEASE DESCRIBE THE GROUNDLINE INTRUSIVE INSPECTION PROGRAM.

A. The Groundline Inspection Program, also referred to as the Intrusive Groundline Pole Inspection program, consists of inspecting wood distribution and transmission poles. The inspection process generally consists of excavating around the pole up to eighteen inches, then drilling into the pole to identify and

measure any weaknesses of decay, weathering, or other physical damage at the groundline. These weaknesses compromise a pole's strength and render it unsuitable for reliable continued service. Decayed and weakened poles can fail, causing the energized conductors they are supporting to contact other objects or surfaces. In turn, this can result in fire initiation. Periodic inspection of wood poles followed by corrective action supports the safe and reliable supply of electric power. Our intrusive inspection program ensures that all wood poles within the WRZ have inspections on cycle to evaluate their structural integrity. The Groundline Intrusive Pole Inspection Program was included in the 2019 WMP and this updated WMP because the work was accelerated from normal cycle work to focus on and address poles in the WRZ. Future intrusive inspections of the poles in the WRZ will fall into normal cyclical work beginning in 2021 and are not included in the incremental programs going forward.

Q. WHAT IS INCLUDED IN AGL INSPECTIONS?

A. The Groundline Intrusive Pole Inspection Program includes an Overhead Safety Inspection ("OHSI"), which is a visual evaluation from the ground level conducted by the crews during the intrusive groundline inspection process. These overhead inspections provide an initial look at the pole top for obvious defects and safety concerns. All visualized deficiencies are captured and remediated through normal work processes. Poles that appear to have imminent hazards are reported and remediated. Poles that are suspected to have additional concerns that do not pose immediate safety issues, such as pole top rot, cross-arm rot,

and broken conductor strands are flagged for a more detailed, or enhanced AGL inspection.

Q. WHAT IS INCLUDED IN THE ENHANCED AGL INSPECTIONS?

A. The enhanced AGL inspections expand the initial OHSI process to provide for a detailed evaluation of the pole top equipment, such as the pole top itself, cross-arms, transformers, insulators, wildlife protection, and guying systems. These components are examined to determine risk of failure due to deterioration caused by aging, wildlife, and environmental conditions, or to determine which components may have suffered damage from external forces such as trees falling against lines or vehicle damage to guy lines. For these inspections, an Unmanned Aerial System ("UAS") pilot captures imagery of the pole from multiple angles, including from the top of the facility, to identify any deficiencies on the top surface of the pole or cross-arm, such as rot, which cannot be viewed from the ground level. The imagery is then reviewed by a qualified inspector who identifies any deficiencies on the pole or any attachments on the facility. Deficiencies identified through inspection will then be addressed through the repair and replace programs.

Q. PLEASE EXPLAIN THE NEW IR INSPECTION PROGRAM INCLUDED IN THE WMP.

A. Infrared ("IR") inspections use thermal imaging technology to identify thermal hotspots in electrical connections and equipment. The purpose is to proactively look for potential issues and thermal hotspots on electrical connections and equipment that cannot be seen during traditional visual inspections. Thermal

hotspots often indicate faulty or failing components such as conductor splices, connectors, and hardware that could lead to equipment failure, thereby sparking an ignition. As part of the WMP, qualified inspectors will conduct distribution and transmission surveys using thermal cameras to locate thermal hot spots. When a hotspot is identified, a profile is created with pictures and results. The results of the inspection will be analyzed, and work orders will be generated to repair or replace these assets. By performing these inspections and associated repairs, the risk of device failure – and in turn, the risk of ignition – can be remediated before it occurs. This ultimately mitigates ignition risk, improves safety, and reduces costs.

Q. PLEASE EXPLAIN THE OVERHEAD SECONDARY OPEN WIRE QUANTIFICATION PROGRAM.

A. This is a distribution inspection program that is part of a collection of data to ensure the completeness and accuracy of the Company's Geographic Information System ("GIS") system. This inspection is a ground survey, which collects attribute details of the distribution secondary conductor. The data is then used to update the GIS. The survey was conducted in 2019 and early 2020 and identified 68 miles of bare or open secondary conductor in the WRZ that will require replacement with an insulated conductor to minimize risk of ignition. The companion replacement project for this quantification project is the Bare Secondary Conductor Replacement Program, which I discuss in more detail below.

Q. PLEASE EXPLAIN THE RISK MODELING THE COMPANY PLANS TO UNDERTAKE AS PART OF THE WMP.

A. "Wildfire spread modeling" is state-of-the-art software that will predict fire behavior. It takes into account current and forecasted weather information and ground fuel conditions for specific locations to predict where a fire might spread, and estimates the consequences of the spread, continually identifying the areas and assets with the greatest risk. The Company is currently negotiating a contract with Technosylva,[1] an industry leader in wildfire modeling software. The software conducts millions of simulations daily that quantify potential impacts to buildings, population, utility assets, and critical facilities. It monitors risk real-time, thereby assisting the Company in being able to make operational decisions to minimize the risk of a wildfire. In addition, the software predicts real-time fire spread, taking into account any current fires in or near the Company's service territory. The simulation will inform Public Service of the possible consequences of a specific fire, which can inform operator actions. The objective is that through the study period, significant data will be gathered, based on the millions of simulations, that will both validate the existing static wildfire risk model and further inform our ongoing WMP. For example, the simulation results can identify the assets that, should a fire be initiated there, would cause the greatest consequences. This is in contrast to the CO-WRAP, which provides information about where the largest consequences occur, independent of where a given fire

[1] http://www.technosylva.com.

was initiated. Knowledge of fires initiated from assets that could cause the most harm will enhance the Company's mitigation efforts, better enabling us to prioritize inspections, replacements, and the development of operational procedures for those locations that would have the most impacts to surrounding areas in the event of a fire. Company witness Steven D. Rohlwing describes further how this software will be utilized from a corporate risk perspective.

Q. PLEASE EXPLAIN THE SITUATIONAL AWARENESS TOOLS PUBLIC SERVICE PLANS TO UTILIZE.

A. Situational Awareness tools cover a broad range of systems that inform operational and/or response actions for both the transmission and distribution systems. Currently, the Company's meteorologists provide pertinent weather data such as Red Flag Warning or High Fire Risk based on information gathered from various public sources, such as the National Weather Service. That information covers the entire state of Colorado, and for our WMP, the meteorology team overlays the weather warnings over the WRZ. Included in the notification are guidelines for Fire Safe work practice behaviors. On weekdays, Company meteorologists monitor the weather and provide information to the Wildfire Mitigation Team and internal employees. The Wildfire Mitigation Team distributes this information to all external contractors and vendors who are asked to review and adhere to any prescribed work practices such as no welding and grinding, no smoking or driving vehicles on dry vegetative areas during Red Flag Warning days.

Additionally, the Technosylva Risk Modeling/Fire Spread Modeling program I previously described will allow System Operators to predict spread of fires in or near our service territory real-time. The program is also a situational awareness tool because it can simulate fire starts at any of our equipment assets to determine fire spread consequences. The Wildfire Mitigation Team will continue to evaluate the addition of situational awareness tools, such as incorporating a select few optimally-placed weather stations to provide current, location-specific weather data. Prior to implementing any operational protocols that would impact electric reliability, having the most up-to-date localized weather information to inform those decisions will be beneficial.

Finally, the Company will evaluate the use of cameras as a means to quickly locate wildfires and their proximity to Company assets in higher population areas. Currently Public Service relies on dispatched field personnel who verify the location and intensity of any fire. This is both time-intensive and costly and will be studied further as more data is gathered.

Q. PLEASE EXPLAIN THE WIND STRENGTH REVIEW.

A. The Wind Strength Review Program will help ensure that our lines can withstand the increased loadings that can happen with strong winds. This reduces the likelihood of a structure failure and subsequent wildfire ignition potential. The Company follows the National Electric Safety Code ("NESC") standards that define the wind loadings that transmission and distribution structures should be constructed to. The NESC is a set of standards, utilized by major utilities, to ensure the safe installation, operation, and maintenance of electric power

systems. For the transmission wind strength review, the Company analyzed four transmission circuits representing a variety of voltage levels and structure types.

Our transmission analysis concluded that several locations on one 69 kV line had suspect clearance and/or wind loading issues that require additional review. However, there were no significant issues identified on the other three circuits analyzed greater than 100kV.

For the distribution analysis, to the Company conducted LIDAR analysis *via* helicopter to gather data and model the as-built feeder system. The Company selected 20 segments throughout the WRZ, representative of the entire system, to gain insight into whether the results differed based on geographic area. Once the system was modeled, analysis was conducted to determine if the feeders met both the current clearance and NESC wind loading criterion. The results indicated that for the 20 segments, approximately 93 percent met or exceeded wind loading criteria and 88 percent met current clearance criteria. The Company will evaluate the remaining segments to determine course of actions including pole replacements are required. In addition, the study resulted in predictive analysis that allows us to prioritize the next segments to gather data, model and analyze.

Q. PLEASE EXPLAIN THE ANNUAL VISUAL INSPECTION PROGRAM.

A. The Company has added an annual foot patrol to visually inspect the 2,900 miles of transmission in the WRZ. This was a new inspection included in the 2019 Plan and is currently planned through 2025. We completed the 2,900 miles in 2019 and we are on track to complete 2,900 miles in 2020. The Company will

evaluate its on-going cycle frequency based on system health observed and industry best practices.

Q. ARE THERE ANY INSPECTION PROGRAMS INCLUDED IN THE UPDATED WMP THAT WERE NOT PREVIOUSLY REFLECTED IN THE 2019 WMP?

A. The AGL Distribution Pole Inspection Program was not included in our 2019 WMP budgets because we only conducted a small study in 2019 utilizing area engineers and interns. We have, however, included it as part of the 2020 and 2021 forecasted budgets, and as an enhancement to the 2019 WMP. This will be conducted by outside contractors utilizing drones and virtual inspections. Public Service is forecasting it will inspect roughly 9,000 poles in the WRZ in 2020 and another 10,000 in the WRZ in 2021.

