Exh. HLR-1T

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-20______

DOCKET NO. UG-20______

DIRECT TESTIMONY OF

HEATHER L. ROSENTRATER

REPRESENTING AVISTA CORPORATION

I. INTRODUCTION

Q. Please state your name, employer and business address.

A. My name is Heather Rosentrater and I am employed as the Senior Vice President of Energy Delivery and Shared Services for Avista Utilities (Avista or Company), at 1411 East Mission Avenue, Spokane, Washington.

Q. Would you briefly describe your educational background and professional experience?

A. I received a Bachelor of Science degree in Electrical Engineering from Gonzaga University, and hold a Professional Engineer (PE) credential. I joined Avista in 1996 as an electrical engineering student at the Company's former subsidiary, Avista Labs, where I developed electrical systems for fuel cells. I joined Avista in 2003 and have broad experience on both the electric and natural gas side of the business, having managed departments and projects in electric transmission, distribution, SCADA, supply chain, as well as business process improvement using LEAN and Six Sigma techniques. I was named Vice President of Energy Delivery in December 2015 and promoted to my current role in October 2019. In this role, I am responsible for electric and natural gas engineering, operations and shared services which includes fleet, facilities, and supply chain.

I currently serve on the board of directors for the Vanessa Behan Crisis Nursery and Second Harvest Food Bank in Spokane, Washington. In addition, I am a member of the Gonzaga University School of Engineering and Applied Science Executive Advisory Council.

Q. What is the scope of your testimony?

A. I will provide an overview of the Company's electric and natural gas energy delivery facilities, electric reliability trends and areas of focus, and explain the factors driving our continuing investment in electric distribution infrastructure. I will explain how our efforts to maintain the asset health and performance of our electric transmission system, including compliance with mandatory federal standards for transmission planning and operations, is driving a continuing demand for new investment. Further, I will describe why our investments in natural gas distribution are necessary in the time frames completed and why each capital investment in our operations facilities and fleet operations is needed to support the efficient delivery of service to our customers, today and into the future. In addition, along with Company witness Mr. DiLuciano, I will provide an overview of the Company's investment in Advanced Metering Infrastructure. A table of the contents for my testimony is as follows:

Q. Are you sponsoring any exhibits in this proceeding?

A. Yes. I am sponsoring the following exhibits:

- Exh. HLR-2, Avista's Electric Distribution Infrastructure Plan for 2020
- Exh. HLR-3, Avista's Natural Gas Infrastructure Plan for 2020
- Exh. HLR-4, Avista's Priority Aldyl-A Protocol Report
- Exh. HLR-5, Study of Aldyl-A Mainline Pipe Leaks - 2018 Update
- Exh. HLR-6, Avista's Electric Transmission Infrastructure Plan for 2020
- Exh. HLR-7, Avista's Substation Infrastructure Plan for 2020
- Exh. HLR-8, Avista's Fleet Infrastructure Plan for 2020
- Exh. HLR-9, Avista's Facilities Infrastructure Plan for 2020

- Exh. HLR-10, Listing of all program investments in my area of responsibility for 2018 and 2019
- Exh. HLR-11, Capital Business Case documents for each of the 2018 and 2019 major projects and programs described in my testimony, as well as the 2020 pro forma projects I support.

Q. Will you be providing an overview of Avista's Wildfire Resiliency Plan in your testimony?

A. While I am the officer responsible for our work in this important area, Company witness Mr. Howell will provide an overview of the strategy and actions comprising the Plan.

II. OVERVIEW OF AVISTA'S ENERGY DELIVERY SERVICE

Q. Please describe Avista's electric and natural gas utility operations.

A. Avista operates a vertically-integrated electric system in Washington and Idaho, and natural gas local distribution operations in Washington, Idaho, and Oregon. In addition to the hydroelectric, renewable, and thermal generating resources described by Company witness Mr. Thackston, the Company has approximately 18,300 miles of primary and secondary electric distribution lines. Avista has an electric transmission system comprised of 685 miles of 230 kV lines and 1,534 miles of 115 kV lines. Avista owns and operates 7,650 miles of natural gas distribution lines, served from the Williams Northwest and Gas Transmission Northwest (GTN) pipelines. A map showing the Company's electric and natural gas service area in Washington, Idaho, and Oregon is provided by Company witness Mr. Vermillion.

As detailed in the Company's 2020 Electric Integrated Resource Plan,[1] Avista expects retail electric sales growth to average 0.3% annually for the next ten years in our service territory, a decline from the 0.5% forecast in the 2017 IRP. Also, based on Avista's 2018 Natural Gas Integrated Resource Plan,[2] in Washington and Idaho the number of natural gas customers is projected to increase at an average annual rate of 0.4%, with demand growing at a compounded average annual rate of 1.3%. What happens in a post-pandemic timeframe is unknown at this point.

Q. How many customers are served by Avista in the State of Washington?

A. Of the Company's approximate 392,000 electric and 362,000 natural gas customers (as of December 31, 2019), 257,394 and 170,270, respectively, were Washington customers.

Q. Please list the Company's operations service centers that support electric and natural gas customers in Washington.

A. The Company has central office and operations service facilities in Spokane and local operations service centers in the communities of Colville, Othello, Pullman, Clarkston, Deer Park, and Davenport.

Q. Summarize the need for continuing investments in the <u>electric distribution</u> system.

A. Avista, like utilities across the country, continues to prudently fund the increasing demand for investment in electric distribution infrastructure. The pattern of our

[1] A copy of the Company's 2020 Electric IRP has been provided by Company witness Mr. Thackston as Exh. JRT-2.
[2] A copy of the Company's 2018 Natural Gas IRP has been provided by Company witness Ms. Morehouse as Exh. JM-2.

investments bears a striking resemblance to that of the industry, which should not be a surprise, since we are all responding to the same predominant needs: first, the need to replace an increasing amount of infrastructure each year that has reached the end of its useful life (based on asset condition), and second, responding to the need for technology investments required to build the integrated energy services grid of the future. To provide better visibility of the factors driving this need for investment, we continue to organize the Company's planned spending over the current five-year planning horizon by "Investment Driver" categories shown below, and as previously discussed by Company witness Mr. Thies.

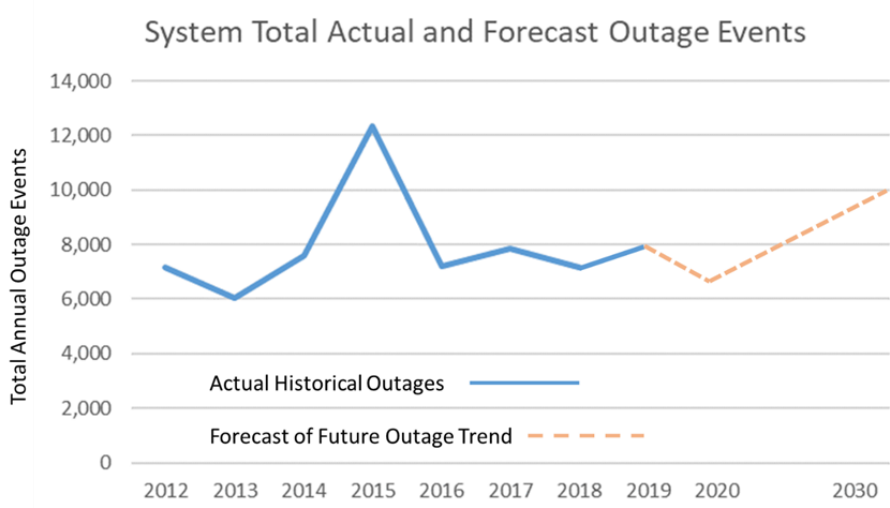
1. Respond to customer requests for new service or enhancements;
2. Meet our customers' expectations for service quality and reliability;
3. Meet regulatory and other mandatory obligations;
4. Address system performance and capacity needs;
5. Replace infrastructure at the end of its useful life based on asset condition, and;
6. Replace equipment that is damaged or fails, and support field operations.

The need for major capital projects and programs supporting our electric distribution system is explained in detail in the Company's Electric Distribution Infrastructure Investment Plan for 2020, Exh. HLR-2, and our enterprise-wide Infrastructure Investment Plan for 2020, Exh. MTT-4.

Q. Would you describe the Company's current focus on reliability?

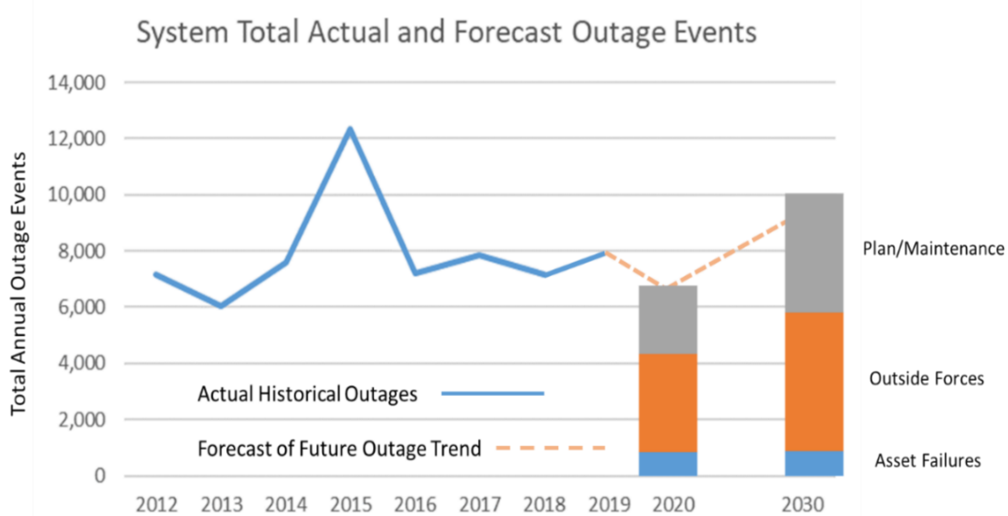
A. Yes. In recent years, the Company has generally aimed to maintain and uphold its current overall reliability performance and we annually report on current-year and historic reliability trends. In 2019, Avista employees under my direction developed draft recommendations for a new electric service reliability strategy based on the aspects we believe are most important to our individual customers and the prudent long-term management of our system. While we will continue to report historic reliability performance, our new approach is forward-focused to better understand, evaluate and respond to long-term reliability trends. This work is based on intensive use of historic reliability data, infrastructure modeling and robust statistical forecasting. An example of this forecasting is shown below in Illustration No. 1, for the annual number of outage events.[3]

Illustration No. 1



The forecast trend shows a potential increase in the annual number outages, and the "outage types" contributing to the forecast are explained below in Illustration No. 2.

