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

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RE: IN THE MATTER OF ADVICE NO. 1797-ELECTRIC OF PUBLIC SERVICE COMPANY OF COLORADO TO REVISE ITS COLORADO P.U.C. NO. 8-ELECTRIC TARIFF TO IMPLEMENT RATE CHANGES EFFECTIVE ON THIRTY-DAYS' NOTICE.	**)))))))**	**PROCEEDING NO. 19AL-______E**

<u>DIRECT TESTIMONY AND ATTACHMENTS OF KYLE I. WILLIAMS</u>

ON

BEHALF OF

PUBLIC SERVICE COMPANY OF COLORADO

May 20, 2019

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

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DIRECT TESTIMONY AND ATTACHMENTS OF KYLE I. WILLIAMS

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GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym/Defined Term	Meaning
AEP	American Electric Power
AQIR	Air Quality Improvement Rider
BART	Best Available Retrofit Technology
CACJA	Clean Air – Clean Jobs Act
CC	Combined Cycle
CCR	Coal Combustion Residuals
Commission	Colorado Public Utilities Commission
CTG	Combustion Turbine Generators
DCS	Distributed Control System
ECA	Electric Commodity Adjustment
Energy Supply	Energy Supply Business Area of XES
EPM	Unifier Enterprise Project Management System
EPA	Environmental Protection Agency
FAC	Flow Accelerated Corrosion
FERC	Federal Energy Regulatory Commission
FFDC	Fabric Filter Dust Collector
GAAP	Generally Accepted Accounting Principles
HRSG	Heat Recovery Steam Generators
HTY	Historical Test Year
ID	Induced Draft
IRS	Internal Revenue Service

Acronym/Defined Term	**Meaning**
MW	Megawatt
NERC	North American Electric Reliability Corporation
NO_X	Nitrogen Oxide
OEM	Original Equipment Manufacturer
O&M	Operations and Maintenance
PCCA	Purchased Capacity Cost Adjustment
PM	Project Manager
Public Service or Company	Public Service Company of Colorado
RPC	Regional Planning Committee
SCR	Selective Catalytic Reduction
Tri-State	Tri-State Generation and Transmission Association, Inc.
Xcel Energy	Xcel Energy Inc.
XES	Xcel Energy Services Inc.

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DIRECT TESTIMONY AND ATTACHMENTS OF KYLE I. WILLIAMS

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

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Kyle I. Williams. My business address is 9500 Interstate 76, Henderson, Colorado 80640.

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

A. I am employed by Public Service Company of Colorado ("Public Service" or the "Company") as General Manager, Power Generation. Xcel Energy Services Inc. ("XES") is a wholly-owned subsidiary of Xcel Energy Inc. ("Xcel Energy"), and provides an array of support services to Public Service 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. As General Manager, Power Generation, I am responsible for providing management for the Public Service Generation business area within the Energy Supply organization, which provides leadership, strategic direction, and management for the power generation group within Public Service. A description of my qualifications, duties, and responsibilities is set forth after the conclusion of my testimony in my Statement of Qualifications.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my testimony is to support the $2.289 billion in Generation business area plant in service additions[1] for 2014 through 2018, and $63.7 million in Generation plant in-service additions for 2019, which are appropriately allocated to Public Service retail electric and are included in the 2018 historical test year ("HTY") that is presented by Company witness Ms. Deborah A. Blair.

Company witness Ms. Laurie J. Wold has calculated the monthly plant balances to develop the plant-related roll forward, which is in turn used by Company witness Ms. Blair to incorporate the year-end plant in service balances into the 2018 HTY cost of service. I also support the $143.5 million in 2018 Operations and Maintenance ("O&M") expenses (pre-adjustment) that are included in the 2018 HTY cost of service, as well as one known and measurable adjustment related to the Rush Creek Wind Project.

[1] The Company's last rate case was Proceeding No. 14AL-0660E (the "2014 Rate Case"), in which a 2013 HTY was approved.

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

A. Yes, I am sponsoring Attachments No. KIW-1 through KIW-5, which were prepared by me or under my direct supervision. The attachments are as follows:

- Attachment KIW-1: Generation Capital Additions 2014-2018
- Attachment KIW-2: Generation Capital Additions 2019
- Attachment KIW-3: Generation 2018 O&M Expenses by Cost Element
- Attachment KIW-4: Generation 2018 O&M Expenses by FERC Account
- Attachment KlW-5: 2019 Rush Creek O&M

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

A. As part of approving the cost of service developed by Company witness Ms. Blair, I recommend that the Colorado Public Utilities Commission ("Commission") approve the 2014–2019 Generation Business Area capital additions and 2018 Generation Business Area O&M expense, as well as the known and measurable adjustment associated with the Rush Creek Wind Project, described below and included in the Company's cost of service presented in this rate review.

II. GENERATION FUNCTIONS AND ACTIVITIES

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

A. In this section of my Direct Testimony, I provide an overview of the functions and activities carried out by the Public Service Generation business area.

Q. PLEASE PROVIDE AN OVERVIEW OF THE COMPANY'S GENERATION BUSINESS AREA.

A. Public Service's generation activities are to a large extent centrally managed by the Energy Supply Business Area of XES ("Energy Supply"). By coordinating activities through XES, the Xcel Energy utility companies are able to share best practices and achieve efficiencies. The focus of Energy Supply is to help coordinate and provide support services for the construction, operation, maintenance, decommissioning, and dismantling of the electric generating facilities of Public Service and its sister utility companies within the Xcel Energy system in a safe, reliable, cost-effective, and environmentally-sound manner. Energy Supply is also responsible for electric generation dispatch and environmental compliance oversight for these generating plants.

Q. PLEASE DESCRIBE PUBLIC SERVICE'S GENERATION PORTFOLIO.

A. In general, Public Service serves its electric retail and wholesale customers in Colorado with power purchased pursuant to long-term power purchase agreements or power generated by its own power plants. The focus of my Direct Testimony is limited to the generation that is owned by the Company. We recover the vast majority of our capacity and energy costs associated with our purchased power resources through a combination of the Purchased Capacity Cost Adjustment ("PCCA") and Electric Commodity Adjustment ("ECA") riders, respectively, which are annually reviewed by the Commission in other proceedings, not through base rates.