In addition, beginning in 2022, the Company is adding an Overhead Inspection for its distribution poles in the WRZ, which will be conducted via ground patrol. This will occur on a three-year cycle with the intent of visiting every pole in the WRZ within four years. Given that the Groundline Intrusive Pole Inspection Program has a 12-year cycle, and is based on industry benchmarking, the Company determined that more frequent visual inspections will help mitigate major safety concerns on the 95 highest risk feeders in the WRZ. The inspection will be similar to the Transmission Annual Visual Inspection activity conducted via foot patrols where a lineman or qualified inspector drives or walks the Company's Distribution feeders to look for safety hazards that may pose either a safety or a reliability concern. These inspections are incremental to the Company's routine inspections.

V. REPAIR AND REPLACEMENT PROGRAM

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

A. The purpose of this section of my Direct Testimony is to discuss the repair and replacement activities Public Service plans to undertake as part of its WMP.

Q. PLEASE GENERALLY DESCRIBE THE REPAIR AND REPLACEMENT PROGRAM.

A. The Repair and Replacement program includes the following activities:

- Pole Repair/Replacement (Distribution),
- Bare Secondary Conductor Replacement (Distribution),
- Covered Conductor Program (Distribution),
- Equipment Upgrades (cutouts/arresters, etc.) (Distribution),
- Overhead Rebuilds (Distribution),
- Small Conductor Replacement (Distribution),
- High Priority Defect Correction (Transmission), and,
- Major Line Rebuilds (Transmission).

Q. PLEASE DESCRIBE PUBLIC SERVICE'S REPAIR AND REPLACEMENT PHILOSOPHY.

A. Utility assets are no different than most any type of equipment in that eventually they will need to be repaired or replaced. This generally happens through normal inspections or when something fails. In the case of wildfire mitigation, we want to make sure that failure of equipment that has the capability of causing ignitions is minimized to the greatest extent possible. Therefore, the WMP includes more aggressive asset inspections, including accelerated and new inspections as

described previously to look for potential issues. The repair and replacement programs go hand in hand with the enhanced inspection programs. Once we discover an issue through inspections, we develop plans to repair or replace those assets.

Q. HOW WILL THE POLE REPAIR AND REPLACEMENT PROGRAM REDUCE THE RISK OF WILDFIRE WITHIN THE COMPANY'S SERVICE TERRITORY?

A. If weakened and deteriorated poles are not repaired or replaced, there are multiple modes of failure that could result in a fire ignition. Decayed and weakened poles are subject to failure at both the groundline and at the pole top (equipment and conductor component level.) Groundline failure can cause complete structure loss with the conductors and equipment coming in contact with the ground causing ignition of vegetation near or around the pole.

The utility industry has focused its research over the past decade on how the system reacts when a tree falls into a distribution line. This research, including field testing, has demonstrated that weakened poles, including those with pole top defects, have a reduced ability to withstand the impact, resulting in a pole or pole top failure. Pole top failure can result in the conductors and equipment falling to the ground causing ignition, or come into contact with each other causing arcing and or hot metal which can fall to the ground causing ignition of vegetation. There is also the potential for a pole top failure, resulting in the conductor coming into contact with the structure itself and causing an ignition of the structure. Replacing these poles is a prudent system hardening program

that will mitigate potential failures caused by a weakened pole or pole top degradation.

Q. PLEASE DESCRIBE THE POLE REPAIR/REPLACEMENT ACTIVITIES INCLUDED IN THE WMP.

A. The distribution wood pole replacement activities include replacing poles identified primarily through the Groundline/Intrusive Pole Inspections and the Enhanced AGL Inspection.

Q. ARE THERE ANY OTHER CRITERIA OR INSPECTIONS THAT CONTRIBUTE TO THE OVERALL DISTRIBUTION POLE REPLACEMENT PROGRAM?

A. Yes, there are condition/age-based replacements that are included as part of the program. In 2019, the Company began analyzing the overall age of its transmission and distribution assets, comparing age date with inspection data to draw a correlation between age and condition. As inspections have continued, more age data has become available, which has led to the Company developing a condition-based replacement program based on asset age. The data demonstrated there is a direct correlation between age and condition. Based on this, the Company has determined that replacing all poles aged 70 years and older in the WRZ is reasonable, recognizing that poles in the 66 to 70-year age category would turn 70 during the next five years, thus needing to be replaced.

Q. WHAT OTHER INSPECTION OR MODELING PROGRAMS COULD LEAD TO ADDITIONAL POLE REPLACEMENTS?

A. The on-going wind strength review will identify sections of feeders that are suspect for clearance or strength issues. To mitigate these concerns, we

estimate approximately 180 poles per year will be replaced with a higher-grade pole.

Q. HOW MANY POLES DID THE COMPANY REPLACE IN 2019?

A. In 2019, the Company replaced 2,300 distribution poles in the WRZ. The Company also replaced approximately 430 distribution wood poles that are not in the WRZ as a result of the same inspections and will continue to do so as inspections are completed through routine work practices. The Company is not seeking to recover the associated costs of any poles not in the designated WRZ through the WPR.

Q. WHAT IS PUBLIC SERVICE'S PLAN FOR REPLACING THE REST OF THE POLES THAT ARE FOUND TO BE DEFECTIVE OR DEFICIENT THROUGH THE 2020 INSPECTION PROGRAMS?

A. We plan to replace the remaining defective poles through 2021, however there may be some carryover into 2022 depending on the 2021 enhanced AGL Inspection Program results, the timing of those results, and numbers of poles found through those inspections that warrant replacements. The table below reflects the Company's estimates for all pole replacement categories through 2025.

Table SLJ-D-5: Pole Replacement Targets

Public Service – Distribution Electric Pole Replacement Target by Failure Source (Estimated Number of Poles)								
Failure Source	**2020 Poles**	**2021 Poles**	**2022 Poles**	**2023 Poles**	**2024 Poles**	**2025 Poles**	**21-25 Total**	**20-25 Total**
Groundline Inspections	2,160	400	-	-	-	-	400	**2,560**
AGL Inspection	640	3,000	670	670	670	670	5,680	**6,320**
Wind Strength Review	-	180	180	180	180	180	900	**900**
Condition/Age Based	1,000	900	370	370	370	370	2,380	**3,380**
Total	**3,800**	**4,480**	**1,220**	**1,220**	**1,220**	**1,220**	**9,360**	**13,160**

Q. PLEASE DESCRIBE THE BARE SECONDARY CONDUCTOR REPLACEMENT ACTIVITIES INCLUDED IN THE WMP.

A. This is a distribution program companion to the Secondary Wire Quantification Inspection and Modeling Program and is a new program included in our updated WMP. Open or bare secondary wire is uninsulated conductor that is no longer installed. This type of secondary wire presents a potential fire hazard because it could come in contact with vegetation and cause a spark or ignition. This Replacement program will remove the small number of miles containing identified open or bare secondary conductor in the WRZ and replace it with lashed wire which will minimize risk of ignitions due to its insulation. Through the Quantification Program initiated in 2019 and completed in April of 2020, the Company identified 68 miles of secondary wire that is planned for replacement in 2021 and 2022.

Q. PLEASE DESCRIBE THE COVERED CONDUCTOR REPLACEMENT ACTIVITIES INCLUDED IN THE WMP.

A. Covered conductor reduces wildfire risk by mitigating foreign objects, conductors on the ground, vegetation, and conductor-to-conductor contact faults, which can present sources of ignition. Given the high cost associated with covered conductor replacement, this program will focus on a group of high-risk feeders in the WRZ and will replace a portion of smaller wire conductor on two separate feeders. This includes approximately eight and a half miles of 15 kV single phase and eight miles of 25 kV three phase feeders in the WRZ that were identified through the wind study analysis as having both clearance and loading issues. Based on the performance of feeders in this focused group, we will evaluate additional covered conductor installations for additional installations in the WRZ.

Q. PLEASE DESCRIBE THE EQUIPMENT UPGRADE ACTIVITIES INCLUDED IN THE WMP.

A. Equipment upgrade activities include replacing fuses and arresters on distribution poles with newer technology fuses and arresters that do no spark when operated. When a distribution feeder experiences a fault, an overcurrent occurs and fuses on the feeder are designed to open and isolate the fault, limiting further damage to other equipment. An expulsion fuse is designed to quench the arc with water vapor from internal elements; the remaining material is extremely hot and is expelled out of the fuse tube when operated; and there are risks of ignition to any nearby vegetation when this hot material is expelled to the ground. Also,

arresters are protective devices that are installed to absorb lightning surges, keeping the surge from the conductor and equipment, and directing the excess energy to ground protecting pole top equipment such as transformers. Arresters can fail when lightning surge energy extends beyond their capacity, or due to repeated operations. The failure mode for an arrester is to become thermally overloaded and finally fault to ground. When the fault happens, a built-in isolator fires and takes the arrester off-line. This operation can expel hot parts to the ground, which can ignite any flammable material or vegetation near the pole. The CAL FIRE-exempt fuses and arresters we have selected for replacements in the WRZ have been tested and proven not to cause sparks or ignite flammable material during standard or failure modes of operations. These replacements will primarily occur programmatically with the pole replacement program to optimize workforce resources already deployed for pole replacements.

Q. PLEASE DESCRIBE THE OVERHEAD REBUILDS INCLUDED IN THE UPDATED WMP.

A. The Overhead Rebuild Replacement Program includes replacing overhead sections of conductor found to be in extremely poor condition as crews replace poles. There have been instances where conductor is found to be small, #4 or #6 copper, and during the pole replacements, the conductor breaks, requiring multiple splices to make it safe and operational. Small conductor has known fire hazard risk, and Public Service plans to eventually replace all small conductor within the WRZ as part of the WMP as described below. However, there are

times when replacing the small conductor at the time of the pole construction is warranted.