Illustration No. 2



[3] Outage data shown excludes outage events for Major Event Days on the Company's electric system.

In our modeling and forecasting the Company groups the cause of outage events into three categories: “Plan/Maintenance,” “Outside Forces,” and “Asset Failures.” As implied by the title, plan/maintenance outages are those unavoidable outages required for Avista’s maintenance, repair and upgrade of its electric distribution system. Outages associated with outside forces are those events beyond the Company’s direct control, such as our recent Labor Day Windstorm, heavy snow, ice, animals or car-hit-pole. Outages associated with asset failures result from equipment that fails in service, which the Company has a greater degree of control over through our engineering standards, asset maintenance programs (e.g. Wood Pole Management), and Vegetation Management. Although the overall forecast shows a likely increasing trend, it is driven primarily by outages beyond our control (outside forces) and those required for maintenance on our system (plan/maintenance). Importantly, outages resulting from asset failures are trending flat over the next decade.

Q. Has the Company reviewed its new reliability strategy with Commission Staff or the Parties?

A. The Company has been working toward improved ways to understand and assess the utility’s reliability performance from the perspective of providing customers the right level of service at the right cost. Avista is still refining elements of its new approach to service reliability and plans to review it with Commission Staff and interested parties before it is formally adopted.

Q. Did Avista achieve its Service Quality Measures Program benchmarks for 2019?

A. The Company is pleased to report we exceeded all six Customer Service Measure benchmarks for 2019 and reported a continuing relatively stable long-term trend in electric service reliability. The Company reported a decrease in the average occurrence of outages per customer, per year (not related to a major storm event), thereby decreasing our five-year average for duration of service outages by two minutes for the second year in a row. Table No. 1 below depicts Avista's 2019 Customer Service Measures results:

<u>Table No. 1 – 2019 Results for Avista's Customer Service Measures</u>

Customer Service Measures	Benchmark	2019 Performance	Achieved
Percent of customers satisfied with our Contact Center services, based on survey results	At least 90%	94.4%	✓
Percent of customers satisfied with field services, based on survey results	At least 90%	94.4%	✓
Number of complaints to the WUTC per 1,000 customers, per year	Less than 0.40	0.13	✓
Percent of calls answered live within 60 seconds by our Contact Center	At least 80%	80.7%	✓
Average time from customer call to arrival of field technicians in response to electric system emergencies, per year	No more than 80 minutes	44.3 minutes	✓
Average time from customer call to arrival of field technicians in response to natural gas system emergencies, per year	No more than 55 minutes	43 minutes	✓

Electric System Reliability	5-Year Average (2015-2019)	2019 Result	Change in 5-Year Average
Frequency of non-major-storm power interruptions, per year, per customer (SAIFI)	0.97	0.94	-0.04
Length of power outages, per year, per customer (SAIDI)	151 minutes	137 minutes	2 minutes

Q. Would you please summarize the need for continuing investments in <u>electric transmission</u> infrastructure?

A. As highlighted in Avista's Electric Transmission Infrastructure Plan for 2020 (Exh. HLR-6), the nation's electric utilities are facing unprecedented challenge from forces driving the continuing need for new investment in transmission infrastructure, and Avista is no different. This rapidly growing demand for new investment has challenged our ability to fund all our high-priority needs for electric transmission, which, themselves, are out of proportion to the investment requirements of our other infrastructure. Drivers for new investment include:

- System improvements required to meet the myriad and expanding federal regulations governing nearly every aspect of our transmission business. Chief among these are the tightening requirements to meet ever-more restrictive transmission operations and planning standards, driven by the assessment of financial penalties for noncompliance.

- Timely replacement of end-of-life assets based on condition. This need is at an all-time high across the industry and will continue to increase year-over-year for at least the next two decades. This need is tied to the major expansion of new electric infrastructure built during the economic boom following the end of World War II. Because these assets are now at or near the end of their useful lives, a substantial boost in new investment is required, compared with previous years, just to maintain existing systems.

- External demands on our transmission system, including new transmission interconnections required for third parties to integrate new, variable energy resources, particularly wind and solar. These interconnections require significant capital investment to extend or reinforce our transmission system and often take priority over investments required to provide for native load service on our system.

- A further driver is related to supporting development of the new energy services grid of the future. Emerging technologies are driving increasing digitization, distributed generation, energy storage, and other technologies that require adapting and upgrading the existing system, including new ways of engaging with our customers. Though primarily focused at the distribution level, these changes in our energy delivery business model also impact transmission investments. This increased digitalization brings with it the potential for greater cyber vulnerability and the need for continuing investment to provide for the safety and security of our bulk power system.

- Siting, permitting and constructing transmission assets has become more complex, time-consuming, and expensive due in part to increasing environmental, property rights, and land-use requirements. Permitting can extend over several years and typically includes conditions constraining how utilities site, design, construct and maintain these assets.

When it comes to the impact for our customers, who must ultimately pay for these requirements and investments, an exacerbating factor is our relatively stagnant load growth due to relatively low increases in population and declining use-per-customer. This translates into nearly flat revenues, which means that new capital investments must be covered by higher customer rates. Historically, annual increases in customer loads produced new revenues that were often sufficient to cover the costs for new investment and inflation without the need to increase rates.

Q. Please describe the Company's process for ensuring it is making timely investments in electric transmission to maintain compliance with mandatory federal standards.

A. The Company's process for determining which projects should be recommended for funding each year includes results of comprehensive planning studies, engineering and asset management analyses, and scheduled upgrades and replacements identified in our operations districts and Transmission Engineering. These projects undergo internal review by multiple stakeholders, who help ensure all system needs and alternatives have been identified and evaluated.

Projects advanced for funding enter a formal review process referred to as the "Engineering Roundtable" (ERT). This group carefully reviews the need for each project, the primary business driver, the alternatives considered, and the justification for the approach recommended. During the review, the potential benefits of any cross-business-unit synergies that could better optimize project benefits and scope are also identified and evaluated. The result of this process is a prioritized list of recommended projects that serves as a roadmap of investments sequenced by year for at least a ten-year time horizon. Using this roadmap, each department can plan ahead for the work they will be responsible to execute once projects are approved for funding and implementation. Once evaluated, prioritized and sequenced, these projects are recommended to the Capital Planning Group (discussed by Mr. Thies) for final review and funding allocation. Representatives from eleven business units participate in the ERT process.

Q. Please summarize the need for ongoing investment in Avista's <u>natural gas distribution</u> system.

A. Natural gas is a foundational energy resource for Avista's customers, as shown in the Company's Natural Gas Infrastructure Plan for 2020 (Exh. HLR-3), and it plays a critical role in our achievement of a clean energy future. It provides the clean fuel for 36% for the nation's electric generation fleet (and growing), heats more than half of America's homes, and provides the vital feedstock and energy for cooling, heating and industrial processes, commerce, and industry. The Company has experienced steady growth in natural gas customers in the prior decade, where the annual number of new connects more than doubled between 2010 and 2019.[4] New services are expected to peak in 2020 at approximately 6,800, and to decline somewhat and levelize near 5,500 in the current five-year planning horizon. This increase in new customer services has required continuing investment in the Company's natural gas system, in addition to meeting the growing requirements over this time frame to reinforce existing supply lines to provide the capacity needed to serve the increased demand.

The other substantial driver for new investments is maintaining compliance with federal and state regulatory requirements and effectively managing the continuing safety risks associated with our natural gas distribution system. Over the last decade, the Company's investments to meet customer requests for new service and to comply with a range of growing regulatory obligations has grown from approximately $15.5 million in 2010 to approximately $67 million in 2019. Avista's allocation of capital investment in its natural gas system from 2009 through 2019 ranged from 6% for investments based on asset condition, 10% to meet

[4] See Exh. HLR-3, Figure 1, page 3.

performance and capacity needs, 11% to provide for failed plant and operations, 36% to meet customer requests, and 37% for mandatory and compliance requirements.[5]

Q. Please summarize the need for ongoing investment in Avista's operations, facilities and fleet resources.

A. Adequate operating facilities are a critical ingredient to the success of all organizations, especially those like Avista that are office facility, information technology, heavy asset and field-operations intensive. As described in Avista's Fleet Infrastructure Plan for 2020 (Exh. HLR-8), our fleet infrastructure includes a wide range of light to heavy trucks specialized for electric and natural gas operations, diverse and specialized equipment, all manner of tools, and extensive material and supply storage areas. Though it is easy to take for granted, our office and operations facilities are at the heart of our ability to effectively and efficiently serve customers, as described in Avista's Facilities Infrastructure Plan for 2020 (Exh. HLR-9). In addition to employees supporting our field operations, our facilities are required to support a broad range of technical and administrative staff, including accountants, engineers, attorneys, customer service representatives, and information technology experts. Besides the facilities themselves, our operations depend on extensive information technology infrastructure, diverse and stand-alone communication networks, and a myriad of other support systems (including supporting all the Company's workers who are connecting remotely into the Company's systems during the COVID-19 pandemic).

As would be expected for a Company that has been in business over 130 years, many of our facilities have been kept in operation well beyond their useful service life. A few

[5] See Exh. HLR-3, Figure 2, page 4.

remaining structures were built in our early years of service, while many, like our energy delivery infrastructure, were built during the economic expansion of the 1950s, placing them now in the range of 60 to 70 years old. Common sense and good stewardship require caring for old buildings that need increasing levels of maintenance or retrofits to keep them serviceable. Even so, over the years many of these facilities became inadequate to meet the Company's growing needs given their age and condition and the increasing levels of maintenance required to keep them serviceable. To better extend their life, these facilities were often upgraded and updated to meet contemporary operating requirements, which included a steady increase in the number of customers served, the growing regulatory and technology complexity in our business, and the need to care for aging infrastructure, to name a few.

These same factors also contributed to the need for more employees and workspace, supporting infrastructure and related equipment. Trucks and vehicles also increased in size and complexity over time requiring larger service space and specialized maintenance requirements. To meet these demands, older facilities were continuously upgraded, added on to, remodeled and extensively repaired to keep them serviceable until the point Avista could embark on a comprehensive planning initiative focused on replacing a wide range of facilities that were well beyond their useful service life, and their cost effective capability to be further adapted to the future. Over the prior 15 years Avista has been systematically replacing facilities that were simply inadequate to meet the Company's current and future needs.