Public Service's generating fleet has a net maximum capacity of approximately 6,000 Megawatts ("MW"). Our generating facilities use a variety of fuel sources including coal, natural gas, water (hydro), and wind. Following the implementation of our Clean Air–Clean Jobs Act ("CACJA") compliance plan and the retirement of Valmont Unit 5, the fuel-switch of Cherokee Unit 4, and the completion of the Rush Creek Wind project, the profile of our generation fleet as it existed in 2018 is shown in Table KIW-D-1 below:

Table KIW-D-1
Summary of Post-CACJA Generation Units and Capacity

Type	2018	
	No. of Units	Total MWs
Coal	8	1,992
Gas	21	3,297
Hydro	11	319
Wind	1	600

Q. PLEASE IDENTIFY THE CURRENT PRIMARY GENERATING UNITS IN PUBLIC SERVICE'S GENERATION PORTFOLIO.

A. Public Service's current generating fleet includes the following facilities (capacity values presented as 2018 net dependable capability as of March 1, 2018):

<u>Coal</u>:

- *Comanche Generating Station:* A three-unit, 1,426 MW generation station located in Pueblo, Colorado, in which Public Service has rights to 1,171 MW. Public Service operates Unit 3 of this station on behalf of itself and other owners.
- *Craig Generating Station*: A three-unit, 2,183 MW generating facility located in Craig, Colorado, in which Public Service has rights to 83 MW of capacity from two units. This facility is operated by Tri-State Generation and Transmission Association, Inc. ("Tri-State") as part of the Yampa Project. The Yampa Project constructed Craig Station from 1974 to 1984; construction was completed on Unit 2 in 1979, Unit 1 in 1980 and Unit 3 in 1984. Unit 3 is owned solely by Tri-State.
- *Hayden Generating Station:* A two-unit, 441 MW generating facility located in Hayden, Colorado. Public Service operates this plant on behalf of itself and three other co-owners as part of the Yampa Project. Public Service has rights to 233 MW of capacity from the two units. Emission control equipment has been added to the Hayden plant, with the latest installments occurring in 2015 for Unit 1 and 2016 for Unit 2.

- *Pawnee Generating Station:* A one-unit, 505 MW generating facility located in Brush, Colorado. Emission control equipment has been added to the Pawnee plant, with the latest installments occurring in 2014.

Natural Gas:

- *Blue Spruce Energy Center:* A two-unit, 292 MW simple cycle plant located in Aurora, Colorado.
- *Cherokee Generating Station:* A four-unit, 950 MW facility located just north of downtown Denver and originally built as a coal-fired plant, which has since undergone a complete restructuring as part of the CACJA. A new natural gas combined cycle ("CC") plant, Units 5, 6 and 7, went online in 2015, capable of producing almost 600 MW of cleaner energy. Original coal-fired Units 1, 2, and 3 have been retired. Unit 4 was fuel-switched from coal to natural gas at the end of 2017, and, as of 2018, has an updated Net Max Capacity of 310 MW.
- *Fort St. Vrain Generating Station:* A six-unit, 1,034 MW combined and simple cycle generating plant located in Platteville, Colorado. Fort St. Vrain Generating Station was repowered with gas after the nuclear plant was decommissioned in 1989.
- *Rocky Mountain Generating Station:* A three-unit, 615 MW combined cycle generating facility located in Hudson, Colorado.
- *Valmont Generating Station Unit 6:* Valmont was a two-unit, 235 MW generating facility located in Boulder, Colorado. Consistent with the

Company's approved CACJA Plan, the Company retired Unit 5, a 184 MW coal-fired unit located in Boulder, Colorado, at the end of 2017. Unit 6 is a 51 MW simple cycle combustion turbine that uses natural gas as a fuel.

- *Peaking Units:* There are five simple cycle combustion turbines that use natural gas as a fuel located on three sites that total 153 MW: Ft. Lupton Units 1 & 2, Fruita and Alamosa Units 1 & 2.

Hydro:

- *Ames Hydro Generating Station:* A one-unit, 3.8 MW generating facility located near Ophir, Colorado. Decommissioning of a portion of the Ames Hydro Generating Station is in progress.
- *Cabin Creek Generating Station:* A two-unit, 324 MW generating facility located near Georgetown, Colorado.
- *Georgetown Hydro Generating Station*: A two-unit, 1.6 MW generating facility located in Georgetown, Colorado.
- *Salida Generating Station:* A two-unit, 1.4 MW facility located in Poncha Springs, Colorado. Decommissioning of Salida Unit 1 is in progress.
- *Shoshone Generating Station:* A two-unit, 15 MW generating facility located in Glenwood Springs, Colorado.
- *Tacoma Hydro Generating Station:* A three-unit, 4.5 MW generating facility located north of Rockwood, Colorado. Tacoma Unit 3 is presently not operable.

Wind:

- *Rush Creek*: The Rush Creek Wind Facility is a 600 MW wind farm located on the eastern plains of Colorado in Cheyenne, Elbert, Kit Carson, and Lincoln Counties. Rush Creek came online in late 2018.

Q. HOW DOES PUBLIC SERVICE MEET THE REMAINDER OF ITS RESOURCE NEEDS?

A. Public Service meets a substantial portion of its generation needs through long-term purchased power agreements. Specifically, Public Service has over 4,500 MW of generating capacity under contract to meet our customers' energy needs. These generating capacity contracts include over 2,500 MW of wind generation and over 250 MW of solar generation. To respond to customers' increased interest in renewable resources, Public Service has steadily increased its renewable energy offerings in recent years. For instance, customers have the opportunity to participate in Public Service's Windsource and Renewable*Connect programs. Both these initiatives are available to residential and business customers alike, leveraging renewable generation (wind and solar, respectively) without additional cost to non-participants. Specifically, Renewable*Connect allows Public Service customers to cover up to 100 percent of their energy usage by choosing to buy solar from a 50 MW solar array in Deer Trail. Similarly, customers enrolled in Windsource support wind energy generated from wind resources in Colorado at a nominal fee per 100 kW/h block.

III. GENERATION CAPITAL BUDGET, PROJECT SELECTION, AND FUNDING

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

A. The purpose of this section of my Direct Testimony is to provide an overview of the primary drivers of Generation's 2014–2019 capital additions, and discuss Generation's project development, budgeting, and management processes.

Q. WHAT ARE THE PRIMARY DRIVERS AFFECTING PUBLIC SERVICE'S GENERATION CAPITAL EXPENDITURES?

A. Generation generally makes capital investments to its fleet for three purposes:

- *Renewable/New Generation:* The construction of new generating units, or the decommissioning of old generating units, is subject to changing system requirements and other factors. Changes to system requirements may result from new environmental mandates, the end of the useful life of a facility, or changes in the level of energy resources needed to serve our customers. One example of a Renewable/New Generation Project is the Company's 600 MW Rush Creek Wind Facility, which was approved by the Commission in Proceeding No. 16A-0117E. The Company developed the Rush Creek Wind project to improve environmental performance and lower overall system costs by capturing the currently attractive pricing for wind generation.
- *Environmental Improvement*: Our plants may require new systems and components to continue to operate reliably and consistently in compliance with existing and new environmental standards from Federal Energy

Regulatory Commission ("FERC"), North American Electric Reliability Corporation ("NERC"), Environmental Protection Agency ("EPA"), and other regulatory requirements. This type of capital addition can include repowering units from one fuel to another, or the addition of new environmental technology such as scrubbers and other emissions controls. Existing emissions control components such as Fabric Filter Dust Collector ("FFDC") or "baghouse" bags wear out and periodically need to be replaced. Such capital projects vary in cost from tens of thousands of dollars to multi-million dollar additions. For example, the Company is scheduled to replace all 13,664 bags in FFDC baghouse on Pawnee Unit 1 in 2019 that have reached the end of their useful life due to corrosion. This includes replacing all the bag springs, hitch pins, washers and bag caps as they are rusted out. The bag replacements are needed in order to meet regulatory and opacity permit requirements, and to maintain the reliability of the unit.