Q. PLEASE DESCRIBE THE SMALL CONDUCTOR REPLACEMENT INCLUDED IN THE WMP.

A. The Company is proposing a new system hardening program in the WRZ, primarily targeting the replacement of the #4 and #6 copper wire on its distribution system. This wire happens to be some of the earliest line construction in Public Service and the wire size is relatively small. The small size, type of material, combined with the age of the construction increases the probability that the wire will break (most frequently with contact from vegetation) and fall to the ground causing an ignition in the wildfire area. The age of the conductor has been impacted by years of accumulated damage from lightning strikes, tree contacts and phase to phase impacts, which cause pitting or other surface damage compromising conductor strength. Years of repairs can create multiple splices in one span of this conductor, making it even more susceptible to failure. In addition, the small wire size is often loaded to a higher percentage of the overall capacity, which increases conductor heating, potentially resulting in conductor annealing and excessive sag. In turn, this decreases the conductor clearances from any underlying vegetation, resulting in possible phase-to-phase-or-phase to ground contacts. For the #4 aluminum conductor steel-reinforced cable ("ACSR"), there is also the potential impact of corrosion on the center galvanized steel strand. As the galvanization is slowly worn away over time, this can expose the uncoated steel resulting in rust and loss of conductor strength

and breakage. The Company estimates there are approximately 300 miles of small conductor in the WRZ.

Q. PLEASE DESCRIBE THE HIGH PRIORITY DEFECT CORRECTION PROGRAM INCLUDED IN THE WMP.

A. The Transmission High Priority Defect Correction Program is a companion to the pole inspection and visual inspection programs. This program targets every structure or component, including poles, cross-arms, insulators, braces, hardware and wires, identified to have high priority defects located in the WRZ to surgically reduce wildfire ignition risk in specific locations. If unaddressed, the critical defects through these inspections increase the wildfire ignition risk for the Company's assets. This program provides a focused effort to timely address those deficiencies. Whenever possible, steel or composite structures will replace the existing wood structures because they provide more consistent design strength and are more resilient against fire.

Q. PLEASE DESCRIBE THE MAJOR LINE REBUILDS INCLUDED IN THE WMP.

A. The Transmission Major Line Rebuild Program is an alternative to the Transmission High Priority Pole and Component Replacement program born out of the wind strength analysis. If most of the assets on a transmission line have reached the end of life or if the amount of required corrective action is too large to be mitigated through a few structure or component replacements, a full or partial rebuild of the line may be the most effective way to reduce the risk on a circuit-based level. The condition assessment is based on visual and intrusive pole inspection results and the wind strength review results indicated that the

most effective risk mitigation solution for the Company's eight 69 kV transmission lines that cross the WRZ is to completely or partially rebuild the line. Therefore, Public Service is planning to expedite its planned rebuild these lines within the next five years.

VI. PROTECTION PROGRAM

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

A. The purpose of this section of my Direct Testimony is to discuss the Protection Program actions the Company plans to undertake as part of its WMP.

Q. PLEASE DESCRIBE THE PROTECTION PROGRAM.

A. The Protection Program is a comprehensive evaluation of the distribution feeders from substation to load in the WRZ. It includes developing an overall protection philosophy, specifically targeted to minimize risks associated with sparks that could occur if a fault occurs on that line. Failures caused by lightning, vegetation, storms, animal contacts, and other causes will result in the system detecting the faults and operating protection equipment such as fuses, arresters, reclosers, and circuit breakers, to remove the disturbance or fault. Typically, these faults result in high currents and the settings on the protective devices are coordinated to protect equipment from these over currents. However, there are instances, when a low current event occurs, such as an energized line that has failed and is on the ground, a “wires down” event. The Protection Program includes methods to improve detection of wires down to minimize risks of ignitions. The program is targeted at the 95 highest risk feeders throughout the WRZ to improve overall fault detection and provide operational options to minimize ignitions caused by faults and protection equipment.

The Protection program includes the following projects: ADMS Enhanced System Protection Program, Protection Study for Feeders, Recloser Communications Network, Substation Relay Communications Upgrade,

Substation Relay Upgrade for Remote Non-Reclosing, and Design/Construct Revised Protection Schemes.

Q. PLEASE DESCRIBE THE ADMS ENHANCED SYSTEM PROTECTION PROGRAM.

A. ADMS is a software platform used to optimize performance of the distribution system. ADMS provides operations with greater ability to visualize, associate, and trend operational parameters while maintaining existing monitor and control capabilities through supervisory control and data acquisition ("SCADA"). With the Company's current ADMS application, there are no specific base or enhanced functionalities specific to the WRZ feeders. The current ADMS functionality requires a field visit and manual modifications to the device's control settings in order to update protective schemes for any substation in the WRZ.

Additional ADMS configurations will be needed to achieve optimum operational capabilities that would allow for remote modifications to protective device settings. This requires creation of alternative device control templates for all WRZ reclosers and further configuration in ADMS.

Additional desired ADMS functionality involves new modules that offer enhanced protection coordination capabilities. These supporting modules enhance the visibility and coordination for feeders in the WRZ. Enabling these modules will automatically alert engineers and operators to protection coordination changes needed when system configurations change temporarily. These module functions are specifically beneficial for wildfire feeders because these feeders are more likely to experience feeder topology or protective scheme

settings changes. This additional ADMS functionality was not planned as part of the original Advanced Grid Intelligence & Security ("AGIS") deployment and was added in 2019 as part of the initial WMP.

Q. PLEASE DESCRIBE THE SUBSTATION RELAY UPGRADE FOR REMOTE NON-RECLOSING PROGRAM.

A. The Substation Relay Upgrade for Remote Non-Reclosing Program is a distribution program that identifies and upgrades feeder relays to enable additional wildfire protection settings on high wildfire risk feeders. The old electromechanical substation relays will be replaced with updated relays, which provide the ability to host additional wildfire protection settings and the ability to record high-impedance fault ("HIF") data. The existing microprocessor-based relays will be updated to include faster protection elements and non-reclosing functionality, but these updates will not include HIF functionality. Depending on the outcome of HIF performance and results, we may consider replacing the current microprocessor-based relays in the future with those that include HIF functionality. Wildfire protection settings will allow the relays to have automatic reclosing disabled on high fire risk days limiting the risk of sparks and potential ignitions due to a fault on the line or a wires down event.

Q. PLEASE DESCRIBE THE SUBSTATION RELAY COMMUNICATIONS UPGRADE.

A. The Substation Relay Communications Upgrade Program enables substations with the highest wildfire risk to remotely enable wildfire protection settings as described above, allowing relays and reclosers to have alternate setting

functionality during high risk fire days. For substations without a fiber connection, this program provides the upgrades necessary for the two-way communication needed to change the settings remotely.

Q. PLEASE DESCRIBE THE PROTECTION STUDY FOR FEEDERS.

A. The Protection Study for Feeders is a distribution program focused on analyzing the existing protection schemes on the 95 highest risk feeders. The studies reviewed the location of reclosers, fuses, and sectionalizers with respect to downstream customers and the WRZ to determine protection device settings, determine which devices need to be replaced, where additional reclosers needed to be installed and identify relays to be upgraded to align with the wildfire protection philosophy. These feeder reviews provided a systematic look at protective devices, and the results included custom one-line diagrams for each feeder, and protection settings for each device on the feeders.

Q. PLEASE DESCRIBE THE DESIGN/CONSTRUCT REVISED PROTECTION SCHEME PROGRAM.

A. The Design/Construct Revised Protection Scheme Program is a distribution program to install reclosers in 2020 in new locations as identified through the Protection Study for Feeders Program. The purpose of the program is to add sectionalizing capabilities by installing new reclosers and replacing legacy devices to provide increased safety for feeders in the WRZ. The additional devices also possess capabilities that allow the reclosers to have automatic reclosing disabled on high fire risk days limiting the risk of sparks and potential ignitions due to a fault on the line or a wires-down event. The additional

reclosers will also enhance reliability due to their increased sectionalizing capabilities, allowing for faster tripping of intermediate devices, thereby keeping upstream customers connected to power.

Q. PLEASE DESCRIBE THE RECLOSER COMMUNICATIONS NETWORK PROGRAM.

A. The Recloser Communications Network Program provides communication devices for reclosers on the highest risk feeders installed in the Design/Construct Revised Protection Schemes Program. The communications equipment allows the reclosers to be SCADA-enabled to remotely change protection settings during Red Flag Warning days and communicate fault data back to the control centers. The program consists of assessing the locations of reclosers for cellular and satellite communications and installing the appropriate devices. Where available, cellular devices will be installed to communicate over public Long-Term Evolution ("LTE") networks. If cellular service is unavailable, satellite communications will be installed, which provides the control center the ability to communicate to devices in remote areas.

Q. WHAT IS THE COMPANY'S OVERALL PROGRESS SINCE 2019 AND PLANNED SCHEDULE FOR ITS SYSTEM PROTECTION PROGRAMS?

A. The Company has made significant progress with its system protection programs since 2019. One of the first steps was establishing a standardized philosophy to address the various protective device settings. We have also been working with a third-party vendor to evaluate every feeder in the WRZ and determine optimum protection schemes. This year, we are making programming changes to some of

the existing relays and also plan to start implementing new relays. While our work with ADMS is ongoing, we intend to have additional functionality in 2021.

VII. EXPANDED VEGETATION MANAGEMENT PROGRAM

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

A. In this section of my Direct Testimony, I discuss the expanded vegetation management actions included in the WMP.

Q. PLEASE DESCRIBE THE EXPANDED AND NEW VEGETATION MANAGEMENT PROGRAM INCLUDED IN THE WMP.

A. Public Service's Vegetation Management department manages millions of trees in our distribution and transmission ROW. We use industry best practices to help achieve our vegetation management goals in an environmentally sensitive, socially responsible, and cost-effective manner. For our distribution and transmission lines, work is generally performed on a four- to five-year cycle. However, as part of our wildfire mitigation efforts, we are enhancing certain elements of our vegetation management processes, due to changing forest conditions, increased populations in the wildfire urban interface ("WUI"), and heightened awareness of risk related to operating electrical lines within the WRZ. The enhanced and new vegetation management activities that were identified in the 2019 WMP include an enhancement to the Mountain Hazard Tree Program ("MHT"), which we have identified as a new distribution and transmission O&M activity, Pole Brushing or Defensible Space Around Poles, which we have identified as a new distribution O&M activity, ROW Vegetation Type Conversion, which we have identified as a new transmission O&M activity, and Secondary Voltage and Service Line Clearance, identified as a new distribution O&M activity.