In addition to replacing end-of-life facilities, we have also reorganized our business to improve the service we provide our customers by responding more quickly to outages and equipment failures. We have accomplished this by locating stocks and supplies in closer proximity to crews and the geographic areas they will be used and storing parts and equipment in more organized and efficient spaces for quick access. The Company goes through systematic procedures and protocols to determine how to best manage its facilities as well as when they need to be replaced. Part of this evaluation includes industry best practices by national organizations that specialize in this area, including Building Owners and Managers Association (BOMA) and the International Facility Management Association (IFMA). These investments are needed not only to keep up with current service requirements, but they also save money for our customers by lowering the overall cost of service over the long term.

III. MAJOR INVESTMENTS IN THE COMPANY'S ELECTRIC AND NATURAL GAS ENERGY DELIVERY SYSTEMS, FLEET, AND OFFICE AND OPERATIONS FACILITIES FOR 2018 AND 2019

Q. Are there any specific 2018 or 2019 investments you sponsor that you would like to elaborate on?

A. Yes. As discussed by Company witness Ms. Schultz, for projects included since our last general rate case and through the 2019 test year, Avista's capital witnesses, including myself, describe certain major projects completed in 2018 and 2019. For these major projects, my testimony and exhibits provide an overview of the need for the investments made and detail how those projects benefit our customers. The selection of major projects was based on any project, <u>on a Washington-allocated basis</u>, that was greater than $5 million for electric operations and greater than $2 million for natural gas operations. We believe this designation is consistent with the information provided in the Company's prior general rate cases. In addition, provided as Exh. HLR-10 is a listing, including project/program name, description and amount transferred to plant, <u>for every</u> project or program completed in 2018 and 2019 that I sponsor. Additionally, many of the pro forma 2020 projects discussed later in my testimony are similar to projects and programs which occurred in 2018 and 2019. The information that supports those 2020 pro forma projects and programs also help to support several projects and programs that transferred in 2018 and 2019.

Q. Please list the major projects and dollars transferred to plant in 2018 and 2019?

A. Table No. 2 below lists the projects and dollars transferred to plant in 2018 and 2019 for major projects in my area of responsibility. I will describe each project and reference the "Project #" before each item, which refers back to Table No. 2, below.

<u>Table No. 2 – Major Projects for 2018 and 2019</u>

Project #	Business Case	2018 TTP (System)	2019 TTP (System)	Exh. HLR-11 Page #
Electric				
1	Distribution Grid Modernization	$ 14,788,545	$ 10,112,822	2
2	Distribution Minor Rebuild	9,272,548	11,868,906	14
3	Rattlesnake Flat Wind Farm Project 115kV Integration Project	-	9,467,516	23
4	South Region Voltage Control	-	7,802,071	26
5	Saddle Mountain 230/115kV Station (New) Integration Project Phase 1	2,554,495	8,943,952	29
6	Substation Rebuilds Program	17,856,512	17,773,790	32
7	Transmission Construction - Compliance	10,845,388	5,883,218	39
8	Transmission Major Rebuild - Asset Condition	7,760,684	314,005	49
9	Westside 230/115kV Station Brownfield Rebuild Project	9,559,989	650,861	52
10	Distribution Wood Pole Management	10,999,184	10,373,071	59
Total Electric		**$ 83,637,344**	**$ 83,190,211**	
General Plant and Other Plant				
11	Campus Repurposing Phase 2	$ 12,304,512	$ 16,130,430	71
12	Downtown Campus	7,893,920	22,210	91
13	Dollar Road Natural Gas Service Center Project	17,195,902	7,038,810	102
Total General Plant and Other Plant		**$ 37,394,334**	**$ 23,191,449**	
Natural Gas				
14	Natural Gas Cheney HP Reinforcement	$ -	$ 3,048,353	113
15	Natural Gas Facility Replacement Program (GFRP) Aldyl A Pipe Replacement	21,914,044	22,002,672	118
16	Natural Gas Non-Revenue Program	8,811,389	8,173,893	130
17	Natural Gas N-S Corridor Greene St HP Main Project	2,905,791	-	135
18	Natural Gas Replacement Street and Highway Program	4,704,048	7,592,120	137
Total Natural Gas		**$ 38,335,272**	**$ 40,817,039**	
Exh. HLR-1T Total Major Investments for 2018 & 2019		**$ 159,366,950**	**$ 147,198,699**	

Q. For the 2018 and 2019 capital additions for which you are responsible, is the Company seeking to include all of those investments in general rates in this case?

A. Yes. While I am providing more detailed information in testimony and exhibits related to the major projects in 2018 and 2019, Ms. Schultz addresses in her testimony that the Company has included all 2018 and 2019 capital projects, especially given that they are already embedded in our 2019 test year. Exh. HLR-10 provides a summary listing of all program and project investments in my area of responsibility for 2018 and 2019, not just "major" projects.

Q. Please describe the major projects and programs exceeding $5 million for electric and $2 million for natural gas and operations facilities.

A. As shown in Table No. 2, eighteen major investments in these categories were transferred to plant during 2018 and 2019.

Q. Please describe Avista's approach for evaluating and managing these major project and program investments.

A. Proposals for individual projects and programs are initially developed, reviewed and evaluated in each responsible business unit, often followed by review, evaluation and prioritization by higher-level review committees, such as Avista's Engineering Roundtable (discussed earlier), the Aldyl A Pipe Advisory Group, and the Facilities Steering Committee. In this review, projects are evaluated for completeness of the problem statement, the identification and evaluation of reasonable alternatives, and applicable risks, and other elements. Refined and finalized proposals are submitted to the Company's Capital Planning Group for consideration and recommendation of funding (as discussed by Mr. Thies). Once approved for funding, the Project Engineer or Manager identifies critical project milestones and the resources needed to achieve them. Major equipment with long lead times may be purchased in this phase, necessary permitting identified and completed, and contracting processes initiated.

During execution, the Company's Project Managers create a detailed work schedule and establish inspection, monitoring, safety, environmental, and invoicing protocols. Standard project management practices are employed to effectively guide the work, identify and manage project risks, recommend needed changes to scope and budget, and track and report out on overall status. Examples of tools that may be used to track budget and schedule, depending upon the size and scope of a project, include Earned Value Measurement, cost-loaded scheduling, Cost Performance Index (CPI) and Schedule Performance Index (SPI).[6] Project results are regularly reviewed with the responsible Department Manager, applicable committee, and/or Director which review includes budget allocations and variances, internal resource demands, customer care results and issues, and contractor performance.

Q. Are alternatives vetted for these projects, before approvals are given?

A. Yes. Where there are reasonable alternatives, the evaluation of those is discussed in each business case (business case documents for the major projects I am sponsoring have been included as Exh. HLR-11).

Q. How is Avista's leadership informed of the program status?

A. As described above, project and program status and results are communicated up departmental lines, through various committees, and to me via my Director-level direct reports. Program and project results are also reported directly to Avista's Capital Planning Group, and the Company's senior leaders, including myself, through steering committees, various business meetings, and presentations.

[6] Cost Performance Index (CPI) is computed by Earned Value / Actual Cost. A value of above 1 means that the project is doing well against the budget. Schedule Performance Index (SPI) represents how close actual work is being completed compared to the schedule. SPI is computed by Earned Value / Planned Value.

<u>Project #1 – Distribution Grid Modernization</u>

Q. Please describe the Company's Distribution Grid Modernization Program.

A. The purpose of this program is to cyclically rebuild and upgrade every electric feeder in Avista's distribution system, with the objectives of replacing end of life assets, while evaluating improvements in feeder design to bolster service reliability, capture energy efficiency savings, and improve operational ability, code compliance and safety.[7] These objectives are accomplished through the systematic replacement of end-of-life equipment, such as old poles, conductor, and transformers, with new and more energy-efficient equipment that ensures the long-term, efficient operability of the system. Other issues addressed on each feeder include pole realignment to address accessibility issues and rights of way concerns, potential feeder undergrounding, coordination of joint use facilities, and clear zone compliance. On qualifying feeders, additional system reliability value is captured by installing distribution line automation devices to help isolate outages and reduce the number of customers that experience a sustained outage (also known as feeder automation).[8]

Q. Did Avista consider alternatives to this approach?

A. Yes, the primary alternatives to this program are to replace distribution poles and attached equipment as they fail in service or to continue funding work under the various operational initiatives designed to treat individual aspects of each feeder, including the wood pole management program, polychlorinated biphenyls (PCB) transformer change-out

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[7] Instead of simply replacing equipment like poles in place and in kind, Grid Modernization looks at the overall feeder design to evaluate the opportunity for gains captured through new designs, feeder alignment, dividing feeders, and new technology.

[8] For a more in-depth description of this program, please see pages 12 of Avista's Electric Distribution Infrastructure Plan for 2020, provided as Exh. HLR-2.

program, vegetation management program, segment reconductor and feeder tie program, overhead to underground conversion, and various other budgeted maintenance programs. Combining the work of these individual programs into one is not only more efficient, but it also enables the entire feeder to be evaluated for beneficial changes in design, alignment, and in other ways not possible when individual elements of the line are simply replaced in an "as is" configuration.

Q. How does this program benefit Avista's customers?

A. Absent this program, the Company would continue to treat every feeder in its system under individual maintenance programs. The value created by opportunities to improve the design, construction and operation of the feeder would be missed. Further, bundling the work of these individual programs for targeted feeders into one coordinated effort improves the cost efficiency by reducing redundant travel costs and capturing labor productivity. In short, customers would experience higher costs for a less robust system absent this program.

Q. Does the Grid Modernization Program have any target completion date?

A. No, this is an ongoing infrastructure renewal program that maintains and improves our always aging infrastructure to best meet the contemporary and future needs of our customers in a least-cost manner.