- *Reliability/Performance Enhancement*: Our generating stations are large, complex machines that require regular upkeep to ensure the continued safe, reliable, and efficient operation of Public Service's existing generation fleet. In order to keep pace with regular upkeep, Generation budgets to replace boiler, turbine, and auxiliary system components. One example of a reliability/performance enhancement project is the multi-year project on Comanche Unit 3 to replace the Distributed Control System ("DCS"), which is critical to monitoring and running the plant's equipment. The DCS vendor no longer supports the version of software used at Unit 3, and as a result, the plant needs to replace the software and make associated necessary hardware upgrades in order to maintain proper cyber protection and vendor support.

Q. PRIOR RATE CASES HAVE INCLUDED "ROUTINE MAINTENANCE" AND "ROUTINE MAINTENANCE PROJECTS." WHAT IS MEANT BY THAT TERM AND WHY ARE THESE PROJECTS NOT INCLUDED IN THIS RATE REVIEW?

A. Many of the Company's capital additions involve replacing worn or obsolete parts of our generating units which—under Generally Accepted Accounting Principles ("GAAP"), Internal Revenue Service ("IRS") regulations, and our capitalization policy—are considered capital additions. We also make safety improvements at our plants, and are required to make the usual investments in our plants to maintain compliance with environmental or other regulatory requirements. We used a generic term to include these types of capital additions as "routine" maintenance, which forms the baseline of our annual capital spend. For this rate review, the Company has elected to separate the project types into Environmental Improvement and Reliability/Performance Enhancement projects to better describe their purpose.

Q. ARE GENERATION CAPITAL NEEDS READILY PREDICTABLE?

A. In general, yes. The Company's capital needs to support the existing fleet are fairly consistent year to year. Despite this reasonable degree of certainty, there are major projects, new units or major capital additions such as the Cherokee combined cycle project or the new Hayden Selective Catalytic Reduction ("SCR") systems on Units 1 and 2 that result in one-time expenses.

Q. PLEASE OUTLINE HOW PUBLIC SERVICE DEVELOPS ITS CAPITAL BUDGET FOR ITS GENERATION BUSINESS AREA.

A. Capital projects are submitted to Generation by our plants, which we then evaluate and rank based on their operational and financial merits. As the plants identify and develop capital projects, specific operational and other data is available that allows them to identify and quantify how the project meets specific criteria, as discussed below. The plants identify how the capital project meets that specific criteria on the project document that they submit as part of the project evaluation and budgeting process.

Generation has specific evaluation criteria that it uses to review and prioritize each capital project, including legislative commitments, financial merit (such as Net Present Value or Present Value of Revenue Requirements), operational factors such as the impact on outage rates, equipment condition, environmental compliance, and/or regulation (*e.g.*, Regional Haze, Colorado Section 9 – Waste Impoundments, Standards for the Disposal of Coal Combustion Residuals ("CCR") in Landfills and Surface Impoundments), efficiency, reliability, capacity, and safety. Generation evaluates projects that may be completed in a single year (for example, replacing the bags in a FFDC), as well as those that will require multiple years to complete (for example, constructing a new lime spray dryer).

Generation develops a ranked list of projects; this list is then evaluated against the available budget for the next year, the planned unit outage schedule for the next several years, and known regulatory factors such as new environmental regulations. This capital budget process allows the Company to develop a capital plan that covers a five-year period, with associated five-year capital expenditures and estimated in service dates.

As each new fiscal year arrives, the Public Service Regional Planning Committee ("RPC") reviews and validates the list of projects for the next fiscal year, makes adjustments to schedules and/or budgets as required to account for evolving conditions and factors, and proposes a list of projects that meets the planned budget for the next five years. The most recent five years of planning information, capital expenditures, and estimated in service dates are developed and recorded in the Unifier Enterprise Project Management System ("EPM"). As each project is reviewed by the RPC, the specific criteria and supporting information are reviewed and verified. The verified information is entered into the EPM where numerical ranks are calculated and a project is prioritized along with other submitted projects. The RPC continually meets throughout the year to make adjustments to projects currently under way.

Q. WHAT PROCESS DOES PUBLIC SERVICE FOLLOW TO MANAGE AND CONTAIN ITS GENERATION CAPITAL COSTS?

A. Capital budgets are finalized at least one year prior to their execution. Part of the project development process includes the identification of key schedule dates and budgetary milestones. Once a capital project has been approved for execution, it is assigned to a Project Manager ("PM"), typically three to six months in advance of the first planned activity required to commence the project. The PM is responsible for working with the plant to review and more fully develop the project schedule and monthly cash flow requirements for the assigned project. The PM will typically contact vendors and contractors to firm up cost and schedule data and begin engineering and purchasing activities. If the PM identifies specific information related to changes in cost or the schedule, they advise management and recommend options for consideration. Management then responds as appropriate depending on the specifics of the information provided.

Generation is expected to manage our capital budget. The most important budget management tool is good project planning. If we plan, budget, and implement our projects well, there is little additional management of the overall capital budget needed. However, unexpected events can, and do, occur. For example, if there is an unexpected failure of a large component at an existing plant, such as a cooling tower circulating water pump, we must address this event and the resulting expenditure when it occurs. Some of our routine work orders exist to meet these needs for very low-cost projects, such as a valve failure, that are not individually budgeted. Further, we would look to reduce the costs of other budgeted projects, or defer them all together if necessary and possible. However, sometimes we must continue with certain projects as-budgeted, since they are necessary for the continued reliable operation of our plants, or because putting them on hold would unnecessarily incur costs despite the need for additional expenditures elsewhere.

IV. GENERATION CAPITAL ADDITIONS SINCE 2013 TEST YEAR

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

A. The purpose of this section of my testimony is to provide an overview of the Generation Business Area's capital additions since the Company's 2014 Electric Rate Case, which included a 2013 HTY.

Q. WHAT IS THE TOTAL DOLLAR AMOUNT OF GENERATION CAPITAL ADDITIONS YOU ARE SUPPORTING IN THIS CASE?

A. As reflected in Attachment KIW-1, I support $2.289 billion (Total Company) for Generation Area capital additions from 2014–2018, and, as shown in Attachment KIW-2, I support $63.7 million (Total Company) for capital additions that will go into service in 2019. Below I primarily discuss the Company's 2014-2018 Capital Additions. I address the Company's 2019 planned in-service capital additions in more detail in Section V, below.