Q. PLEASE DESCRIBE THE ENHANCEMENT TO THE MHT PROGRAM.

A. Mid-cycle patrolling is a routine activity, conducted every two years, or mid-cycle, as part of the Company's established transmission and distribution MHT programs. As part of the WMP, we have expanded the "mid-cycle" patrolling to not only normally patrolled forests that were largely dominated by spruce and pine trees, but to also patrol and manage all areas in the WRZ. This reduces the probability of vegetation-caused ignitions by proactively inspecting and managing the vegetation around our assets within the WRZ. The enhancement includes patrolling a more extensive portion of the Company's service territory to cover all distribution and transmission corridors in the WRZ.

Q. PLEASE DESCRIBE THE DEFENSIBLE SPACE AROUND POLES PROGRAM.

A. The Defensible Space Around Poles ("DSAP") program (also referred to as "pole-brushing") is a new distribution vegetation management activity designed to create a vegetation-free zone around the base of electrical poles. If the equipment on top of a pole creates a spark, then the most likely risk of ignition is on the ground around the pole, directly below that equipment. Generally, creating a 10-foot radius firebreak clearance around the pole will reduce the risk of sparks that may occur during the operation of pole-top equipment igniting vegetation beneath the pole. This is a distribution vegetation management program and will continue until all the fuses and arresters as part of the Equipment Upgrade Program are complete. Once that occurs, the poles with equipment remaining, which are not targeted for replacement as part of the

Equipment Upgrade Program, will continue to receive the DSAP treatment. It is expected that the total number of poles will be less than one hundred and the cycle frequency will be evaluated once the Equipment Upgrade Program replacements are complete.

Q. PLEASE DESCRIBE THE SECONDARY VOLTAGE LINE CLEARANCE PROGRAM.

A. The Company generally focuses its vegetation management efforts on transmission and primary distribution lines that may have a larger impact on customers. This program will target distribution secondary and service lines, which are smaller lines, but nonetheless present a risk of starting ignitions. This activity proactively manages vegetation around these types of lines, focusing on hazards from encroaching vegetation, such as tree limbs.

Q. PLEASE DESCRIBE THE ROW CONVERSION PROGRAM.

A. The ROW Conversion Program is focused on transmission and expands upon the Company's existing practice of trimming within ROWs to include vegetation that would not normally be required to achieve normal compliance. The ROW Conversion Program proactively manages additional vegetation, including smaller trees and shrubs to further reduce the fuel along the electrical corridors in the WRZ. The program not only reduces the risk of wildfire, but also allows for better access to facilities for inspections and maintenance.

VIII. OTHER WMP PROGRAM ELEMENTS

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

A. In this section of my Direct Testimony, I discuss several other elements of the WMP that are not discussed above. These include: the Ignition/Wires Down Reporting process, training programs, and Community and Development initiatives. I also address future programs that the Company may consider for future inclusion in its wildfire mitigation efforts, and which in turn could be presented for recovery through the WPR through a future filing.

Q. WHAT DOES THE IGNITION/WIRES DOWN REPORTING PROCESS ACCOMPLISH?

A. This program is a metric and performance tool that will augment the current reporting that occurs through the Company's Outage Management System when there is an outage and a troubleman or first responder is called out to investigate and conduct repairs. There are instances when a wire or conductor drops or breaks from its designed location on a pole or cross arm and falls to the ground. This can occur as a result of third-party impacts to the pole, vegetation falling into the line, conductor splice failures, connector failures, and pole failures. As a result, the line may remain energized and become a source of ignition. The ignition/wires down tracking is a process whereby the utility's first responder who is a troubleman/lineman will indicate if there was a wire down upon arrival and if there are any signs of ignition or burned areas. In addition, the crew member will also look to the pole, pole top equipment and immediate surroundings for any signs of ignition. These are reported for all areas in the Public Service's service

territory through the crew members' mobile device terminal in the field. The Wildfire Mitigation Team will determine if the outage occurred in the WRZ by using Global Positioning System ("GPS") coordinates or address of the outage. All reports will be analyzed to improve the frequency and performance of equipment to mitigate wires down and/or ignitions.

Q. DOES THE WMP ADDRESS EMERGENCY RESPONSE?

A. Yes. The primary purpose of the WMP is to guide the Company's efforts to minimize the risks of the Company's facilities causing ignitions that could lead to a wildfire. However, the updated WMP has evolved to address the Company's response to an active wildfire, whether ignited by Company equipment or another source, and where the fire is encroaching on the Company's assets.

As part of Xcel Energy's Enterprise Event Management Framework, protocols for identification, communication, decision-making and response are outlined all hazards, including wildfires. The primary focus of our wildfire response plan is ensuring the safety of responders and the public with a coordinated and integrated internal plan. As part of the WMP, the Company has established a base-level Wildfire Response Plan that is currently in place. The Wildfire Response Plan outlines specific response actions, including: wildfire monitoring, internal notifications and communications, incident classifications, and incident response planning. The Company's Communications and Community Relations organizations also communicate and engage with the public, media, local emergency offices and others during large events. The

Company plans to develop more detailed wildfire communication plans as part of the its Wildfire Response Plan and on-going community outreach programs.

Q. ARE THERE OTHER AREAS THE COMPANY IS STUDYING FOR POTENTIAL FUTURE INCLUSION IN ITS PLAN?

A. Yes. In addition to the core components of the Plan I described above, the Company will continue to study new, emerging, and evolving technologies and practices that it will consider for future implementation in conjunction with the Plan. For example, the Company is considering how or when PSPS could be used within the Company's service territory. The Company is also actively studying potential applications for technologies like microgrids, storage, and additional drone applications in strategic locations throughout the WRZ.

The Company has continued to remain involved with both the Electric Power Research Institute ("EPRI") and the Edison Electric Institute ("EEI") as they identify and develop emerging technologies. EEI has established a Wildfire Technology Committee, where I serve as the Xcel Energy Steering Committee representative. Through this effort, EEI has partnered with the National Labs to look at various new technologies that could be implemented in the near term to further minimize the risks of utility-caused ignitions. One of the projects being developed by Oak Ridge National Laboratory, "Distribution Arcing Fault Signature Library," will help improve early fault detection. This project utilizes the capture and analysis of grid signatures that can be used as early indicators of arcing to identify and mitigate wildfire risk. In addition, the EEI Wildfire Technology Committee will continue evaluating a project designed to monitor the

structural health of high voltage connectors on transmission lines. Connectors are often the weakest link on a transmission structure and a failure could lead to a downed transmission line, becoming a potential wildfire ignition source. While the Company is not proposing to implement any of these particular practices or technologies at this time, it is engaged in a number of pilot projects and studies that may help inform potential future actions.

Q. YOU MENTIONED THAT THE COMPANY IS EVALUATING PSPS AS A POTENTIAL WILDFIRE MITIGATION TOOL. COULD YOU EXPLAIN WHAT PSPS IS AND WHY THE COMPANY IS NOT PURSUING IT AT THIS TIME?

A. Public Safety Power Shut-Offs, or PSPS, are a tool that utilities may use when there is a high risk for a wildfire. When certain events or conditions are present, the utility may temporarily shut off power to a particular area to prevent its electric system from becoming the source of an ignition. With the growing threat of wildfires, proactively cutting power to lines that may fail in certain weather conditions, primarily as a result of objects coming into contact with the circuits, reduces the likelihood of those facilities starting or contributing to a wildfire. There are several components required in order to effectively and safely execute a PSPS program. For example, we learned from the number of PSPS events that occurred in California last year that while a PSPS can serve as an important and effective tool to managing fire risk, it must be executed with precision and care. The following list is an example of just some of the processes and procedures that must be in place in order to minimize the number of customers that are impacted:

- A clear strategy must be developed to minimize public safety risk during high wildfire risk conditions;
- Clear tactical and strategic decision-making protocols must be in place prior to initiating a PSPS;
- Strategies for safe and effective re-energization must be established;
- Notification protocols for timely communications to customers must be clearly established; and,
- Notification protocols to all key stakeholders including all public safety partners must be created.

Further, to minimize the number of customers impacted, additional situational analysis tools are required. We will continue to prudently study PSPS as a last-resort wildfire mitigation tool should the circumstances warrant the need. There are instances when the Company must de-energize for safety reasons, such as when there is already an active fire at or nearing our facilities in order to keep all first responders and the general public safe. Those are emergency procedures that have always been protocol, will continue when necessary, and should not be confused with a PSPS.

Q. WHY DOESN'T THE PLAN INCLUDE MICROGRID OR BATTERY STORAGE SOLUTIONS?

A. The Company is currently studying potential applications for these types of technologies through ongoing studies and pilots, such as its Community Resiliency Initiative and various Innovative Clean Technology Programs. We recognize that microgrids and storage can enable communities to be self-supportive during severe events such as wildfires. They can also play an important role as we pursue PSPS options. One of the primary considerations for

microgrids or battery storage solutions is to provide backup power generation to areas that may be affected by a PSPS event. We are continuing to evaluate the use of a PSPS and as we do so, we will also consider how we can minimize customer impacts associated with a pro-active de-energization plan. As the Plan matures, we will further consider emerging technologies and how they can be utilized in a cost-effective manner.

Q. CAN YOU DESCRIBE WHAT TRAINING PROGRAMS ARE INCLUDED TO REDUCE WILDFIRE RISK?

A. The Company developed annual training to inform employees about fire prevention and ensure fire-safe operational work practices. The training focuses on what field employees can do to prevent causing a fire and how they should respond if they encounter a wildfire while working in the field. The baseline training is for operations employees and is conducted in an online format, and field employees receive additional training from their manager or supervisor to reinforce fire safety and prevention. The training also details the Red Flag Warning notification process, and details how the field crews incorporate fire-safe practices into daily safety briefings in the field.