Q. What capital additions for this program did Avista make in 2018 and 2019?

A. The total capital investment was $14,788,545 and $10,112,822 in 2018 and 2019, respectively, on a system basis.

Project #2 – Distribution Minor Rebuild

Q. Please describe the Company's Distribution Minor Rebuild Program.

A. The purpose of this program is to replace end-of-life assets and respond to a range of operations needs in order to provide public and employee safety and the continuity and adequacy of service to our customers. In addition to needed work that is ancillary to customer-requested service, minor rebuilds, and replacement of individual assets are required across the distribution system as issues are identified to maintain system integrity, reliability, and safety.[9]

Q. Did Avista consider alternatives to this approach?

A. There are no traditional alternatives to the work completed under this program since it consists of many, small unplanned projects[10] across the entire electric distribution system. These small, unplanned projects are responsive to a range of factors generally beyond the control of the Company. Examples include ancillary work required by customer-requested rebuilds,[11] "trouble work" – like the repair of damage from a car-hit-pole, investments needed to support joint use of our facilities, replacement of deteriorated or failed equipment that is not scheduled for planned asset condition replacement, and small general rebuilds required to meet National Electric Safety Code (NESC) requirements, remediate failed, under-sized or unsafe equipment, and install needed switches, regulators, line reclosers, etc. There are instances among the small rebuild projects where limited alternatives are evaluated in the

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[9] For a more in-depth description of this program, please see pages 12-13 of Avista's Electric Distribution Infrastructure Plan for 2020, provided as Exh. HLR-2.
[10] For example, the average cost of each of these small projects is approximately $4,500, which translates to over 2,000 individual projects in a given budget year.
[11] These investments include work required to properly maintain the system, but that are not reasonably covered by the tariffed financial contribution required of the customer.

design phase by the individual project designer. In general, however, there is no reasonable alternative to timely making these investments once the need has been identified.

Q. How does this program benefit Avista's customers?

A. The investments made under this program allow the Company to continue to provide electric service that meets the needs of our customers in a safe, reliable, compliant and affordable manner.

Q. Does the Distribution Minor Rebuild Program have any target completion date?

A. No, this is an ongoing infrastructure renewal and maintenance program that ensures our always-aging infrastructure is maintained in proper condition to provide for the needs of our customers and the safety of the public and our employees.

Q. What capital additions for this program did Avista make in 2018 and 2019?

A. The total capital investment, on a system basis, was $9,272,548 and $11,868,906 in 2018 and 2019, respectively.

<u>Project #3 – Rattlesnake Flat Wind 115kV Integration Project</u>

Q. Please describe the Company's current investments in the Rattlesnake Flat Integration Project.

A. As mandated by the Federal Energy Regulatory Commission (FERC), Avista must accept and analyze third-party requests to interconnect and integrate generating resources with the Company's electric transmission and distribution system. Such interconnection was requested for the proposed 144MW Rattlesnake Flat Wind Farm southeast of Lind, Washington. From the alternatives studied by the Company's transmission planning group the developer chose a point of interconnection to Avista's Lind-Washtucna 115kV transmission line at a new 3-position ring bus Neilson substation with a line position dedicated to the interconnection customer. The project consists of a number of individual new construction and upgrade projects to accommodate the required interconnection and load service capabilities.

Q. Did Avista consider alternatives to this project?

A. Not as threshold issue since the Company is obligated by FERC rules to accept, study, and offer interconnection services to third parties requesting such service. The Company did, however, evaluate different options for meeting the interconnection requirements of the developer and identified the most effective option for our customers and the developer.

Q. How does the Rattlesnake Flat Integration Project benefit Avista's customers?

A. Avista is required to provide transmission interconnections and services to requesting customers. The cost of the necessary investment is defrayed by the interconnection customer who pays for transmission service over the life of the contract. Projects like these may also provide our customers with infrastructure improvements achieved at a lower cost than if Avista were to fund them without the addition of third-party funds.

Q. Did this project have a target completion date?

A. Yes, this project, as required under the interconnection agreement, was moved into service in September 2020 for approximately $10.5 million as shown in Table No. 3 below.

Q. What capital additions for this project did Avista make in 2019?

A. The capital investment already transferred to plant for 2019 totaled $9,467,516.

<u>Project #4 – South Region Transmission Voltage Control</u>

Q. Please describe the Company's investments in the South Region Transmission Voltage Control Project.

A. This project was developed to resolve an ongoing issue with high voltage on the 230kV transmission system in the Lewiston/Clarkston area. This voltage problem was persistent most months of the year, peaking generally during the overnight hours (with the exception of heavy loads in summer months). This high-voltage condition results when long, lightly-loaded transmission lines produce large amounts of line charging current, which leads to the generation of more reactive power (VARs). This increase in reactive power increases the operating voltage on the system. The project addresses this issue by installing two 50 MVAR shunt reactors to the existing 230kV bus at North Lewiston substation. Shunt reactors are used in high-voltage electric transmission systems to absorb reactive power to stabilize the system voltage and increase energy efficiency during periods of high load variability. Shunt reactors are the most compact device commonly used for reactive power compensation in long, high-voltage transmission lines.

Q. Did the Company consider alternatives to this project?

A. Yes, however, there were no reasonable alternatives to the solution developed and implemented. The installation of the two shunt reactors was the least cost approach to mitigating the VAR-induced voltage problems plaguing the service area.

Q. How does this program benefit Avista's customers?

A. Our customers will benefit from investments that support our prudent and compliant operation of our facilities in a sound financial manner. The alternative of continuing to operate the lines under higher voltage would continue to create load service issues in our south region, is not in compliance with NERC operating regulations, and would eventually require the Company to take the lines out of service to avoid the high voltage impacts.

Q. Does the South Region Transmission Voltage Control project have any target completion date?

A. The project was completed in 2019.

Q. What capital additions for this project did Avista make in 2019?

A. The capital investment already transferred to plant for 2019 totaled $7,802,071.

<u>Project #5 – Saddle Mountain 230/115kV Station Integration Project</u>

Q. Would you please describe the Company's Saddle Mountain 230/115kV Station Project?

A. Yes. Avista learned in 2013 of grid performance issues on Grant County Public Utility District's electric system that were exacerbated by Avista's load service in our Othello service area. This issue was subsequently advanced to Columbia Grid through the regional planning process, which along with Avista's own system planning analysis, determined our system could not meet several NERC performance requirements during periods of summer heavy load and some categories of winter loading. The Saddle Mountain project was developed as the selected solution to mitigate this issue and to ensure Avista's compliance with mandatory NERC performance standards.

Q. Did Avista consider alternatives to the Saddle Mountain Project?

A. Yes, Avista considered constructing a new 115kV line to serve the area but found through planning analysis that it would not mitigate the low voltage issues in the Othello area. Another alternative was considered, which would add a neutral or 'star point' to the associated transmission circuits, and then closing these star points to better manage unbalanced power and voltage issues. This alternative would require very costly (anticipated to be $75 million) reconductoring of the lines to mitigate potential violations. The Company also considered installing distributed generation in the affected area to mitigate the grid performance issues but this option was considered too costly and with potential lead times that were prohibitive. Finally, Avista identified the selected alternative to construct the new Saddle Mountain station, combined with identified upgrades to several existing transmission line segments, as the most cost-effective option to provide the voltage support needed today, and for the foreseeable planning horizon.

Q. How does this project benefit Avista's customers?

A. Absent this program, the Company would either be out of compliance with NERC planning standards, including the voltage issues created for Grant County, or would have to adopt a more expensive alternative to providing the needed voltage support. This project, of course, provides the voltage support needed to provide our Othello area customers with adequate load service.

Q. Does the Saddle Mountain Project have any target completion date?

A. This project is scheduled for completion in 2021.

Q. What capital additions for this program did Avista make in 2018 and 2019?

A. The total capital investment was $2,554,495 and $8,943,952 in 2018 and 2019, respectively, on a system basis.

<u>Project #6 – Substation Rebuilds Program</u>

Q. Please describe the Company's investments in the Substation Rebuilds Program.

A. Projects to rebuild the Company's aging electric substations involve replacing and upgrading structures, fencing, grounding, apparatus and equipment at end-of-life, when obsolete, or is otherwise necessary to maintain safe and reliable operation of Avista's transmission and distribution systems. While asset condition of the overall substation, including major apparatus and equipment, is the primary driver for these investments, additional factors may broaden the scope of a station rebuild project. These factors include operational and maintenance requirements, updated design and construction standards, SCADA communications, future customer load-service needs, and other programs such as Grid Modernization. This program (Substation Rebuilds) differs from Avista's Substation Asset Management program in that the latter is focused on replacing only aging apparatus and equipment, and not rebuilding or refurbishing the entire substation.

Q. Has the Company considered an alternative to this program?

A. Yes, in some instances instead of replacing or rebuilding aging substations, Avista could continue to manage stations under the Substation Asset Management Program, however, this alternative is not reasonable by the time the Company has identified the need for substantial rebuild or replacement. This is because aged equipment is often obsolete and replacements are unavailable, because some structures such as the grounding pad, cannot be replaced once failed, and because a station might have to be taken out of service for an extended period of time for major work on structures and equipment. When aging substations reach this point in their lifecycle, the only reasonable alternative is to completely refurbish or rebuild them.[12]

Q. How does this program benefit Avista's customers?

A. If Avista's electric substations are not timely refurbished or rebuilt then the risk of equipment failure increases, potentially resulting in an outage for a large number of customers, as well as, the added cost of performing emergency repairs or replacements. Our customers benefit from prudent investments that support the reliable operation of our facilities in a sound financial manner.

Q. Does the Substation Rebuilds Program have any target completion date?

A. No, this is an ongoing infrastructure renewal program that refurbishes our end-of-life electric substations to ensure we can continue to provide our customers reasonable service at the lowest cost.

Q. What capital additions under this program did the Company make in 2018 and 2019?

A. The investment for substation rebuilds was $17,856,512 and $17,773,790 in 2018 and 2019, respectively, on a system basis.

<u>Project #7 – Transmission Construction - Compliance</u>

Q. Please describe the Company's investments in made under the Transmission Construction – Compliance Program.

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[12] When replacing a substation, the new substation is often placed adjacent to the existing substation, which remains in service until the new substation is completed, ensuring minimal outages to the customers served on from the station.

A. This program covers the transmission rebuild and reconductor work identified by the Company as necessary to maintain compliance with the NERC reliability standards.[13] The applicable standard requires Avista to complete an annual planning assessment, to identify shortfalls and corrective actions, and for those actions to be timely implemented within specific timeframes to remedy identified system performance deficiencies. Avista's transmission construction - compliance program identifies funding needed to mitigate identified reliability issues, ensuring our compliance with NERC requirements. In addition to meeting NERC standards, this program also includes construction to remedy issues on any transmission line that is not compliant with the current capacity criteria under the National Electric Safety Code (NESC). The NESC minimum criteria have also been adopted as requirements by the State of Washington.