Q. PLEASE DESCRIBE HOW YOU BREAK OUT THESE CAPITAL ADDITIONS.

A. I break out projects over the course of 2014–2019 by using the three categories described above: (1) renewable/new generation; (2) environmental improvement; and (3) reliability/performance enhancement. I use these categories because, as discussed above, they are the primary drivers of Generation's capital additions. Moreover, from a cost perspective, expenditures by Generation for capital additions cover a wide range. Therefore, I utilized a $5 million materiality threshold for projects and describe projects where the capital addition exceeds that level for the years 2014–2018 and an $800,000 materiality threshold for 2019. Table KIW-D-2 provides an overview of this data.

Table KIW-D-2
Generation Capital Additions 2014-2019
Public Service (Total Company)
(Dollars in Millions)

Category	2014	2015	2016	2017	2018	2019
Renewable/New Generation**	$0	$583.6	$0.3	$0	$896.8	$0.6
Environmental Improvement	$292.4	$53.5	$37.8	$29.7	$10.1	$14.2
Reliability/Performance Enhancement	$88.7	$70.9	$104.6	$43.6	$77.1	$48.9
TOTAL*	**$381.1**	**$708.0**	**$142.7**	**$73.3**	**$984.0**	**$63.7**

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

**The Cherokee 2x1 Project and Rush Creek Wind Project, which comprise the Company's Renewable/New Generation Projects between 2014-2019, are categorized as "Reliability/Performance Enhancement" projects in Attachments KIW-1 and LJW-4. The specific cells for these projects are labeled CHR0C 2X1 Combined Cycle COD 2, CHR5C 2X1 Combined Cycle CTG, CHR6C 2X1 Combined Cycle CTG, CHR7C 2X1 Combined Cycle CTG, PSCo Wind-Rush Creek, and Rush Creek-Land & Land Rights.

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

Q. PLEASE DISCUSS THE PRIMARY DRIVERS OF GENERATION CAPITAL ADDITIONS RELATED TO RENEWABLE/NEW GENERATION SINCE THE 2013 HTY.

A. The Company's capital additions related to Renewable/New Generation between 2014–2018 are the Cherokee 2x1 Combined Cycle Project and the Rush Creek Wind project:

- *Cherokee 2x1 Combined Cycle Projects (2015)*: These projects were part of the overall Cherokee 2x1 combined cycle plant installed as part of the CACJA. The plant is a 577 MW gas-fired power plant. The Cherokee 2x1 combined cycle projects consisted of the installation of: (1A) two "F"-class combustion turbine generators ("CTGs"); (2A) two heat recovery steam generators ("HRSGs"), Units 5 and 6; and (3) one steam turbine generator, Unit 7, as well as auxiliary equipment. The facility was placed in-service in 2015. The projects, by operating unit including plant "Common" represented $583.9 million in capital additions placed in service in 2015.[2]
- *Public Service Rush Creek Wind (2018):* The Rush Creek Wind Project provided the Company the opportunity to develop, own, and operate a new 600 MW capacity wind facility located in eastern Colorado comprised of the Rush Creek I and II sites. This is the generation plant portion of the project. The project also included a 345 kV generation intertie to interconnect the Rush Creek Wind Project to the grid, as discussed by Company witness

[2] Figure includes some trailing capital additions placed in service in 2016.

Ms. Connie L. Paoletti. This project helped us meet our strategic initiative to increase our renewable portfolio, and continues to reduce carbon emissions from Public Service's system. The Rush Creek Wind project consisted of the design, installation and commissioning of 300 Vestas V110 2.0MW turbines. Construction commenced in April 2017. Rush Creek was placed in-service on October 23, 2018. The facility Commercial Operation Date was December 7, 2018. Currently road and property restoration activities still remain to be completed. This project represents $896.8 million in capital additions placed in service in 2018.

Q. PLEASE DISCUSS THE PRIMARY DRIVERS OF GENERATION CAPITAL ADDITIONS RELATED TO ENVIRONMENTAL IMPROVEMENT BETWEEN 2014–2018.

A. The Company's capital additions related to Environmental Improvement between 2014–2018 are represented by the following projects:[3]

- *Pawnee Unit 1 SCR and Scrubber Installation (2014):* This project involved the installation of an SCR system and a dry scrubber as part of the Company's plan to comply with the CACJA. The SCR reduces the unit's nitrogen oxide ("NO_X") emissions and the dry scrubber will reduce the unit's SO2 emissions. The scope consisted of the new SCR unit, an aqueous ammonia storage and injection system, three dry scrubber vessels, a lime

[3] Projects recovered through the CACJA Rider include the 2X1 Combined Cycle plant, including interconnection, at Cherokee Station (*i.e.*, Cherokee Units 5, 6, and 7; a SCR and particulate scrubber at Pawnee; and SCR equipment at the Hayden Station on Units 1 and 2).

preparation system, ash storage silos and ash/line slurry spray injection system. Steam coil air heaters were added to increase the flue gas temperature at low loads and a tubular air heater was added to reduce the flue gas temperature at high loads. New Induced Draft ("ID") fans and motors were also added to overcome the increased flue gas pressure drop of the SCR and the dry scrubber. This project represented $289.9 million in capital additions placed in service in 2014.

- *Hayden Unit 1 SCR Project (2015):* This project involved the installation of a SCR system as part of the Company's plan to comply with the CACJA. The SCR reduces the unit's NO_X emissions. The scope consists of a new SCR unit, an anhydrous ammonia storage and injection system (shared with Unit 2), and new ID fan motors to overcome the increased flue gas pressure drop of the new SCR. This project represented $49.5 million in capital additions (Public Service share) placed in service in 2015.
- *Hayden Unit 2 SCR Project (2016):* This project involved the installation of a SCR system as part of the Company's plan to comply with the CACJA. The SCR reduces the unit's NO_X emissions. The scope consisted of a new SCR unit, an anhydrous ammonia storage and injection system (shared with Unit 1), and new ID fan motors to overcome the increased flue gas pressure drop of the new SCR. This project represented $27.4 million in capital additions (Public Service share) placed in service in 2016.

- *Rocky Mountain Generating Station Surface Impoundment Lining Project (2016):* To comply with the new requirements of the Clean Water Act, the Company cleaned up, re-lined, and installed a leak detection system in its Rocky Mountain Generating Station evaporation and cooling tower blowdown ponds. This project represented $5.7 million in capital additions placed in service in 2016.[4]
- *Craig Generating Station Units 1 and 2 – Install Craig YAMPA SCR (2017):* The Company is a minority owner of Craig Generating Station Units 1 and 2. The Unit 2 SCR system (post-combustion NO_x control technology) was installed pursuant to the Best Available Retrofit Technology ("BART") requirement of Colorado's Regional Haze State Implementation Plan. This project represented $18.2 million in capital additions placed in service in 2017 and $293,409 in capital additions placed in service in 2018.

Q. PLEASE DESCRIBE THE PRIMARY DRIVERS OF GENERATION CAPITAL ADDITIONS RELATED TO RELIABILITY/PERFORMANCE ENHANCEMENT BETWEEN 2014-2018.

A. The Company's capital additions related to Reliability/Performance Enhancement between 2014-2018 are represented by the following projects. As projects related to Reliability/Performance Enhancement account for the greatest number of Generation's capital projects, I have broken this category out further by year:

[4] This figure includes trailing costs from 2017.