The Company also developed Downed Line and Ignition Reporting Training for field personnel who respond to equipment issues and outages and describes the report required to document any potential source of ignition such as a wire on the ground. The training describes the reporting procedure and emphasizes how the accurate reporting can help prevent wildfires.

Q. WHAT OPERATIONAL PROCEDURES IS THE COMPANY PURSUING TO MINIMIZE WILDFIRE RISK?

A. The Company is pursuing several operational procedures to utilize the upgraded protection devices and ADMS to respond to high fire threat conditions. Over the past year the Company has developed alternate settings for protective devices to increase the sensitivity, increase the trip speed, and ensure coordination of devices. On Red Flag Warning days, these alternate settings will be enabled, and if a device trips, the line will be patrolled from the upstream protective device to ensure re-energization will not cause an ignition. These alternate settings are being studied, and an operational test will be implemented on select distribution feeders in 2020. The devices will be programmed and coordinated through ADMS, and the study will help determine the impacts of the alternate settings.

IX. WMP COST AND BUDGET

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

A. The purpose of this section of my Direct Testimony is to present and explain the Company's planned five-year budget for its WMP, as well as 2019 WMP Actual spend and the WMP forecasted spend. Additionally, I identify and explain the costs Public Service is seeking to recover through its WPR.

Q. PLEASE PROVIDE AN OVERVIEW OF THE COMPANY'S WMP FIVE-YEAR BUDGET.

A. The tables below provide the Company's distribution and transmission capital and distribution and transmission O&M costs for the WMP, including 2019 actual costs, 2020 forecasted costs, and a five-year forecast through 2025. Also shown are breakdowns by program (Tables SLJ-D-7 and SLJ-D-9). Further detail on these costs is included in Attachment SLJ-D-2 to my Direct Testimony.

Table SLJ-D-6: Wildfire Mitigation Programs
Distribution and Transmission Capital Additions

Public Service - Total Electric **WMP Capital Budgets**** (Dollars in millions)								
	2019 Actuals	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Distribution	36	56	89	42	35	35	34	**325**
Transmission	7	17	49	57	30	35	7	**201**
Total*	**43**	**72**	**137**	**99**	**65**	**69**	**41**	**526**

* There may be differences between the sum of the individual category program amounts and Total amounts due to rounding.
**The table reflects plant additions but the revenue requirement uses plant in service. The difference is Allowance for Funds Used During Construction ("AFUDC").

Table SLJ-D-7: Wildfire Mitigation Programs
Distribution and Transmission Capital Additions by Program

Public Service - Total Electric WMP Capital Budgets** by Program (Dollars in millions)								
Program	**2019 Actuals**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Inspection and Modeling	1	1	0	0	0	0	0	**2**
Protection	0	9	9	7	0	0	0	**25**
Repair and Replace	42	62	129	91	64	69	41	**499**
Total*	**43**	**72**	**137**	**99**	**65**	**69**	**41**	**526**

* There may be differences between the sum of the individual category program amounts and Total amounts due to rounding.
** The table reflects plant additions but the revenue requirement uses plant in service. The difference is AFUDC.

Table SLJ-D-8: Wildfire Mitigation Programs
Distribution and Transmission O&M

Public Service - Total Electric WMP O&M Budgets (Dollars in millions)								
	2019 Actuals**	**2020****	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Distribution	4	8	7	7	8	8	8	**49**
Transmission	2	2	2	2	2	2	2	**15**
Total*	**6**	**10**	**9**	**9**	**10**	**10**	**10**	**64**

* There may be differences between the sum of the individual category program amounts and Total amounts due to rounding.
** For 2019 and 2020, the Company will only recover the amount of O&M in base rates.

Table SLJ-D-9: Wildfire Mitigation Programs Distribution and Transmission O&M by Program

Public Service - Total Electric WMP O&M Budgets by Program (Dollars in millions)								
Program	**2019 Actuals****	**2020****	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Community and Development	0	1	1	1	1	1	1	**8**
Inspection and Modeling	4	5	4	4	4	4	4	**30**
Protection	0	1	0	0	0	0	0	**1**
Vegetation Management	1	2	2	2	3	3	3	**14**
Repair and Replace	2	1	1	1	2	2	2	**11**
Total*	**6**	**10**	**9**	**9**	**10**	**10**	**10**	**64**

* There may be differences between the sum of the individual category program amounts and Total amounts due to rounding.
** For 2019 and 2020, the Company will only recover the amount of O&M in base rates.

Q. IS THE COMPANY SEEKING TO RECOVER ALL OF THESE COSTS THROUGH THE WPR?

A. No. The Company is seeking to recover incremental distribution capital and O&M through the WPR. As for transmission costs, the Company will seek to recover transmission capital costs through its Transmission Cost Adjustment ("TCA"), but is not seeking recovery of any incremental transmission O&M associated with its wildfire mitigation efforts, as the levels currently reflected in base rates are reflective of the Company's forecasted transmission wildfire O&M for the next five years. With respect to transmission capital additions, the Company plans to recover its transmission capital costs associated with its WMP

through the TCA. As Company witness Ms. Trammell explains, the Company is seeking to begin recovering eligible 2019, 2020, and 2021 incremental wildfire mitigation capital costs through the WPR soon after its Application and subsequent compliance Advice Letter are granted. Below I present detailed budget information supporting the Company's eligible, incremental distribution wildfire mitigation costs that it seeks to recover through the WPR.

Q. WHAT DO YOU MEAN BY "INCREMENTAL" CAPITAL AND O&M?

A. The dollar figures shown in the Tables SLJ-D-10 and SLJ-D-11 below are part of our enhanced efforts above and beyond the capital and O&M levels already included in base rates, and therefore reflect total incremental amounts, not inclusive of O&M work that will be conducted by internal crews. The total internal O&M labor excluded from these figures is approximately $1 million. Public Service's 2020-2025 Capital forecasts represent new planned capital projects and are therefore 100 percent incremental to the $5.7 million of distribution capital additions authorized for inclusion in base rates as part of the 2019 Electric Rate Case.

Table SLJ-D-10: Wildfire Mitigation Programs
Incremental Distribution Capital Additions

Public Service - Total Electric WMP Capital Budgets**-Distribution (Dollars in millions)								
Project	**2019 Actuals**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Distribution	35.5	55.6	88.6	42.0	34.5	34.5	34.5	**325.2**
Base Rates***	(5.7)	0.0	0.0	0.0	0.0	0.0	0.0	**(5.7)**
Total Incremental*	**29.8**	**55.6**	**88.6**	**42.0**	**34.5**	**34.5**	**34.5**	**319.6**

* There may be differences between the sum of the individual category program amounts and Total amounts due to rounding.
** The table reflects plant additions but the revenue requirement uses plant in service. The difference is AFUDC.
*** The $5.7 million is the total amount of plant included in the 2019 Electric Rate Case. Mr. Freitas explains the 13 month average, which is what base rates are based on is $1.7 million.

The distribution O&M presented in Table SLJ-D-11 below represents total forecasted, eligible expenses for programs that are either new or accelerated from the Company's routine O&M activities.

Table SLJ-D-11: Wildfire Mitigation Programs
Incremental Distribution O&M

Public Service - Total Electric WMP O&M Budgets-Distribution (Dollars in millions)								
Project	**2019 Actuals****	**2020****	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Distribution	4.3	7.7	6.4	6.5	7.7	7.7	7.7	**47.8**
Base Rates	(2.4)	(2.4)	(2.4)	(2.4)	(2.4)	(2.4)	(2.4)	**(16.8)**
Total Incremental*	**1.9**	**5.3**	**4.0**	**4.1**	**5.3**	**5.3**	**5.3**	**31.0**

* There may be differences between the sum of the individual category program amounts and Total amounts due to rounding.
** For 2019 and 2020, the Company will only recover the amount of O&M in base rates.

Q. PLEASE EXPLAIN IN DETAIL THE INCREMENTAL WILDFIRE MITIGATION COSTS THE COMPANY SEEKS TO RECOVER THROUGH THE WPR.

A. The eligible distribution capital costs the Company is seeking to recover through the WPR align with the various program areas I discussed above and are reflected in Tables SLJ-D-12 and SLJ-D-13 below. As I previously mentioned, these costs are only related to eligible capital projects that occur within the WRZ during the five-year term of the WPR.

Table SLJ-D-12: Wildfire Mitigation Programs
Incremental Capital Additions - Distribution

Public Service - Total Electric **WMP Capital Plant Budgets** by Program-Distribution** (Dollars in millions)								
Project	**2019 Actuals**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Inspection and Modeling	0.7	0.8	0.1	0.1	0.1	0.1	0.1	**1.8**
Protection	0.4	9.2	8.6	7.0	0.0	0.0	0.0	**25.3**
Repair and Replace	34.4	45.6	79.9	34.9	34.4	34.4	34.4	**297.7**
Total*	**35.5**	**55.6**	**88.6**	**42.0**	**34.5**	**34.5**	**34.5**	**325.2**
Base Rates***	**(5.7)**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**(5.7)**
Total Incremental*	**29.8**	**55.6**	**88.6**	**42.0**	**34.5**	**34.5**	**34.5**	**319.6**

* There may be differences between the sum of the individual category program amounts and Total amounts due to rounding.
** The table reflects plant additions but the revenue requirement uses plant in service. The difference is AFUDC.
*** The $5.7 million is the total amount of plant included in the 2019 Electric Rate Case. Mr. Freitas explains the 13-month average, which is what base rates are based on, and amounts to$1.7 million.