Q. Did Avista consider alternatives to this program?

A. Not as threshold issue since the Company is obligated by NERC planning standards, and the NESC to timely study and remedy any performance issues. Avista is subject to substantial financial penalties for non-compliance with NERC standards, and the risk of not meeting NESC minimum requirements under the Washington Administrative Code (WAC). The Company does, however, carefully consider reasonable alternatives in the development of a remediation solution for each identified issue.

Q. How does this program benefit Avista's customers?

A. Our customers benefit from prudent investments that meet our mandatory

[13]NERC Reliability Standard TPL-001-4 – Transmission System Planning Performance Requirements ("Standard"), has 8 requirements and 57 sub-requirements related to planning and analysis, including the requirement for robust system models to determine system stability, voltage levels and system performance under various scenarios.

transmission compliance requirements and that support the reliable operation of our facilities in a sound financial manner.

Q. Does the Transmission Construction – Compliance Program have any target completion date?

A. Yes, given what is presently known about NERC planning standards and requirements, in addition to current NESC requirements, this program is expected to complete in 2025.

Q. What capital additions under this program did the Company make in 2018 and 2019?

A. The respective capital investment in 2018 and 2019 was $10,845,388 and $5,883,218, on a system basis.

<u>Project #8 – Transmission Major Rebuild – Asset Condition</u>

Q. Would you please describe the Company's Transmission Major Rebuild – Asset Condition Program?

A. This program provides for the major rebuild of electric transmission lines that are nearing the end of their useful service life based on overall condition of the assets, and the rating for probability of a failure and magnitude of the consequence. Factors such as operational issues, ease of access during outages and potential benefits of communications build-out are also considered in prioritizing the work to be completed in the planning horizon.

Q. Did Avista consider alternatives to these transmission major rebuilds?

A. Yes, the primary alternative to this proactive inspection and replacement would be to replace poles, cross arms, conductor and other attached equipment upon failure. This alternative is not practical or reasonable, however, since the consequences would be a greater overall cost to customers, an increasing risk of large and lengthy service outages, much greater wildfire risk, and the likelihood of penalties for non-compliance with NERC operating standards. The only way Avista can properly maintain its service levels for customers and shield them from a range of financial and other risks is to systematically rebuild end-of-life transmission facilities.

Q. How does this program benefit Avista's customers?

A. Absent this program, the Company would perform emergency replacements of equipment that failed in service with the consequences I have described above. By systematically rebuilding end-of-life transmission facilities the Company is able to deliver reasonable service to our customers, at the lowest lifecycle cost.

Q. Does the Transmission Major Rebuilds Program have any target completion date?

A. No, this is an ongoing infrastructure renewal program that maintains our always aging infrastructure in reasonable service condition at a reasonable cost.

Q. What capital additions for this program did Avista make in 2018 and 2019?

A. The total capital investment was $7,760,684 and $314,005 in 2018 and 2019, respectively, on a system basis.

<u>Project #9 – Westside 230 kV Substation Rebuild</u>

Q. Please describe the Company's investments in the Westside 230 kV Substation (Westside).

A. The Westside project was scheduled over two years and included extension of the existing 115 kV and 230 kV buses in the station to allow for replacement of the 250 MVA autotransformer number 1 and replacing autotransformer number 2 with a new, higher capacity 250 MVA unit. Work included reconfiguration of the station to a double-bus/double-breaker design. The need for this project was based on transformer number 1 exceeding its nameplate rating under certain NERC planning contingencies for heavy summer loads. This investment was mandatory to meet NERC compliance obligations to not exceed facility and equipment ratings.

Q. Did Avista consider alternatives to this project as implemented?

A. Yes, the primary alternative to this project was to shed non-consequential customer load during peak conditions to prevent overloading on transformer 1, however, this option fails to meet Avista's objective to provide its customers reliable electric service, and load shedding would ultimately represent a violation of NERC transmission standards.

Q. How does this project benefit Avista's customers?

A. Because the capacity of this substation had to be substantially increased to eliminate overload of the autotransformers, it was prudent for Avista to make this investment to continue providing adequate and reliable load service to its customers, while ensuring the expected life of this very expensive equipment was not impacted.

Q. Does the Westside 230 kV Substation have any target completion date?

A. This project is scheduled for completion in 2022.

Q. What capital additions for this project did Avista make in 2018 and 2019?

A. The investments placed in service in 2018 and 2019 were $9,559,989 and $650,861, respectively, on a system basis.

Project #10 – Distribution Wood Pole Management

Q. Would you please describe the Company's Distribution Wood Pole Management Program?

A. Yes. Avista has approximately 230,000 to 240,000 wood poles[14] in its electric distribution system and a portion of these must be replaced each year based on asset condition, i.e., replacement of poles and attachments that have reached the end of their useful service life. Our wood poles are inspected on a 20-year cycle, resulting in our inspection of approximately 12,000 poles each year.[15] Individual poles or attached equipment that don't meet our inspection requirements are replaced as part of capital follow-up work. Attached equipment includes overhead distribution transformers, cutouts, insulators and pins, wildlife guards, lighting arresters, cross arms, pole guying, and grounds.[16]

Q. Did Avista consider alternatives to this pole inspection and replacement program?

A. Yes, the primary alternative to this proactive inspection and replacement program is to simply replace poles as they fail in service and fall down (asset strategy known as "run to fail"). Sub-alternatives evaluated include inspecting the pole population on a cycle time either shorter or longer than the current 20-year cycle.

Avista analyzed the option of replacing poles as they fail, as well as a range of inspection cycle intervals ranging from 5 to 25 years. The customer value of the 20-year cycle, as measured by customer rates of return, is superior to both the run-to-fail option and the 25-

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[14] Under the current inspection program individual poles are validated by location, age and material in our geographic information system, leading to an overall refinement in the population size.
[15] Avista's Wood Pole Inspection Program is funded as an expense.
[16] For a more in-depth description of this program, please see pages 16-17 of Avista's Electric Distribution Infrastructure Plan for 2020, provided as Exh. HLR-2.

year cycle time. Cycle times shorter than 20 years do produce slightly better results as measured by their respective rates of return. This incremental increase in value is the result of avoiding failures in poles and attached equipment that would otherwise occur with longer inspection cycles.[17] Importantly, any reduction in cycle time requires an up-front increase in expenses to pay for the increased number of poles inspected each year, and a corresponding increase in requirements for capital replacements, at least through the first complete inspection cycle. Avista believes this incremental increase in costs would put too much near-term price pressure on our customers, considered in combination with the margin of benefit and Avista's many other infrastructure investment needs.[18] The Company is continuing with its 20-year inspection cycle.

Q. How does this program benefit Avista's customers?

A. Absent this program, the Company would perform emergency replacements of wood poles on the system as they failed. Allowing the poles to fail often results in a service outage for customers on the line (29% of pole failures result in customer outages). The cost of replacing each pole as it failed would be greater than the programmatic repair and replacement of poles that fail to pass inspection. In short, customers would experience higher costs and less reliable service absent this program. A "run to fail" strategy also puts the safety of Avista's customers and employees at higher risk. Alternatively, the Company could systematically replace wood poles early in their lifecycle based on age and not asset condition. This approach would cost our customers more money because we would not capture the full lifecycle value of the asset and would still experience some outages related to premature

[17] On average, under its current 20-year inspection cycle interval, Avista experiences approximately 12 pole failures each year out of its population of 230,000 wood poles.
[18] Please see Avista Utilities Infrastructure Investment Plan, Exh. MTT-4.

failure of poles (that would otherwise be identified and replaced through inspection). Perhaps even more importantly in today's world, a run to fail strategy would also increase wildfire risk.

Q. Does the Distribution Wood Pole Management Program have any target completion date?

A. No, this is an ongoing infrastructure renewal program that maintains our always aging infrastructure in reasonable service condition at a reasonable cost.

Q. What capital additions for this program did Avista make in 2018 and 2019?

A. The total capital investment was $10,999,184 and $10,373,071 in 2018 and 2019, respectively, on a system basis.

Project #11 – Campus Repurposing – Phase 2

Q. Please describe the Company's investments under its Campus Repurposing Project – Phase 2.

A. Avista has taken a holistic approach to address wide-ranging needs at its Central Office Facility, included under the "Campus Repurposing Phase 2" Business Case. Primary among the needs addressed were: 1) create needed workspace for an increasing employee population; 2) improve the safety and efficiency of employee, service-related and service provider traffic on campus; 3) create new fleet management and maintenance facilities to replace outdated and inadequate work space and processes; 4) provide adequate materials storage space and create more flexibility in space for emergency operations; and 5) provide safe and adequate parking for our customers, visitors, and our employees.

The Avista Central Office Facility or “corporate campus” was developed in the 1950s to consolidate all utility operations, which were at that time spread throughout the City of Spokane. At the time Avista constructed its Central Office Facility, the Company served a total of 102,685 electric, and 9,962 natural gas customers. While the original footprint of the campus was adequate at the time it was built, there has been a nearly continuous need to expand its size to keep up with the growing needs of our business. From the late 1980s through 2014, the Company strategically acquired parcels of land as they became available to the north of the campus. Today, the campus encompasses 36 acres, constrained on the east by the Spokane River, to the west and south by Mission Park, the Burlington Northern Railroad, and developed residential neighborhoods, and to the north by residential housing and assisted living facilities. Today, the Company serves approximately 392,000 electric and 362,000 natural gas customers.

Avista made the decision in 2011 to approach its current and future central facility needs through a comprehensive planning process. The result of this approach was a comprehensive campus plan that anticipated and planned for our service needs for the next 50 years. Our focus was to minimize the need to provide reactive solutions to emerging service needs and to invest in the best long-term plan for the benefit of our customers. In the prior phase of this major project the Company completed a new fleet services building to support field operations at our central office facility.

In the current phase, Avista recently completed construction of a Campus Parking Structure needed to accommodate vehicle parking for employees working at the Company’s central office. Nearly 1,300 employees currently report to work at the main campus, which had a parking capacity of 728 dedicated spaces that were available to employees.[19] The new structure will add up to 500 additional parking spaces in a relatively small footprint (0.71 acres) compared with the 10 acres that would have been required for equivalent surface-level parking. This solution frees up valuable campus space for more efficient uses such as equipment and material storage areas, staging areas, truck parking and maneuvering, and future growth.