<u>2014 Capital Projects</u>

- *Comanche Unit 1 Water Wall Replacement (2014):* The scope of work involved replacing all four walls of the boiler water wall tubes from elevation 4876’-0” to 4950’-9” in 30 feet and 40 feet sections in Comanche Unit 1’s boiler. The scope also included replacing selected sootblowers with water cannons. The tube material was replaced with tubing more resistant to thermal fatigue cracking with the addition of the water lances. The water walls on Unit 1 exhibited cracking due to thermal shock related to existing water wall cannon use. To slow or stop further tube leaks, weld overlay was applied in 2000, while long-lasting fatigue cracking eventually developed on the overlay. Since the entire section of water wall tubes were replaced, it was prudent to incorporate water cannons at the same time. This project represented $7.7 million in capital additions placed in service in 2014.
- *Pawnee Unit 1 Finishing Superheater Replacement (2014)*: This project involved replacing of the finishing superheat section of the Pawnee unit boiler. Pawnee’s finishing superheater had been in service for 30 years. A number of known problems were addressed as part of this replacement. Those problems included a significant number of welds inside the crown seal area (inaccessible for simple repairs) that have lack of fusion during original manufacturing, cracking at tube to tube solid ties, deterioration of dissimilar metal weld, and tube failures due to overheated sections of tubes. The backpass temperature also needed to be reduced due to the addition of SCR

system and the SO_2 dry scrubber. This project represented $7.3 million in capital additions placed in service in 2014.

- *Blue Spruce Unit 1 Combustion Turbine Part Replacement (2014):* The project entailed replacement of parts for the Blue Spruce Unit 1 combustion turbine. Replacement parts were required for continued operation, per the Original Equipment Manufacturer's ("OEM's") recommended end of life of the components. These included combustion liners, and the stage one nozzle. The components had been repaired as many times as possible, but had reached their End of Life per the OEM GER3620. The likelihood of the parts failing if used again was high, and the consequence to the machine would be significant. This project represented $6.0 million in capital additions placed in service 2014.

<u>2015 Capital Projects</u>

- *Comanche Unit 3 Finishing Superheater Section Replacements (2015):* This project consisted of replacing the Comanche Unit 3 finishing superheater section with a different material. Tube failures in this section resulted in 6 to 7 percent of the current Unit 3 Unplanned Outage Rate. The build-up and exfoliation of oxides on the inside of the tubes caused tube pluggage which reduced or stopped circulation resulting in tube overheating and failure. The material exfoliation rate was expected to increase over time per the OEM. This project represented $11.7 million in capital additions in 2015.

- *Rocky Mountain Generating Station Major Parts Replacement (2015):* This project included replacement of Rocky Mountain Generating Station combustion components and two turbine stage blades, vanes, and ring segments, consistent with the manufacturer's suggested end of life for the components. The likelihood of the parts failing if operation was continued beyond the OEM recommendation was high, and the consequence to the machine would have been significant. This project represented $8.2 million in capital additions placed in service in 2015.

<u>2016 Capital Projects</u>

- *Pawnee Unit 1 Reheater Replacement (2016):* This project replaced the complete reheat section of the boiler including the inlet and outlet headers. A redesign of the reheat section was needed to open the spacing between the assemblies. This meant reducing the number of assemblies and also reducing the height of the upper horizontal bank at the rear wall to make the sootblowers more efficient, but still maintain the same surface area. This project represented $18.0 million in capital additions in 2016.[5]
- *Clear Lake Dam Rebuild (2016):* This project rebuilt the Clear Lake Dam, which is located above the city of Georgetown. The original Clear Lake Dam was built in the 1910s and has been modified and partially reconstructed thru the 1960s. In 2013, sink holes were discovered upstream of the dam and many leaks were discovered within and around the outlet works of the dam.

[5] This figure includes trailing credits from 2017.

The old dam was demolished down to its base in 2014. A new 45 feet tall by 220 feet long by 50 feet wide structural concrete dam and structural steel outlet works was built in 2015 and 2016. This project represented $13.9 million in capital additions in 2016.[6]

- *Pawnee Unit 1 Cooling Tower Rebuild (2016):* This project consisted of replacing the entire cooling tower structure on its existing basin. The cooling tower serves as the cooling mechanism for the circulating water that flows through the condenser and other auxiliary systems for the plant. Without proper operation of the cooling tower, the unit would have to be de-rated or be taken off-line. An inspection of the tower in 2012 revealed that many of the structural components had failed or were cracked and rotting. The new tower design was improved to increase cooling capacity. This project represented $13.9 million in capital additions in 2016.
- *Tacoma Cascade Flow Line Replacement (2016):* The Tacoma Cascade Flow Line outside of Durango, Colorado is the water intake for the Tacoma Hydro-electric power plant. It takes water from a drop structure in Cascade Creek for a distance of approximately 14,000 feet to a channel that delivers water to Electra Lake, and then on to Tacoma Hydro. Flow line locations are in residential, camping, and in mountainside locations. If a flow line fails, it will causes extensive damage to private and public structures. The original flow line was put in place in the 1950s. Approximately 6,800 feet of this flow

[6] This figure includes some trailing additions from 2017-2018.

line was replaced with 64 inch diameter ductile iron pipe. This project represented $7.8 million in capital additions placed in service in 2016.

2017 Capital Projects

- *Rocky Mountain Energy Center Barrier Land Purchase (2017)*: This project involved the purchase of a safety barrier of land surrounding the Rocky Mountain Energy Center. Rocky Mountain Energy Center uses anhydrous ammonia that is extremely dangerous if it leaks. Originally, the plant had a safety barrier of land around it with a protective covenant only allowing agricultural uses. The owner of the land successfully overcame this covenant and had the land rezoned, allowing him to build one-acre homesteads at the fence line. Purchasing the land is necessary to protect people from possible harm, and to proactively stop nuisance complaints for noise and light from home owners at the fence line. This project represented $6.0 million in capital additions placed in service in 2017.

2018 Capital Projects

- *Cherokee Generation Station Unit 6 Hot Gas Path Parts Installation (2018):* This Cherokee Generation Station hot gas path inspection project included replacement of all combustion components, and all three turbine stage nozzles, shrouds, and buckets, consistent with the manufacturer's suggested replacement schedule; these had reached their end of life, again per manufacturer requirements. The likelihood of the parts failing if run beyond the OEM recommendation was high, and the consequence to the machine would have been significant. This project replaced these components. This project represented $15.2 million in capital additions placed in service in 2018.