Table SLJ-D-13: Wildfire Mitigation Programs
Incremental O&M-Distribution

Public Service - Total Electric WMP O&M Budgets by Program-Distribution (Dollars in millions)								
Project	**2019 Actuals****	**2020****	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Community and Development	0.0	0.9	1.3	1.3	1.3	1.3	1.3	**7.3**
Inspection and Modeling	2.5	3.5	2.4	2.8	2.8	2.8	2.8	**19.7**
Protection	0.0	0.7	0.1	0.0	0.0	0.0	0.0	**0.8**
Vegetation Management	0.4	1.4	1.5	1.5	2.2	2.2	2.2	**11.4**
Repair and Replace	1.4	1.2	1.1	0.9	1.4	1.4	1.4	**8.7**
Total*	**4.3**	**7.7**	**6.4**	**6.5**	**7.7**	**7.7**	**7.7**	**47.8**
Base Rates	**(2.4)**	**(2.4)**	**(2.4)**	**(2.4)**	**(2.4)**	**(2.4)**	**(2.4)**	**(16.8)**
Total Incremental*	**1.9**	**5.3**	**4.0**	**4.1**	**5.3**	**5.3**	**5.3**	**31.0**

* There may be differences between the sum of the individual category program amounts and Total amounts due to rounding.
** For 2019 and 2020, the Company will only recover the amount of O&M in base rates.

Q. CAN YOU EXPLAIN WHAT FACTORS DROVE THE DISTRIBUTION INCREMENTAL 2019 WILDFIRE CAPITAL AND O&M COSTS ABOVE WHAT IS INCLUDED IN BASE RATES?

A. Yes. In Public Service's rebuttal case in the 2019 Electric Rate Case, the Company forecasted it would place in service $5.7 million in capital additions in 2019. However, the Company actually placed approximately $35.5 million in capital in service. This increase can be attributed largely to the Pole Replacement project, which cost just over $34 million.

Q. WHAT FACTORS LED TO THE DISCREPANCY BETWEEN THE FORECASTED CAPITAL AND O&M FOR 2019 AND ACTUAL AMOUNTS INCURRED IN 2019?

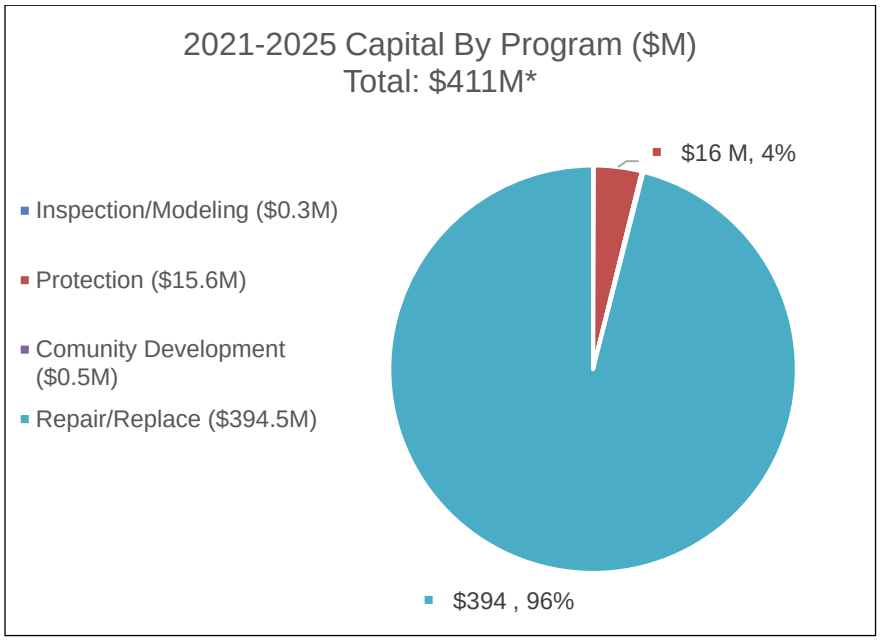
A. In 2019, the Company experienced extreme challenges with acquiring crew resources. First, throughout the nation, crews were pulled to premium-pay work responding to hurricanes and California wildfires. Through September, the Company's crew counts ranged from six to ten crews per week, and it was unclear if we would be successful in attracting additional crews as reflected in our forecast submitted on Rebuttal. By mid-November, however, the Company was able to increase crew counts to 56 crews per week to target replacement of those poles in the WRZ that had failed inspections. In order to increase the crew counts, market prices became higher than historical prices, and much of the work was completed using contracts similar to those used by California utilities.

Q. PLEASE IDENTIFY THE KEY DRIVERS OF THE COMPANY'S WILDFIRE CAPITAL COSTS OVER THE PLAN YEARS.

A. The largest drivers of the costs of the WMP are the Repair/Replacement programs, amounting to 96 percent of the total wildfire capital costs the Company forecasts between 2021-2025. Though we are not seeking to recover transmission costs through the WPR, transmission replacement costs make up approximately 55 percent of those total Repair/Replace costs. Distribution repair/replacement makes up the remaining 45 percent. Figure SLJ-D-2 below contains a pie chart showing 2021-2025 capital by program, and Figure SLJ-D-3

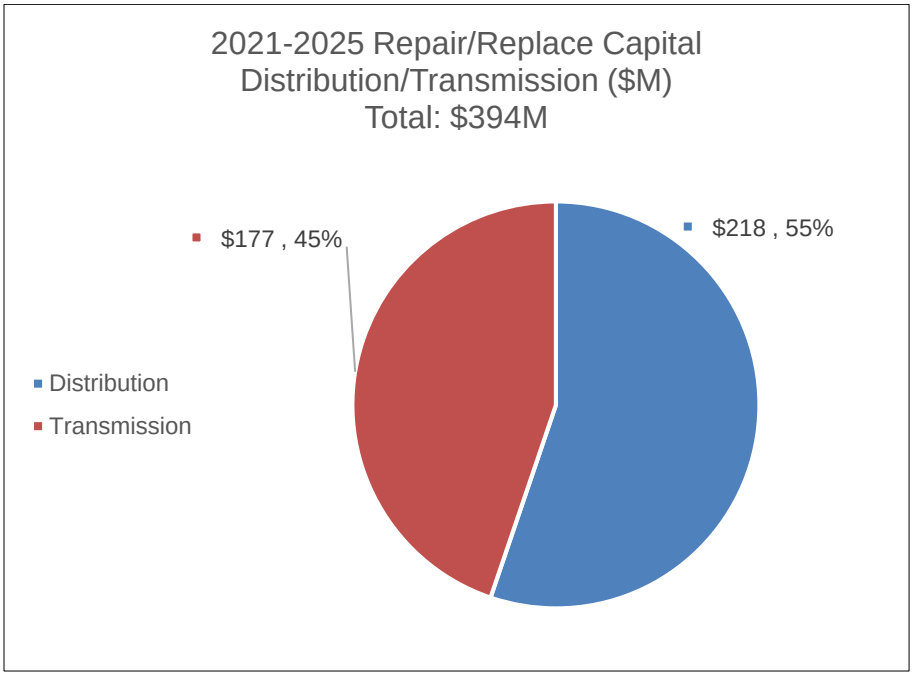
contains a pie chart showing 2021-2025 Repair/Replacement capital, broken down by transmission and distribution.

Figure SLJ-D-2: 2021-2025 Capital Costs by Program



*Does not include incremental 2019 and 2020 capital projects.

Figure SLJ-D-3: 2021-2025 Total Repair/Replacement Capital Costs

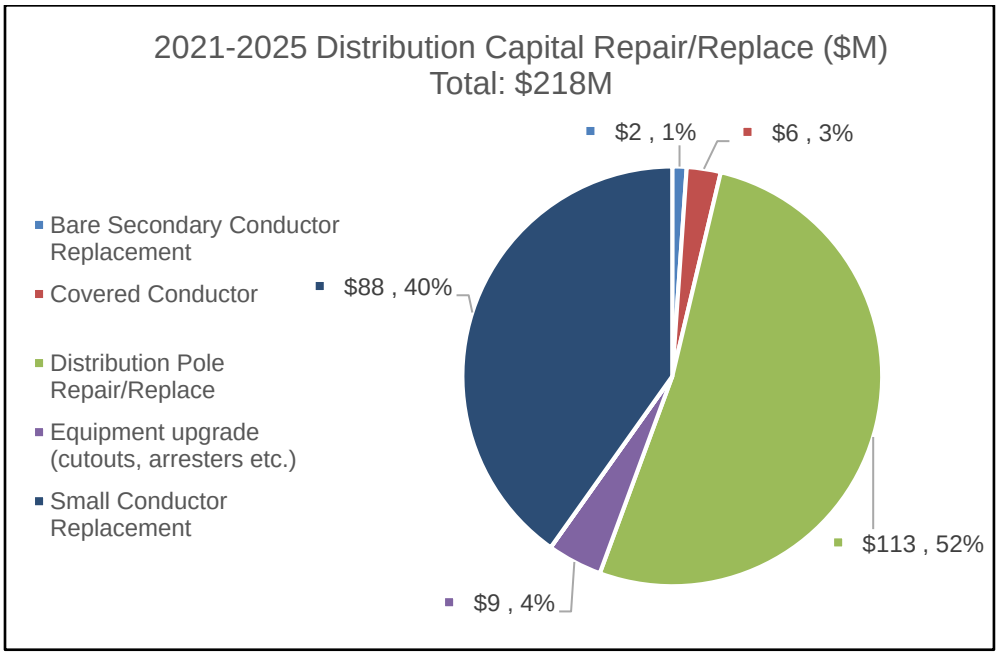


Q. PLEASE IDENTIFY THE KEY DRIVERS OF THE COMPANY'S DISTRIBUTION WILDFIRE CAPITAL COSTS OVER THE PLAN YEARS.

A. The largest single driver of the Distribution Repair/Replace WMP capital expense will be the Pole Repair/Replacement programs, amounting to 50 percent of the total wildfire distribution capital costs the Company forecasts between 2021-2025. This is followed by the Small Conductor Replacement, Equipment Upgrades and Covered Conductor programs. Figure SLJ-D-4 below contains a pie chart showing the magnitude of distribution capital costs associated with each major program in the WMP.

Figure SLJ-D-4: 2021-2025 Distribution Capital Repair/Replacement Costs

A.