A primary concern for Avista in determining how to address the need for more employee parking was the safety of employees themselves. According to the National Safety Council, potholes or cracks in parking lot surfaces, debris, poor lighting, puddles, snow, and ice can lead to pedestrian injuries (not to mention crossing active railroad tracks and right-of-way during the darkness). Slips, trips and falls are common in parking lots, and they are also highly-vulnerable areas for crime, according to the Urban Institute Justice Policy Center.[20] Avista employees experience these issues, having been confronted, chased and threatened and having their vehicles vandalized, burglarized or stolen from Company parking areas. Having to search for twenty minutes for a parking space, walk a mile or more to get to the office building from remote parking (potentially in icy and snowy conditions), or fear the potential of threats related to parking in risky areas had a very negative impact not only on safety and productivity, but also on the morale and job satisfaction of our employees.

Q. Did the Company consider alternatives to constructing a new Campus Parking Structure?

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[19] This number does not include gravel parking areas used by employees on the right-of-way of the Burlington Northern Railroad across the tracks from the campus.
[20] Urban Institute Justice Policy Center, https://www.urban.org/sites/default/files/publication/31261/1001193-Preventing-Car-Crimes.PDF

A. Yes. Initially, the Company took incremental steps over several years to increase parking spaces available to employees working at our central office. These included adding spaces to our south Mission parking lot and creating new spaces in our transformer storage area in 2009, expanding employee parking in our north wood pole storage area in 2012, and adding remote parking spaces in our north Ross Court area, also in 2012. Collectively, these efforts created 275 additional parking spaces for our employees. Creating these new spaces did come at a cost, however, as it required Avista to move operations vehicles and materials storage offsite to our Beacon Substation, increasing crew time and resources to access vehicles and materials each day. And, we were still 425 spaces short of providing adequate parking for our employees.

As I noted above, Avista considered three alternatives for meeting our current and long-term parking needs at our central office facility. The first involved potential development of the Ross Court parcel of four acres into a dedicated, paved parking lot. The development would have to meet all applicable Spokane City codes including sidewalks, drainage and parking island vegetation. Pursuing this alternative would impact the then-pending construction of a new fleet services building and would net only 175 of the needed 425 parking spaces. The second alternative would require the Company to purchase adjacent residential properties to the east of the central office, in the cumulative area of approximately 10 acres, clear the land of homes and improvements, and develop the parcels into a parking lot with 500 spaces. Besides the high cost of development there were risks such as not all of the needed property owners being willing to sell their homes, and we still faced street and railroad crossings in addition to higher long-term maintenance costs. The selected alternative was to build a multi-story parking garage on 0.71 acres of land just adjacent to the central office. This option was the least cost and best optimized alternative to meeting the Company's current and long-term parking needs at our central office complex.

Q. How does this program benefit Avista's customers?

A. As noted earlier in my testimony, having adequate office and operations facility space is at the heart of our ability to effectively and efficiently serve customers. This major project represents a prudent investment supporting our current and long-term service to our customers.

Q. Does the Campus Repurposing Project – Phase 2 have a target completion date?

A. Yes, the Campus Parking Structure was placed in service in 2019, with completing investments being made through the second quarter of 2020.

Q. What capital additions for the Campus Repurposing Project – Phase 2 did Avista make in 2018 and 2019?

A. The capital investment made under this project was $12,304,512 and $16,130,430 for 2018 and 2019, respectively, on a system basis.

<u>Project #12 – Downtown Campus</u>

Q. Would you please describe the Company's Downtown Campus Project?

A. Yes. The Downtown Campus Project included several different, but related projects that addressed two key needs identified by the Company. The first key need was to arrange for additional office space needed to accommodate the addition of approximately 100 Avista employee and contract staff associated with two multi-year projects, the Avista Facilities Management project and the Washington Advanced Metering Infrastructure project.

The second key need was to provide a new integrated operations facility for our downtown electric network group[21]. The Downtown Campus project included purchase of a 2.3-acre parcel in downtown Spokane with an existing 22,000 square foot office building, followed by improvements and renovation of the building to provide office space and employee parking for two different work groups.

Q. Did Avista consider alternatives to meeting these two business needs?

A. Yes. For the need to provide additional office space Avista already had a lease at a Spokane Valley business center that was initially set up to provide office space for the workforce implementing the Company's new customer care and billing and asset management systems (Project Compass). This leased space, however, was not large enough to accommodate the 100 workspaces needed, which would have required leasing another site or constructing new additional office space at a new location (since space at our central office facility was already constrained). Compared with continuing and additional leases or constructing new office space, purchasing and renovating the office facility at the downtown location was the most cost-effective alternative.

In providing for the needs of our downtown electric operations group Avista considered the alternative of constructing a new operations facility along with construction of a new office facility (described above), or possibly leasing a new facility with the combination of office space, specialized vehicle, equipment and tools storage, and extensive warehouse space. While suitable office space could certainly be leased, there was no viable leasing option

[21] Like most downtown areas in the United States, Downtown Spokane is served electricity through a network distribution system, that includes underground transformers and network protectors that provide necessary redundant service. It is a specialized system (as compared to radial or underground distributions systems) served by specially trained and qualified service personnel.

for the diverse needs of the downtown network operations group. The selected alternative of purchasing the downtown office facility, which included the space needed for construction of a new network operations facility was the most cost-effective, long-term solution.

Q. How does this investment benefit Avista's customers?

A. The selected alternative provides our downtown Spokane customers with more efficient and lower cost, centrally located field services, and at a lower cost than would have been required to construct a new facility by itself at a different site. The needed office space provided by the existing office facility, with renovation, ensures we can continue to provide reasonable service to our customers at the lowest cost, compared with long-term leasing or construction of a new stand-alone office facility.

Q. Is Avista's investment in its Downtown campus completed?

A. Yes. These projects were substantially completed in 2019.

Q. What capital additions for this project did Avista make in 2018 and 2019?

A. The total capital investment was $7,893,920 and $22,210 in 2018 and 2019, respectively, on a system basis.

<u>Project #13 – Dollar Road Natural Gas Service Center Project</u>

Q. Please describe the Company's investments in the Dollar Road Natural Gas Service Center Project.

A. Avista's Dollar Road Service Center (Service Center), constructed over 60 years ago, was approximately 22,000 square feet in size, and served as the primary natural gas operations center for the greater Spokane metropolitan area, including support for natural gas operations in our outlying communities. The building was constructed in 1956 and at the time

Avista acquired the Spokane Natural Gas Company operations in 1958, this facility served 9,962 natural gas customers. The overall site had been improved in prior years by asphalting exterior yards for natural gas pipe, material, and equipment storage. Adjacent properties had also been acquired to provide needed storage capacity, and vehicle storage and Fleet Services buildings were also constructed.

Many of the elements of the Service Center building itself were in end-of-life condition and in need of replacement. Among the alternatives evaluated, the selected approach was to replace the existing Service Center facility onsite with a new Service Center building. The project scope also included an increase in the size of the outdoor storage yard for needed equipment, vehicles, and materials.

Q. Did Avista consider alternatives to this project?

A. Yes. The Company evaluated leasing options, which ultimately did not provide any properties or facilities needed for our complex office space, fleet, equipment storage, field operations, and materials storage. Avista also evaluated purchasing a new suitable land parcel and constructing a new service center building and supporting structures and facilities. Not only was there no property available at that time that was suitable for our natural gas field operations, but that option would have been considerably more expensive than the selected alternative since the Company had already owned the property and had invested in a fleet building, storage buildings, security fencing and paved material storage yards.

Q. How does this project benefit Avista's customers?

A. As noted above, the Dollar Road Service Center is Avista's primary natural gas operations facility in the greater Spokane area, staffed by approximately 70 field crew and administrative and support employees. The Service Center also supports our local natural gas crews for the communities of Ritzville, Colville, and Davenport. The service center now provides direct and ancillary support for the service of 167,000 natural gas customers. The new Service Center allows the Company to provide our customers more efficient natural gas service at lower, long-term cost than keeping the then-existing facility, or selecting a different alternative among those evaluated.

Q. Has the Dollar Road Service Center project been completed?

A. Yes. Construction of the new facility was substantially completed in 2019.

Q. What capital additions for this program did Avista make in 2018 and 2019?

A. The total capital investment was $17,195,902 and $7,038,810 in 2018 and 2019, respectively.

<u>Project #14 – Cheney High Pressure Reinforcement Project</u>

Q. Would you please describe the Company's Cheney High Pressure Natural Gas Reinforcement Project?

A. Yes. The natural gas planning department routinely runs load study analyses on the Company's natural gas system to identify areas of the system with insufficient capacity serve existing firm customer loads on a "design day" that reflects loads expected on the coldest day on record. Areas identified as having insufficient capacity to meet design day requirements are prioritized based on the severity of the risk associated with the potential inability to serve firm loads. A priority area identified by these studies, in addition to pressure monitoring in the field during cold weather events, is Avista's natural gas service to the city of Cheney where the capacity of the existing high-pressure line is insufficient to meet design day requirements. A factor that has allowed Avista to stave off the need for reinforcement of the line is a long-standing informal agreement the Company has had with a large customer who would voluntarily switch to a different fuel during peak cold weather periods. While such an agreement may be good in the short-term, it is not a long-term solution. Further, this customer is now planning to add significant capacity to their operation and will be unable to fuel switch in the future to help alleviate Avista's design day capacity shortfall.

Q. Did Avista consider alternatives to this project?

A. Yes. As noted above, the alternative exercised for several years was to curtail the large customer's load, but even with that measure the Company still reached the point where it could longer serve design day loads in the City of Cheney. In addition to this measure, Avista's Gas Engineering group has also evaluated supply alternatives to increase capacity, including replacing a portion of the line to Cheney with a larger diameter pipeline from our Medical Lake station, installing a new high-pressure line from Airway Heights, and installing a new gate station at Spangle and installing a new high-pressure supply line from there to Cheney.

Q. How does this project benefit Avista's customers?

A. Absent this investment, the Company would continue to fall behind its ability to serve design day loads in Cheney, which when experienced at some point in the future, would have devastating consequences for our customers.[22] With the reinforcement project Avista will be able to adequately serve our customer loads under extreme weather conditions,

[22] If Avista could not meet customer loads during severe cold weather, which includes residents of the city, commercial and industrial customers, Eastern Washington University, etc., natural gas would not be available again until the weather had warmed sufficiently to ensure we could serve the demand, including several additional days for the customer relighting process.

and will have the capacity to serve known and likely future increases in customer natural gas loads.