- *Rocky Mountain Generating Station Major Outage Support (2018):* Rocky Mountain Generating Station's combustion components and all four turbine stage blades, vanes and ring segments reached their end of life per manufacturer requirements. The likelihood of the parts failing if run beyond the OEM recommendation was high, and the consequence to the machine would have been significant. This project replaced these components, and represented $8.3 million in capital additions placed in service in 2018.
- *Fort St. Vrain Unit 3 Combustion Turbine Rotor Replacement (2018):* This project replaced the Fort St. Vrain Unit 3 combustion turbine rotor with a refurbished rotor, consistent with OEM recommendations and industry experience. A rotor wheel with a crack cannot be operated without extreme risk of significant failure of the entire turbine, and a replacement turbine wheel has a 12-month lead time. A vendor purchased a rotor and performed a life extension on the rotor to have it ready for our Unit 3 outage in 2018. This project represented $7.7 million in capital additions placed in service in 2018.
- *Fort St. Vrain – Combustion Equipment Replacement (2018):* Fort St. Vrain's combustion Fuel Nozzles and Stage 1 Turbine Buckets had reached their end of life per manufacturer specifications. The likelihood of the parts failing if run beyond the OEM recommendation was high, and the consequence to the

machine would have been significant. This project included the purchase and installation of replacement parts for all combustion components, and all Stage 3 Turbine components required for continued operation. This project represented $6.1 million in capital additions placed in service in 2018.

- *Pawnee Emergent Fund – Steam Production (2018):* A small part of our capital budget is dedicated to emergent work that occurs at our plants. This type of work includes unexpected failure of major equipment such as air compressors, control valves, gearboxes, high-energy pumps, motors, etc. This work represented $6.3 million in capital additions placed in service in 2018.

Q. BEYOND THESE CAPITAL ADDITIONS, HAVE THERE BEEN ANY SIGNIFICANT RETIREMENTS SINCE 2013?

A. Yes. Since 2013, the Company has retired Valmont Unit 5, Ponnequin Wind, Salida Unit 1 (in process), Cherokee Unit 3, and Zuni Station.

Q. PLEASE DESCRIBE THE ARAPAHOE STATION RETIREMENT.

A. Arapahoe Station was a coal-fired, steam electric generation station with four operating units located in Denver, Colorado. The units' primary fuel source was coal, but the units were capable of burning natural gas as well. Arapahoe Units 1 and 2 were commissioned in 1950 and 1951, respectively, and retired in 2002 pursuant to the Company's Air Quality Improvement Rider ("AQIR"). Units 3 and 4 were commissioned in 1951 and 1955, respectively, and retired in 2013 pursuant to the Commission's Decision No. Decision No. C10-1328.

TABLE KIW-D-3

Arapahoe				
Unit	1	2	3	4
Generation	44 MWN	44 MWN	48 MWN	110 MWN
Fuel Type	Coal / Natural Gas	Coal / Natural Gas	Coal / Natural Gas	Coal / Natural Gas
Date Commissioned	1950	1951	1951	1955
Date Retired	2002	2002	2013	2013

Q. PLEASE DESCRIBE THE VALMONT UNIT RETIREMENT.

A. Valmont Unit 5 was a coal-fired, steam electric generating unit located in Boulder, Colorado. Its primary fuel source was coal; the unit also was capable of burning natural gas. Unit 5 was commissioned in 1964 and retired in 2017 pursuant to the CACJA.

TABLE KIW-D-4

Valmont	
Unit	5
Generation	196 MWG
Fuel Type	Coal / Natural Gas
Date Commissioned	1964
Date Retired	2017

Q. PLEASE DESCRIBE THE CHEROKEE UNIT 3 RETIREMENT AND UNIT 4 FUEL SWITCH.

A. Cherokee Station was a coal-fired, steam electric generating station with four operating units located in Denver, Colorado. The units' primary fuel source was coal; the units were capable of burning natural gas as well. Cherokee Unit 1 was commissioned in 1957 and retired in 2012, Unit 2 was commissioned in 1959 and retired in 2011, and Unit 3 was commissioned in 1962 and retired in 2015.

Cherokee Unit 4 was commissioned in 1968 and fuel-switched to natural gas starting in 2018 under the CACJA.

TABLE KIW-D-5

Cherokee				
Unit	1	2	3	4
Generation	117 MWG	114 MWG	170 MWG	383 MWG
Fuel Type	Coal / Natural Gas	Coal / Natural Gas	Coal / Natural Gas	Coal / Natural Gas
Date Commissioned	1957	1959	1962	1968
Date Retired	2012	2011	2015	Switched to natural gas 2017

Q. PLEASE DESCRIBE THE ZUNI STATION RETIREMENT.

A. The original Zuni Station was built about 115 years ago in Denver, Colorado. Boilers at Zuni have been in service since 1948 providing both electric generation and steam production. The boilers, station support equipment, and systems are up to 70 years old. Zuni Station operated with three boilers capable of burning coal, natural gas, or number six fuel oil. There were also two steam turbines. Zuni Station was retired for electric dispatching purposes on December 31, 2015. In 2016, Public Service performed certain necessary repairs and capital upgrades to the Zuni Unit 1A Boiler and common system facilities. Since January 1, 2016, Public Service has operated that boiler exclusively as a steam production facility on an interim basis. Zuni will cease steam operations in 2019, as described in the pending Steam Rate Review in Proceeding No. 19AL-0063ST.

V. 2019 CAPITAL ADDITIONS

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

A. The purpose of this section of my testimony is to provide an overview of the Generation's Business Area's planned capital additions that will go in service in 2019.

Q. PLEASE DESCRIBE THE CAPITAL ADDITIONS THE GENERATION BUSINESS AREA PLANS TO PLACE IN SERVICE IN 2019.

A. As reflected in Attachment KIW-2 and Table KIW-D-2, above, during 2019, the Company plans to place into service $63.7 million in Generation-related capital additions. Below I describe these capital additions by budget group, providing an overview of approximately 80 percent of the Generation Business Area's forecasted portfolio of projects (which amounts to a materiality threshold of approximately $800,000 per project for projects planned to be placed in service in 2019).[7]

1. Renewable / New Generation

The total capital additions planned for Renewable / New Generation projects in 2019 is $550,000. The Company is not planning to place any new generation projects in service in 2019. This figure represents capital addition carryover from the Rush Creek project and a land purchase for the Cheyenne Ridge Wind Project.

[7] Note that some projects listed in Attachment KIW-2 contain in service dates before 2019. This can generally be attributed to trailing costs incurred in 2019 for projects that were booked as going into service in a prior year.

2. Environmental Improvement

Total planned capital additions for Environmental Improvement projects in 2019 is $14.2 million. Key projects over $800,000 related to Environmental Improvement for 2019 include:

- *Pawnee Unit 1 SCR Catalyst Replacement and Ash Cleaning System (2019):* This project will replace two layers of catalyst and to install an ash cleaning system at the inlet of each of the two new layers. Ash has infiltrated and partially plugged the second and third layers of catalyst. A new catalyst design, less prone to plugging, will replace the existing catalyst. A cleaning system consisting of high pressure air will be installed above the second and third layers of the new catalyst to reduce the potential of plugging. The project is scheduled to go into service upon completion of the unit outage at the end of May. This project represents a forecast $5.1 million in capital additions in 2019.
- *Pawnee Unit 1 Baghouse Bag Replacements (2019):* This project will replace the baghouse bags. The bags are seven years old. The historical life expectancy is about six years. The project will go into service upon completion of the unit outage, scheduled for the end of May. This project represents a forecast $3.1 million in capital additions in 2019.
- *Cabin Creek Protection and Mitigation Enhancement Implementation (2019):* This project resulted from the FERC relicensing agreement between Xcel Energy and the US Forest Service. The scope of work includes development

of habitat for fishery, boreal toads, beaver dam refurbishment, upgrading the road to Cabin Creek's upper reservoir, and new instrumentation and controls on the outfall of the lower reservoir and recreational area improvements. The project is scheduled to go into service at the end of August 2019. This project represents $4.0 million in capital additions in 2019.