Q. PLEASE EXPLAIN HOW THE COMPANY DEVELOPED ITS CAPITAL COST ESTIMATES FOR THE WMP.

A. The Company's capital cost estimates were largely developed based on existing, negotiated rates and contracts in place with vendors. For its distribution pole

repair/replace program, the Company already has routine work agreements in place with two vendors that are currently conducting this work and who will execute nearly 90 percent of the work. We are also in the process of negotiating with a third vendor, who we anticipate may perform about 10 percent of the work. In addition, historical replacement and equipment installation rates were used to develop cost estimates.

Q. PLEASE EXPLAIN HOW THE COMPANY NEGOTIATES ROUTINE WORK AGREEMENTS.

A. Routine work is addressed through long-term agreements (typically three years) based on competitive bids. Repetitive and predictable work such as pole replacement is performed using contractual units of work rather than time and equipment billing. In the case of wildfire pole replacement, a second bid was issued with the two incumbents remaining as the lowest-cost provider options available for this work.

Q. WHAT VARIABLES MIGHT IMPACT THE ACCURACY OF THE COMPANY'S COST ESTIMATES?

A. There are several variables that will impact our cost estimates. For instance, although we have routine agreements in place with a number of vendors for pole replacements, these contracts are subject to re-negotiation on different schedules. Over the course of the WMP, things like labor constraints and supply chain pricing stand to influence the Company's wildfire budgets. The Company's estimates are based on the number of facilities or devices (*e.g*. poles and conductor) that are revealed through the course of inspections or modeling to

need repair or replacement. To develop the budget, we relied on our experience and historical data to determine how many repairs and replacements will likely be needed. However, these figures are subject to change based on the results of inspections and modeling. Further, the new conductor projects, including the Small Wire Replacement and Covered Conductor projects, will have their estimates updated once the installations are designed and sent out to bid. The small wire replacement projects utilized historical averages for overhead installations and costs may vary based on location and the number of poles that will need to be replaced, for example. In addition, the Covered Conductor project estimates are based on manufacturer high-level costs per mile and will become more precise as the design and project bid occur.

Q. PLEASE IDENTIFY THE KEY DRIVERS OF THE COMPANY'S WMP O&M EXPENSE OVER THE PLAN YEARS.

A. As Figure SLJ-D-5 below reflects, the largest driver of the wildfire distribution O&M expense from 2021-2025 is Inspection and Modeling, followed by Vegetation Management, Repair and Replace, and Community and Development activities. Figure SLJ-D-6 shows the 2021-2025 distribution Inspection/Modeling O&M broken down further by category.

Figure SLJ-D-5: 2021-2025 Distribution O&M by Program

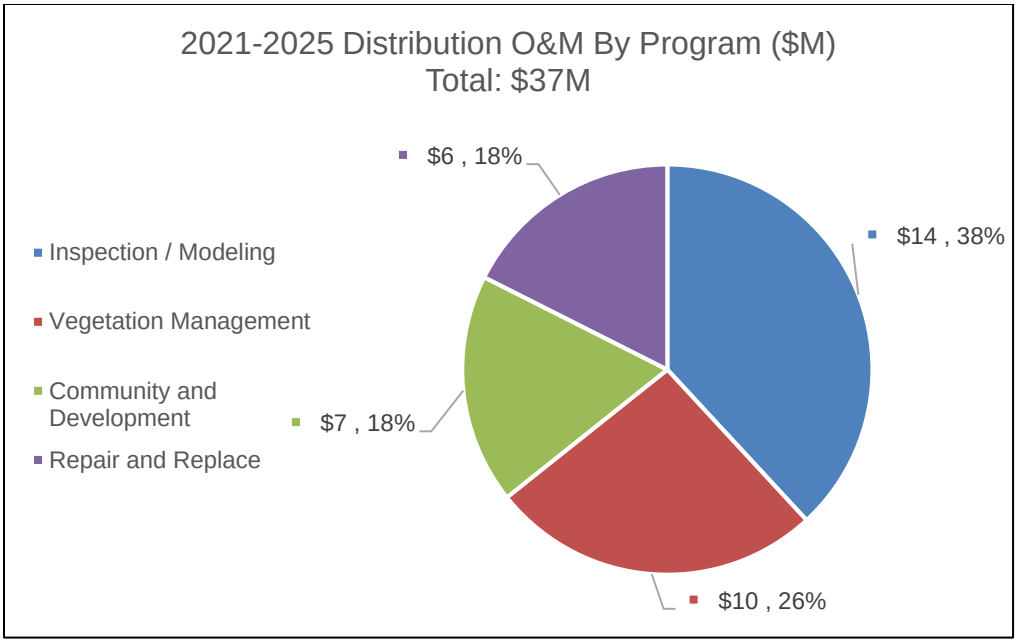
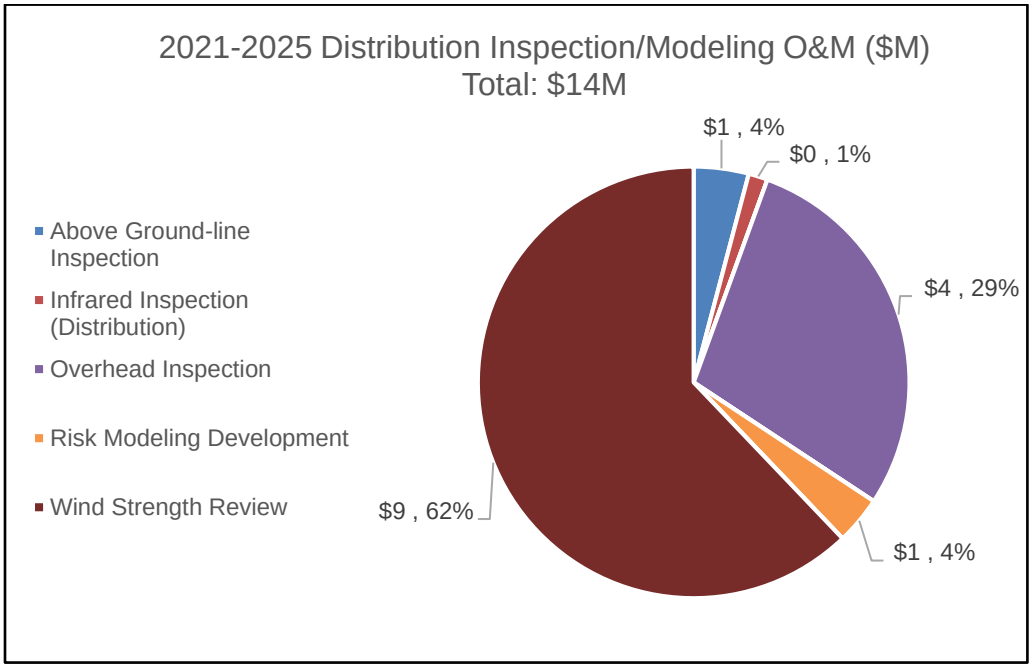


Figure SLJ-D-6: 2021-2025 Distribution Inspection/Modeling O&M



1 A.

Q. PLEASE EXPLAIN HOW THE COMPANY DEVELOPED ITS O&M ESTIMATES FOR THE WMP.

A. Similar to its capital cost estimates, the Company's O&M estimates were largely developed based on existing, negotiated rates and contracts in place with external contractors and vendors. The largest distribution O&M budget driver is the Wind Strength Review project, for which the Company has a contract for a defined scope of work. The second biggest driver in 2020 is the O&M component for the Pole Replacements. And finally, the DSAP or Pole Brushing O&M for future years is forecasted based on the anticipated number of equipment poles and existing vegetation management contracts, making it a significant driver. The Company will refine its cost estimates to be used for rider recovery based in part on historical actual costs and any new or modified contracts in place.

Q. HOW WILL THE COMPANY PRUDENTLY MANAGE ITS WMP COSTS AND BUDGETS GOING FORWARD?

A. The Company has an established process to carefully manage all WMP costs. There are multiple business areas involved in all processes from planning to program implementation. The Wildfire Mitigation Team serves as a single point of contact for all projects across all business areas and provides ongoing oversight to all programs. The Wildfire Mitigation Team must monitor and manage forecasts, program targets, variances to either as well as program actual spend. However, the Company's Sourcing department continues to procure additional resources including through bidding and negotiation processes. The

external construction and vegetation management crew resources are managed within their respective business areas by Transmission and Distribution leadership. Engineering and other professional resources, such as the vendor for the Risk Modeling software, will be managed by the Wildfire Mitigation Team. The Wildfire Mitigation Program has director-level sponsorship from across the Company to provide oversight and direction to the Wildfire Mitigation Team as the WMP is implemented and as the program is modified and further refined and developed. Executive leadership from Regulatory, Operations, Distribution Electric Operations, Transmission Operations, Risk, Community Relations, and Gas Operations review the WMP execution, targets, and spend routinely to provide strategic guidance. The WMP was developed with cross-functional expertise and is managed with cross-functional senior leadership ensuring overall program and cost performance.

Q. HOW WILL THE COMPANY ENSURE THAT ELIGIBLE EXPENSES INCURRED FOR EXTERNAL LABOR FORCES ARE REASONABLY CONTAINED?

A. We learned a lot from our experience in 2019 given the challenges associated with obtaining contract crews. The Company released all but two of the most competitive contracting firms and went out for bid in late 2019. Since then, we were able to forecast multiple years of pole replacement work by location (based on inspection results to-date) thereby eliminating some of the unknowns for the contractors resulting in the best pricing. We asked that all the bidders provide the Company with a price per pole bid, or unit pricing in order to gain some cost

certainty. This was a vigorous bidding process that resulted in an additional contracting company, competitive with the existing two, and they will be initiating work for Public Service by the third quarter of 2020. This has provided the Company with increased near-term budget stability around the projects that comprise nearly half its total capital budgets.

Q. WHAT DOES UNIT PRICING MEAN?

A. Unit pricing represents a "menu-of-work" approach to construction projects. For example, a three-phase distribution pole in a rocky area that is vehicle accessible will cost a certain dollar amount. A pole that is not vehicle accessible on a mountain side will have different unit pricing. Each task has a known cost associated with completing the task, irrespective of how much time it takes to do it, as an average time for that type of replacement is built into the cost.