Q. Does the Cheney High Pressure Reinforcement Project have a target completion date?

A. Yes. The Company expects the project to be substantially complete by year end 2020.

Q. What capital additions for this program did Avista make in 2019?

A. The total capital investment in 2019 was $3,048,353. This is a Washington-specific capital expenditure.

<u>Project #15 – Aldyl A Pipe Replacement Program</u>

Q. Please describe the Company's investments in the Priority Aldyl A Pipe Replacement Program.

A. The Aldyl A Pipe Replacement Program[23] is a 20-year structured pipe replacement effort with dedicated internal and external resources focused on reducing natural gas system risk, on a prioritized basis, by replacing priority Aldyl A pipe throughout Avista's natural gas distribution system. The program was initiated in 2011 and is slated to be completed by year 2032.[24]

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[23] This pipe replacement program is managed by the Company's Gas Facility Replacement Program, which is the organizational program responsible for managing all aspects of replacement planning and execution of all individual replacement projects. Multiple individual projects are carried out across our natural gas service area each year.

[24] For a detailed description of this program, please see Avista's Priority Aldyl A Protocol Report, provided as Exh. HLR-4.

Q. Please describe the alternatives evaluated by the Company and how this program approach was selected.

A. The primary alternative to this proactive replacement program was to simply replace sections of the subject pipe as it failed in service over time. The Company's asset management analysis, however, revealed that this approach would eventually lead to a failure rate and consequences that would be unacceptable to Avista, our customers, the general public, and regulators.[25] The question, then, was to determine the time horizon over which a replacement program should be conducted. The analysis showed that a replacement interval in the range of 25 to 30 years would likely still result in an unacceptable increase in the number of annual leaks, while an interval in the range of 10 to 15 years would result in substantially-greater cost pressure on customers, exacerbate the complexities and demands of the project, and fail to produce enough of a reduction in annual leaks to overcome these burdens. A time interval in the range of 20 years was determined to be optimal. The Company has continued to re-evaluate the analysis since the initial work was completed, which has confirmed Avista's approach and timeline for managing this issue. I have provided the most recent report updating this analysis, conducted in 2018, as Exh. HLR-5.

Q. How does this program benefit Avista's customers?

A. Absent this program, the Company would perform emergency replacements of sections of priority Aldyl A pipe as it failed in service. Failures in the piping result in

[25] As described in Exh. HLR-4, in February 2012 Avista's Asset Management Group released its findings in the report titled "Avista's Proposed Protocol for Managing Select Aldyl A Pipe in Avista Utility's Natural Gas System." The report documents specific Aldyl A pipe in Avista's natural gas pipe system, describes the analysis of the types of failures observed, and the evaluation of its expected long-term integrity. The report proposed the undertaking of a 20-year program to systematically replace select portions of Aldyl A medium density pipe within its natural gas distribution system in the States of Washington, Oregon, and Idaho.

underground leaks that have the potential to migrate into homes and businesses, creating a significant risk for our customers, citizens, first responders, and our employees. As noted below, this approach would eventually result in a number of failures each year that would be unacceptable. In addition to this unacceptable risk, the cost of emergency replacements would be extreme based on the complex infrastructure replacement and permitting required to do the work. Replacing this pipe in our system in the manner undertaken will help the Company shield our customers from this unreasonable risk and minimize, optimize and levelize the costs they pay for the work to be done.

Q. Does the Priority Aldyl A Pipe Replacement Program have a target completion date?

A. Yes, it does. Under the current plan, Avista expects to replace all of the priority Aldyl A piping in its system in all jurisdictions by year 2032.

Q. What capital additions for this program did Avista make in 2018 and 2019?

A. The capital investment for this program, on a system basis, was $21,914,044 and $22,002,672 in 2018 and 2019, respectively.

<u>Project #16 – Natural Gas Non-Revenue Program</u>

Q. Please describe the Company's investments made under the Natural Gas Non-Revenue Program.

A. This annual program, which is under the Company's Failed Plant and Operations capital investment driver, includes investments to replace obsolete facilities, pipe and equipment at the end of their useful life or that have failed, equipment and/or technology to enhance gas system operation and/or maintenance, projects to improve public safety, and improvements ancillary to customer requested work.[26] These investments, while necessary for safe and reliable operation of our system, are not part of our programs to fund new customer connects, increase performance or capacity, or make systematic replacements based on asset condition.[27]

Q. Did the Company consider alternatives to this program?

A. Like the electric distribution minor rebuild program I described earlier in my testimony, there is no traditional alternative to the work completed under this program since it consists of many, small unplanned projects across the entire natural gas distribution system. These small, unplanned projects are responsive to a range of factors generally beyond the control of the Company. Examples include ancillary work required by customer-requested service,[28] repair of damage from a dig-in of our facilities, investments needed relocate facilities, repair of leaks, deepening pipeline sections that are too shallow, remediating failed, under-sized or unsafe equipment, and correcting overbuild issues. There are instances among the small rebuild projects where limited alternatives are evaluated in the design phase by the individual project designer. In general, however, there is no reasonable alternative to timely making these investments once the need has been identified.

Q. How does this program benefit Avista's customers?

[26] Work requested by customers is generally, by tariff, performed at the customer's expense. Under certain circumstances, however, Avista may choose to perform additional work needed on the system not related to the customer's request. An example is to replace an existing steel service with polyethylene pipe to eliminate the possibility of future deficiencies in cathodic protection and to reduce future maintenance related to that steel service. The cost of this conversion is assigned to this Program.

[27] For additional information on this program, please see pages 12-13 in Avista's Natural Gas Infrastructure Plan for 2020, provided as Exh. HLR-3.

[28] These investments include work required to properly maintain the system, but that are not reasonably covered by the tariffed financial contribution required of the customer.

A. Remediating issues on our natural gas system in the manner undertaken helps the Company meet operating and compliance requirements, provide our customers reliable natural gas service, shield them from unreasonable risk, and optimize and levelize the costs they pay for work that needs to be done on the system.

Q. Does this Program have any target completion date?

A. No, this is an ongoing infrastructure renewal program that maintains our always aging infrastructure in safe and reliable service condition at a reasonable cost.

Q. What capital additions for this program did Avista make in 2018 and 2019?

A. The capital investment for this program, on a system basis, was $8,811,389 and $8,173,893 in 2018 and 2019, respectively.

<u>Project #17 – North South Corridor (NSC) Greene Street High-Pressure Main Project</u>

Q. Please describe the NSC Greene Street High-Pressure Main Project.

A. In preparation for the next phase of the Washington State Department of Transportation's North Spokane Corridor Freeway Project, Avista was required to relocate approximately 1,760 feet of 20" diameter high-pressure gas pipeline and a district regulator station. The original line was installed in 1956 and provided a main source of natural gas for our Spokane customers. The new pipeline section and regulator station were installed adjacent to the future freeway route in a dedicated utility easement.

Q. Did Avista consider alternatives to the selected project?

A. Yes. Avista evaluated different potential routes for the new pipeline. The route chosen, adjacent to the future freeway, had the least pipe footage and was the most economical of the options. An added benefit of the route selected is that the dedicated easement protects Avista's customers from bearing the costs associated with any potential future road work.

Q. How does this project benefit Avista's customers?

A. This project allows Avista to continue providing our customers with adequate, safe and reliable natural gas service, which would not have been otherwise possible without relocating this major supply line.

Q. What was the timeline for completing the NSC Greene Street High-Pressure Main Project?

A. This main pipe project had to be completed before Spring 2019 to accommodate the next-scheduled construction phases of the North-South freeway project. Additionally, the existing pipeline could only be taken out of service in July and August without dropping load service to our customers in the City of Spokane. Accordingly, the work was completed in early September of 2018.

Q. What were the capital additions required for this project in 2018?

A. The total investment made in 2018 was $2,905,791. This was a Washington-specific capital expenditure.

<u>Project #18 – Gas Replacement Street and Highway Program</u>

Q. Please describe the Company's current investments in the Gas Replacement Street and Highway Program.

A. Nearly all Avista's natural gas pipelines are located in public utility easements set aside for this purpose, which are controlled by jurisdictional franchise agreements. Avista is required under these agreements to relocate its facilities, at our cost, when local jurisdictional projects, typically transportation, require the move. In some instances, the

Company will have a substantial lead time to plan for, budget, design and permit for the move, but in most cases, we're notified of the need to move during the year the jurisdictional project must be completed. Because these jurisdictional projects are outside Avista's control, and because it's impossible to forecast the year-to-year costs, this program and its ultimate costs are subject to considerable variability.

Q. Did Avista consider alternatives to this program?

A. There is no alternative to this program since the Company is required to move its facilities, within a specified time frame, when notified by local jurisdictions pursuant to our franchise agreements. Within each project, however, there are sometimes opportunities to evaluate alternative ways to continue providing service, and the Company always looks for opportunities to leverage these projects to capture other system benefits.

Q. How does this program benefit Avista's customers?

A. Avista relies on its natural gas infrastructure to provide service to its customers and uses public utility easements as a cost-effective way to reduce the costs of placing new infrastructure into service. In cases where we must relocate our facilities, even though there is a new incremental cost for doing so, it still represents the least-cost approach for continuing to provide reliable and affordable natural gas service.

Q. Does this project have a target completion date?

A. No, this is an ongoing facility maintenance program that ensures our natural gas infrastructure in available to serve our customers at a reasonable cost.

Q. What were the capital additions required for this program?

A. The total investment was $4,704,048 and $7,592,120 in 2018 and 2019, respectively.

IV. 2020 PRO FORMA ELECTRIC AND NATURAL GAS LARGE DISTINCT PROJECTS, MANDATORY AND COMPLIANCE PROJECTS, AND ONGOING ENERGY DELIVERY PROGRAMS

Q. Are you supporting pro forma 2020 capital additions as a part of your testimony in this case?

A. Yes. Table No. 3 below provides a listing of the actual and forecast 2020 pro forma capital additions by major category in my areas of responsibility.