- *Cabin Creek Protection and Mitigation Enhancement Implementation (2019):* This is the same project as above. Two work orders were inadvertently created and charged for the same project. The project is scheduled to go into service at the end of August 2019. This portion of the overall project above represents $0.9 million in capital additions in 2019.

3. Reliability / Performance Enhancement

Total spend on Reliability / Performance Enhancement projects for 2019 will be $48.9 million. Key projects over $800,000 related to Reliability / Performance Enhancement for 2019 include:

- *Cherokee Generation Station Unit 5 Hot Gas Path Parts Installation (2019):* The Cherokee Generation Station hot gas path inspection project includes replacement of all combustion components and all three turbine stage nozzles, shrouds, and buckets consistent with the manufacturer's suggested replacement schedule. The likelihood of the parts failing if run beyond the OEM recommendation is high, and the consequence to the machine would be significant. The project will go into service following completion of the outage, scheduled for May 2019. The project represents $12.2 million in capital additions to be placed in service in 2019.

- *Rocky Mountain Generating Station Unit 1 Combustion Turbine Parts Exchange (2019):* The Rocky Mountain Generating Station hot gas path inspection project includes replacement of all combustion components and turbine blades, vanes and ring segments for turbine stages 1 and 2 consistent with the manufacturer's suggested replacement schedule. The likelihood of the parts failing if run beyond the OEM recommendation is high, and the consequence to the machine would be significant. The project will go into service following completion of the outage, scheduled in November 2019. It represents $5.1 million in capital additions to be placed in service in 2019.
- *Fort St. Vain Unit 2 Combustion Turbine Hot Gas Path Inspection (2019):* The Fort St. Vrain Generating Station hot gas path inspection project includes replacement of all combustion components and turbine buckets, nozzles and shrouds for turbine stages 1 and 2 consistent with the manufacturer's suggested replacement schedule. The likelihood of the parts failing if run beyond the OEM recommendation is high, and the consequence to the machine would be significant. The project went into service following completion of the outage in April 2019. It represents $3.7 million in capital additions to be placed in service in 2019.
- *Rocky Mountain Generating Station Unit 1 Compressor Blade Replacement (2019):* The Rocky Mountain Generating Station Project includes

replacement of all 16 stages of compressor blades that have reached end of life. The replacement of all 16 stages of compressor diaphragms, which the industry does not currently have an expected life for these components, has been removed from the scope of the project. In exchange, the torque tube will be replaced with a new improved design to avoid a failure. Also added to the scope was a gas turbine optimization package (GTOP6 Light) that will increase capacity by improving the air flow. The project will go into service following completion of the outage, scheduled in November 2019. It represents $4.9 million in capital additions in 2019.

- *Rocky Mountain Generating Station Unit 1 Replace Combustion Turbine Exhaust (2019*): This project is to replace the existing combustion turbine exhaust cylinder and manifold with a new improved design. This project is to correct a known design issue with the Siemens 501FD exhaust cylinder and manifold. As an example Northern States' Black Dog Plant experienced an 11-month forced outage due to the same exhaust cylinder failing, leading to a $15.0 million emergent project. The project will go into service following completion of the outage scheduled, in November 2019. It represents $5.0 million in capital additions in 2019.
- *Rocky Mountain Generating Station Unit 1 Combustion Turbine Evaporator Coil Replacement (2019):* As a result of this project, Rocky Mountain Generating Station's Unit 1 Heat Recovery Steam Generator low pressure evaporator tube bundles and headers will be replaced. A recent inspection

revealed widespread flow accelerated corrosion ("FAC") damage throughout the tubes as well as some damage to the headers. The project will go into service following completion of the outage, scheduled in November 2019. It represents $1.6 million in capital additions in 2019.

- *Comanche Unit 1 Coal Mill Rebuild (2019):* The original scope of the project was to perform a total rebuild of the Comanche 1D mill (and the Comanche 1A mill in a future year), including replacement of all coal grinding section parts and gear box components. However, with the announced retirement of Comanche Unit 1, both mills were inspected. It was determined that each mill was in dire need of coal grinding section replacement, but their gear box components were in fairly good shape. The decision was made to rebuild the grinding sections of both 1A and 1D mills, and to not perform any work on the gear box components. The change in scope does not materially impact the original budget. The mills are scheduled to go into service in May and June 2019, respectively. These projects represent $0.9 million in capital additions in 2019.
- *Pawnee Unit 1 Generator Stator Rewind (2019)*: Pursuant to this project, Pawnee Unit 1's turbine generator will be rewound. The generator has a water-cooled stator, and in the late 1980s industry began to see significant increases in the number of water leaks from this type of generator. In 1994, during a generator inspection, a leak in the winding was detected – causing a stator bar connection to fail. The 2014 generator inspection revealed that the

condition of the T1 phase had deteriorated compared to previous testing in 2005 and a stator rewind should be considered in the next five to six years. As a result, the material was purchased in 2017 and is to be installed in 2019. The project will go into service upon completion of the unit outage scheduled for the end of May. This project represents $2.9 million in capital additions in 2019.

- *Comanche Common Replace Unit 1 & 2 Startup Transformer (2019):* The original project scope was to replace the common Unit 1 and Unit 2 startup transformer. The transformer was purchased on a previous project in 2017, and scheduled to be installed in 2019. However, with the announced retirements of Unit 1 and Unit 2 by 2025, the Company decided not to install the transformer unless the existing transformer fails. Accordingly, the Company has replaced this $1.5 million project with the Comanche Common Replace Bull Dozer project, which I discuss below.
- *Comanche Common Replace Bull Dozer (2019):* The project is to purchase a new coal bull dozer for Comanche. The existing 2004 Caterpillar 854 coal dozer transmission was rebuilt several years ago by our authorized Caterpillar repair shop, but has recently failed again and is now beyond repair. The bull dozers at our retired coal units, Cherokee and Valmont, do not have the capability or the capacity to efficiently move the amount of coal that Comanche requires. The dozer delivery is expected to be in August 2019. This project was originally planned as the Comanche Replacement Unit 1 & 2

Startup Transformer, but we have subsequently chosen to move forward with the Comanche bulldozer replacement instead, at the same projected capital cost and with a similar in service date. The bulldozer project represents $1.5 million in capital additions in 2019.[8]

Q. HAS THE COMPANY, AND WILL THE COMPANY, MANAGE ITS PROJECTED GENERATION BUSINESS AREA RELATED CAPITAL ADDITION PROJECTS IN 2019 TO ENSURE THE FINAL, ACTUAL COSTS ARE REASONABLE AND PRUDENT?