Q. WHAT MIGHT CAUSE VARIABILITY IN THE COMPANY'S COST ESTIMATE FORECASTS?

A. Poles continue to be identified through our planned and ongoing inspection processes. As such, we cannot predict with 100 percent certainty how many poles will be in rocky soil, or how many might require the use of a helicopter, for example. Therefore, for cost estimating purposes, we are providing an average cost per pole. Additionally, we have estimated the numbers of poles we expect to be replaced based on historical averages. Those estimates are subject to variations based upon the outcome of inspections underway and yet to occur.

X. ANNUAL REPORTING, STAKEHOLDER ENGAGEMENT, AND COMMUNITY ENGAGEMENT DURING FIVE-YEAR WPR PERIOD

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

A. The purpose of this section is to discuss the Company's planned Annual Reporting, Stakeholder Engagement, and Community Engagement initiatives that it will engage in under the WMP.

Q. PLEASE SUMMARIZE THE ANNUAL REPORTING THE COMPANY WILL CONDUCT OVER THE FIVE-YEAR WPR PERIOD.

A. To track the longer-term efficacy of the WMP, the Company plans to provide annual reporting on the following metrics:

- The number of ignitions associated with electric overhead powerlines within the Wildfire Risk area;
- The number of downed transmission and distribution wires within the Wildfire Risk area;
- The number of Red Flag Warning Days in Colorado;
- The communities or areas which experienced Red Flag Warnings, as well as the dates they occurred;
- The total number of wildfires in the Company's service territory; and,
- The total actual annual investment in the WMP per year; and,
- Additional metrics related to completed activities.

Consistent with the Wildfire Settlement Agreement, the Company's 2019 metrics are provided as Attachment SLJ-3 to my Direct Testimony.

Q. WHAT OTHER TYPES OF DATA WILL PUBLIC SERVICE GATHER THROUGH ITS PLAN?

A. As detailed in the WMP, the Company is conducting multiple inspection programs on its transmission and distribution infrastructure located in the WRZ. Data gathered from the groundline intrusive pole inspections, the enhanced AGL inspections, IR inspections, aerial and ground inspections, and wind strength

studies will all provide valuable asset health data. More robust downed-wire and ignition reporting mechanisms will also be introduced and provide feedback on the Company's asset safety and reliability performance. For example, the Company will continue to track vegetation-caused outage events through its Outage Management System. The Company also plans to modify its existing Wires Down reporting system to include data that will help determine weaknesses in the system including: conductor size and material, if the line was energized upon arrival, and mode of failure. This information will provide insight to conductor and splice types that may have a higher failure rate. It will also provide indications to other frequent material failure modes.

Q. HOW WILL THIS DATA BE USEFUL IN THE FUTURE?

A. Asset health data will be incorporated into future risk studies. This will afford the Company improved modeling and the ability to begin tracking and measuring of the efficacy of implemented programs and improve its prioritization of project implementations. The Company will continue to update stakeholders and the Commission on its progress through stakeholder meetings and its annual WPR filings.

Q. PLEASE EXPLAIN THE STAKEHOLDER, UTILITY, AND TRADE GROUP ENGAGEMENT THE COMPANY WILL CONDUCT DURING THE FIVE-YEAR WPR PERIOD.

A. The Company is actively engaged in a suite of on-going wildfire mitigation forums. In late 2019, members from the Wildfire Mitigation Team, senior Company leadership, Emergency Response and Transmission and Distribution

Operational leadership met with the SDG&E wildfire mitigation leadership. The visit included a planned site visit to the weather center and response facility where SDG&E leadership team members spent several hours discussing their wildfire plan, from its inception in 2007 to current day programs, highlighting the initiatives that have been demonstrated to provide the greatest value and their "20/20 hindsight" as to what a wildfire mitigation plan might include. During the same trip, Company employees had similar discussions with Southern California Edison ("SCE") wildfire mitigation leadership personnel, visited their weather center and response facility, and toured their advanced technology center to learn about emerging technologies. Both of these visits provided invaluable perspective to the on-going development and implementation of the Company's WMP and helped to form open lines of communication for sharing of information, best practices, and lessons learned with utility counterparts.

The Company has also been actively engaged with EEI as part of the combined EEI/Industry wildfire mitigation efforts. I have served on the Wildfire Technology Steering Committee since the third quarter of 2019 representing the Company and utility sector, providing input to the technology programs under consideration. In February 2020, EEI hosted a Wildfire Technology Summit where I was asked to lead a panel discussing Wildfire Behavior Modeling and Situational Awareness as well as other relevant wildfire mitigation topics. The second day was utility members-only event and the focus was on various Department of Energy ("DOE") and the National Labs technologies, as well as

efforts by EPRI to develop technology, that would aid in wildfire mitigation in the near-term as discussed previously in my Direct Testimony.

In addition, the Company has several engineers that continue to participate with EPRI to advance the Company and industry's wildfire mitigation efforts. In May of 2020, EPRI hosted a utility-only webinar titled "Grid Safety and Resilience for Extreme Events Including: Wind, Icing, Snow, Flooding, Wildfire" to review the aforementioned topics, with a focus on the EPRI Wildfire meeting and presentations that occurred at the SDG&E facilities in late February which members of the Wildfire Mitigation Team and engineering staff attended. Topics ranged from advanced system protection, inspection programs, and standards to risk awareness and industry leading practices. Following that webinar, EPRI recently published a combined EPRI/EEI Wildfire Technologies White Paper that summarizes at a high-level potential strategies and technologies that will mitigate utility caused wildfire ignitions creating a more resilient system.[2] The primary objective of the white paper is to provide a documentation of currently-available technologies and strategies available to the industry to help mitigate utility related wildfire ignitions. It informs various stakeholders including public policy decision makers about the current status of various initiatives including progress and the pros and cons associated with the various strategies. Topics include fault reduction methods such as covered overhead conductors, enhanced vegetation management practices, expulsion fuse replacements, and imagery. The Wildfire

[2] *Wildfire Risk Reduction Methods*, EPRI (Jun. 2020), https://assets.ctfassets.net/ucu418cgcnau/63fdVvKU7XfVdUnUQXUwiU/ffbf0851ad0fa55393ebf1a12cf492f5/Wildfire_Risk_Reduction_Methods.pdf.

Mitigation Team will continue to participate in similar engagements throughout 2020 and in the future, to continue share, learn, and gain valuable utility insights and experience as well as provide input and review for on-going new technologies developments.

Q. PLEASE EXPLAIN THE COMMUNITY ENGAGEMENT THE COMPANY WILL CONDUCT OVER THE FIVE-YEAR WPR PERIOD.

A. The Company will continue to engage with the communities where we conduct inspections and replacements to keep local stakeholders aware of our on-going activities. We will also participate in various community wildfire response initiatives to gain insight on areas where improvements to our Plan can provide additional community benefits and to continue to build on-going partnerships. Additionally, as the Plan continues to progress, we will provide updates to our external website.

XI. RECOMMENDATIONS AND CONCLUSION

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.

A. In sum, I recommend that the Commission approve the Company's WMP and WPR, finding them to be reasonable and in the public interest.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

Statement of Qualifications

Sandra L. Johnson

Sandra L. Johnson is the Wildfire Mitigation Project Director for Xcel Energy Services. In this position, she is responsible for the management and execution of the Wildfire Mitigation Plan as a whole. This involves leading an extensive cross-functional team and to provide vision and oversight to the Company's wildfire mitigation efforts as we continue to implement and develop long-range solutions to minimizing risk of utility caused wildfire ignitions.

Ms. Johnson first joined Public Service Company of Colorado in 1993 as a Transmission System Planning Engineer. From 1999-2001 she worked as a Transmission Operations Engineer at the Lookout Operations Center. She then returned to planning as the Transmission Planning Manager for New Century Energy and was in that role from 2001 to mid-2004. Her last position with the Company was as the Director of Transmission Asset Management for Xcel Energy. She was in that role from mid-2004 through mid-2007. In that role, Ms. Johnson and her team were responsible for the development of both short-term and long-term transmission business growth strategies. Sandra managed the expansion planning projects for three operating companies, including Public Service Company of Colorado, Northern States Power, and Southwestern Public Service Company. She led reliability expansion projects, portfolio deliveries, and asset management of the transmission organization. At that time, she executed a five-year $1B+ capital project portfolio. Ms. Johnson was appointed by former Governor Bill Owens to serve on the Governor's Reliable Electricity Infrastructure Taskforce in 2006. The Taskforce was established to promote the

continued investment in the Colorado electric transmission system ensuring delivery of affordable and reliable energy, enhance access to renewable energy resources, and provide timely cost recovery mechanisms. These efforts resulted in the Company's TCA currently in place. Ms. Johnson took a break from the industry in mid-2007 to devote her time to her family and community. She currently serves as Co-Director for the Denver Chapter of ChickTech, a national non-profit dedicated to increasing the numbers of underrepresented women pursuing STEM related professions.

Ms. Johnson holds a Bachelor of Science degree in Electrical Engineering and a Master of Science degree in Electrical Engineering focusing on electric power systems and utility regulations from the Electric Utility Management Program, both from New Mexico State University.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF COLORADO FOR APPROVAL OF WILDFIRE MITIGATION PLAN AND WILDFIRE PROTECTION RIDER	)))))	**PROCEEDING NO. 20A-XXXXE**

AFFIDAVIT OF SANDRA L. JOHNSON
ON BEHALF OF
PUBLIC SERVICE COMPANY OF COLORADO

I, Sandra L. Johnson, 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 17 day of July 2020.

Sandra L. Johnson
Wildfire Mitigation Project Director

Subscribed and sworn to before me this 17th day of July, 2020.

Schuna D. Wright
Notary Public

My Commission expires May 6, 2021

SCHUNA D WRIGHT
Notary Public
State of Colorado
Notary ID # 19974007693
My Commission Expires 05-06-2021