A. Yes.

[8] This project was originally planned as the

VI. GENERATION O&M

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

A. In this section of my testimony, I provide an overview of the Generation area's O&M expenses since the 2013 HTY, followed by a discussion of the 2018 Generation business area O&M expenses and proposed adjustment, which the Company proposes to utilize as the primary basis for establishing Generation O&M levels included in rates.

Q. WHAT ARE THE TYPES OF COSTS THAT GENERATION INCURS FOR O&M?

A. To support the Company's generating fleet, a variety of O&M work is performed by Generation. The costs to perform this work generally fall into six categories:

- *Internal Labor*: Costs for the labor force that runs our plants and supports Generation activities. Our Internal Labor budget includes planned overtime, and excluding overhaul related work, to ensure we have personnel available to operate our plants at all hours of the day. Internal Labor is the largest component of our O&M costs.
- *Contract Labor*: Costs of outside contractors, experts, and other third-party assistance that we utilize to augment our internal core operations and maintenance competencies. Examples include crews we hire to help with overhaul work, as well as experts from our equipment manufacturers to provide expertise on the plants they helped engineer and construct.

- *Base Commodities*: Costs primarily for chemicals and water used in the generation process and for the control of emissions. Chemicals for which we incur the most costs include ammonia, lime, sulfuric acid, and mercury absorbent.
- *Materials*: Costs for all non-chemical material costs we incur to operate and maintain our plants. This includes everything from steel to personal protective equipment.
- *Craig Partnership*: Costs paid to Tri-State to operate the Craig Station as part of the Yampa Project described above.
- *Other*: All other costs we incur to operate and maintain our generation plants. This includes transportation fleet costs, utility costs for the plants such as gas, electric and sewer bills, fees such as environmental fees, and other smaller miscellaneous O&M costs.

Q. PLEASE PROVIDE AN OVERVIEW OF PUBLIC SERVICE'S GENERATION O&M EXPENSES SINCE THE 2013 HTY.

A. The Company's actual O&M expenses during 2018 were $143.5 million. Table KIW-D-6 below identifies the amount of overall O&M costs by the categories I discuss above. Attachments KIW-3 and KIW-4 provide a list of these expenses by Cost Element and FERC account, respectively.

Table KIW-D-6
2013 vs 2018 O&M Expenses
Public Service - Electric
(Dollars in Millions)

Cost Category	2013	2018	Variance
Internal Labor	$ 64.8	$ 60.9	$ (3.9)
Contract Labor	$ 46.0	$ 34.6	$ (11.4)
Base Commodities	$ 24.0	$ 11.1	$ (12.9)
Materials	$ 26.3	$ 23.9	$ (2.4)
Craig Partnership	$ 6.6	$ 4.4	$ (2.2)
Other	$ 5.5	$ 8.6	$ 3.1
Total*	$173.2	$ 143.5	$ (29.7)
*There may be differences between the sum of the individual category amounts and Total amounts due to rounding.			

Table KIW-D-6 shows O&M expenses on an annual basis have decreased in almost all categories. The $3.1 million increase reflects an increase in other operating expenses from 2013 to 2018 including increased legal fees and litigation expense.

Q. WHAT IS THE TOTAL DOLLAR AMOUNT OF GENERATION O&M YOU ARE SUPPORTING IN THIS CASE?

A. As reflected in Attachments KIW-3 and KIW-4, I am supporting $143.5 million, not including the Rush Creek adjustment I describe below. Attachment KIW-3 provides an accounting of these expenses by Cost Element and Attachment KIW-4 provides the O&M by FERC account.

Q. WHAT ARE THE MAJOR DIFFERENCES BETWEEN THE GENERATION BUSINESS AREA'S O&M IN THE 2013 TEST YEAR AND 2018?

A. The primary driver has been plant retirements, which I addressed in the Section IV of my Direct Testimony. Generally speaking, these plant retirements lower O&M across all of the primary O&M categories described above. The decrease in commodities was mostly driven by the retirement of Valmont, and the fuel switch at Cherokee.

Q. IS THE COMPANY PROPOSING KNOWN AND MEASURABLE ADJUSTMENTS TO ITS 2018 TEST YEAR O&M?

Yes. There is one adjustment related to the Rush Creek Wind Project. An O&M adjustment to the 2018 HTY is needed because the Rush Creek Wind Project achieved commercial operation and was placed in service in December 2018. Because the 2018 HTY only includes one month of Rush Creek O&M, the full level of O&M necessary to maintain the wind facility is not included in our base O&M expense for 2018. As reflected in Attachment KIW-5, the Company will incur $13.5 million in O&M expense for Rush Creek in 2019. Ms. Blair supports the adjustment to the 2018 HTY cost of service to account for the 2019 level of Rush Creek O&M in her Direct Testimony.

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

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

VII. RECOMMENDATIONS AND CONCLUSION

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.

A. In sum, as part of approving the cost of service developed by Company witness Ms. Blair, I recommend that the Commission approve the 2014–2019 Generation Business Area capital additions and 2018 Generation Business Area O&M expense, as well as the known and measurable adjustment associated with the Rush Creek Wind Project, described above and included in the Company's cost of service presented in this rate review.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

Statement of Qualifications

Kyle I. Williams

I began my career with American Electric Power ("AEP") in 1992 as a Plant Engineer at the Muskingum River Plant in Beverly, Ohio. I worked various power plant positions with AEP until 2010. In 2010, I took a position with Luminant at the Monticello Steam power plant in Mt. Pleasant, Texas as maintenance superintendent, later to be promoted to Operations Manager at Big Brown Power Plant. In 2013, I accepted a position at Prairie State Generating Company in Marissa, Illinois as the General Manager of power production. In 2014 I moved to Xcel Energy as the Director of Comanche Station, and was then promoted to General Manager of Public Service Generation in 2017.

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

* * * *

RE: IN THE MATTER OF ADVICE NO. 1797-ELECTRIC OF PUBLIC SERVICE COMPANY OF COLORADO TO REVISE ITS COLORADO P.U.C. NO. 8-ELECTRIC TARIFF TO IMPLEMENT RATE CHANGES EFFECTIVE ON THIRTY-DAYS' NOTICE.	**) PROCEEDING NO. 19AL-______E**

**AFFIDAVIT OF KYLE I. WILLIAMS
ON BEHALF OF
PUBLIC SERVICE COMPANY OF COLORADO**

I, Kyle I. Williams, 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 10 day of May, 2019.

Kyle I. Williams
General Manager, Power Generation

Subscribed and sworn to before me this 10th day of May, 2019.

Joan K. Pierce
Notary Public

My Commission expires March 7, 2020

JOAN K. PIERCE
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20164009218
MY COMMISSION EXPIRES MARCH 7, 2020