Table No. 3 – Pro Forma Capital Additions for 2020 (System)

WA GRC Plant Group	Project #	Business Case	2020 TTP (System)	Exh. HLR-11 Page #
Large Distinct Projects	19	Campus Repurposing Phase 2	$ 2,882,297	71
	20	Electric Storm* (2020 Labor Day Storm Costs & Chelan-Stratford Tx Line)	12,106,375	141
	21	Natural Gas Cheney HP Reinforcement	4,917,961	113
	22	Jackson Prairie Joint Project	2,260,081	148
	23	Rattlesnake Flat Wind Farm Project 115kV Integration Project	10,453,640	23
Total Large Distinct Projects			**$ 32,620,354**	
Mandatory & Compliance	24	Electric Relocation and Replacement Program	$ 2,409,847	151
	25	Natural Gas Cathodic Protection Program	754,474	158
	26	Natural Gas Facility Replacement Program (GFRP) Aldyl A Pipe Replacement	22,209,770	118
	27	Natural Gas Isolated Steel Replacement Program	1,298,601	161
	28	Natural Gas PMC Program	2,587,271	164
	29	Natural Gas Replacement Street and Highway Program	2,707,549	137
	30	Joint Use* (previously embedded in Distribution Minor Rebuild)	2,725,555	171
	31	Protection System Upgrade for PRC-002	1,275,526	178
	32	Saddle Mountain 230/115kV Station (New) Integration Project Phase 1	28,666,330	29
	33	Transmission Construction - Compliance	9,958,308	39
	34	Transmission NERC Low-Risk Priority Lines Mitigation	4,342,283	184
	35	Westside 230/115kV Station Brownfield Rebuild Project	3,500,005	52
Total Mandatory & Compliance			**$ 82,435,519**	
Programs	36	Capital Tools & Stores	$ 1,248,193	190
	37	Distribution Grid Modernization	7,896,876	2
	38	Distribution Minor Rebuild	8,384,352	14
	39	Downtown Network - Asset Condition	1,716,542	201
	40	Downtown Network - Performance & Capacity	2,667,154	217
	41	Electric Storm	3,819,231	141
	42	Fleet Services Capital Plan	7,057,566	228
	43	Natural Gas Non-Revenue Program	7,275,307	130
	44	Natural Gas Regulator Station Replacement Program	861,927	243
	45	Natural Gas Reinforcement Program	1,161,519	251
	46	SCADA - SOO and BuCC	1,975,748	258
	47	Segment Reconductor and FDR Tie	6,859,809	265
	48	Structures and Improvements/Furniture	2,597,517	277
	49	Substation - New Distribution Station Capacity Program	11,629,936	293
	50	Substation Rebuilds Program	13,741,428	32
	51	Transmission - Minor Rebuild	1,778,571	300
	52	Distribution Wood Pole Management	10,334,298	59
Total Programs			**$ 91,005,974**	
Exh. HLR-1T Total 2020 Pro Forma Capital Additions			**$ 206,061,847**	

Q. The Company included specific pro forma 2020 capital additions within its request for rate relief. Would you please explain how the capital additions for 2020 were decided on?

A. Yes. As discussed by Ms. Andrews, the Company typically has approximately 120 plus projects (business cases) completed on an annual basis which represent the approximate $405 million of capital spending for any given year. In order to minimize the projects pro formed in this case for calendar 2020, the Company used the Commission's recent Used and Useful Policy Statement , as well as the recent PSE Order 08 in Dockets UE-190529 and UG-190530 ("PSE Order"), for guidance in selecting projects for inclusion in this proceeding as follows:

- First, the Company looked for a balance between the burden on parties to review and the Company's need to recover 2020 capital additions that were already largely in-service serving customers at the time of filing the Company's case (or would, within two months of filing, be in-service through December 31, 2020), ensuring these projects meet the Commission's requirement that each project is "used and useful," and "known and measurable."

- Second, the Company grouped its projects to fit into the Commission defined categories: 1) specific, identifiable and distinct; 2) programmatic (on-going programs or scheduled investments), and 3) short-lived assets. The Company created a 4th category – reflecting projects that are mainly "programmatic," and required to meet regulatory and other mandatory obligations, titled: 4) Mandatory and Compliance. The Company excluded all non-material projects generally less than $500,000 electric and $200,000 natural gas.

Q. It appears that project or program #s 19, 21, 23, 26, 29, 32, 33, 35, 37, 38, 43, 50 and 52 listed above in Table No. 3 are duplicative of projects and programs previously listed in Table No. 2, and which are fully described in the previous section of your testimony. Is that the case?

A. Yes, the above listed investments were either ongoing programs or projects that had substantial investments in 2018 and/or 2019, and which will continue to occur in 2020.

Q. Is all of the support for these projects and programs in 2020 the same as you described previously for 2018 and 2019?

A. Yes, the support is the same, and therefore I will not repeat that same information for these programs in this section of testimony.

Q. Before describing the 2020 capital projects that you sponsor in your testimony, in general, has the Company applied offsets against the projects you discuss below?

A. Yes, although not directly. Most projects do not have direct identifiable offsets that can be applied on an individual project basis. However, as discussed by Ms. Schultz, in each of her 2020 Pro Forma Capital Adjustments in which the projects I sponsor are captured, she reduces depreciation expense for all 2019 retirements. The inclusion of 2019 retirements act as an offset to all 2020 projects pro formed into this case, effectively reducing pro formed depreciation expense approximately 21% for electric and 16% for natural gas. A discussion of each 2020 capital project pro formed into this case for which I am responsible is provided below.

<u>Project #20 – Labor Day 2020 Storm Damage to Avista's Electric System</u>

Q. Please describe the Company's emergency investments as a result of the extraordinary wildfire and wind events of the recent Labor Day 2020 Weekend?

A. Avista, like many of the region's electric utilities, suffered extensive damage to its electric transmission and distribution system as a result of high winds and wildfire events experienced over the 2020 Labor Day weekend. The greatest damage was caused by wildfire that burned several structures on our Lind-Shawnee 115kV line, a structure on our Shawnee-Sunset Line, and approximately 160 structures covering 13 miles of our Chelan-Stratford 115kV transmission line. Repair of the damaged facilities began immediately after the storm events and when wildfire damaged areas were declared safe to enter. Avista was able to quickly repair damage on the first two lines and expedited comprehensive planning work for the Chelan-Stratford Line, including a new optimized transmission design, emergency requisition of replacement poles and selection and onboarding of contract resources to perform the work.

Avista also suffered fire and wind-related loss of substantial distribution infrastructure, including the tragic fire that burned the community of Malden and Pine City, Washington, and extensive wind damage in the Colville district. Please note the types of repairs often made as a result of these storm events, as described below in Project #41 – Electric Storm.

Q. Has Avista considered alternatives to repairing the wind and fire damaged electric infrastructure?

A. No. It is imperative the Company move as quickly as possible to restore service to its customers and to restore the integrity of its electric transmission and distribution system. Avista is, however, adopting an alternative design for the rebuilt sections of the Chelan-Stratford Line. First, the original wood poles are being replaced with steel transmission structures, which allows the span lengths to be increased. The increased span results in fewer poles, which will save our customers money. The use of steel also helps better-optimize our lifecycle cost of ownership, due in part, to the improved resistance to future wildfires.

Q. How does this investment benefit Avista's customers?

A. Our customers rely on the Company to respond immediately to outage events caused by the Labor Day and similar storm events, and to quickly and efficiently restore our electric delivery system. Customers will also benefit in the future from the Company's decision to replace wood support structures in fire prone areas with new steel poles.

Q. Does the Recent Labor Day Storms Project have a target completion date?

A. Yes, the Company's local distribution infrastructure was largely operational within a few days, with some extensively fire-damaged areas taking slightly longer to complete. Repair of the Chelan-Stratford line is scheduled for completion in December.

Q. What capital additions for the Labor Day Storms event does Avista expect to have in service in 2020?

A. The Company now estimates these storm-related investments will total $12,106,375 on a system basis.[29]

Q. Why should this Project be treated different than what is discussed later in Electric Storm, Project #41?

A. The level of destruction to the facilities described above was simply well above and beyond the level of investment the Company makes on an annual basis related to storm activity. For example, Avista spent $3.6 million in 2018 and $6.3 million in 2019. The

[29] Preliminary project costs for the Chelan-Stratford Transmission Line Rebuild project from the 2020 Labor Day Storm are now expected to be lower than the estimated amount included in the Company's filing. Final project costs, once available will be updated during the pendency of the case, reducing the overall rate base and revenue requirement associated with this project.

currently budgeted spending level ranges from $3.0 million in 2020 to $2.5 million in year 2024. Again, the level of devastation related to the Labor Day storm necessitates separate treatment for the recovery costs.

Project #22 – Jackson Prairie Joint Project

Q. Please describe the Company's investments in the Jackson Prairie Joint Project.

A. Avista is a one third joint owner in the Jackson Prairie Natural Gas Storage Project and has long relied on this asset to optimize gas prices and supply for the benefit of its customers. As an example of the benefit of this asset, over the natural gas procurement year of 2016-2017, the storage optimization provided by Jackson Prairie saved Avista's natural gas customers over $20 million. Like any asset, investments must be made in the facility each year to ensure the integrity of its safe, efficient and cost-effective operation. Avista participates with its joint owners to identify and vet upcoming capital needs and to approve annual investments to be made in the facility. Company witness Ms. Morehouse provides further information regarding Avista's ownership in Jackson Prairie.

Q. Has Avista considered alternatives to owning and maintaining the Jackson Prairie Natural Gas Storage Project?

A. Yes. The Company periodically evaluates the practicality of acquiring alternative natural gas storage capacity that includes leased pipeline capacity and storage for replacing the Jackson Prairie and the option of constructing a new stand-alone compressed natural gas storage facility. Both the leasing of natural gas pipeline capacity on TC Energy's Gas Transmission Northwest system and leased storage capacity would provide only part of the flexibility provided by Jackson Prairie and at a much greater cost. The alternative of constructing a new compressed natural gas facility is very cost prohibitive. Maintaining Avista's ownership in Jackson Prairie, including investments to maintain the integrity and safe operation of the facility, provides our customers the least cost solution to meeting our natural gas storage needs.

Q. How does this investment benefit Avista's customers?

A. As noted above having the Jackson Prairie natural gas storage facility allows the Company to optimize natural gas procurement, supply and pricing to the substantial benefit of our customers, provided at the lowest-possible cost.

Q. Does the Jackson Prairie Joint Project have a target completion date?

A. No, this asset maintenance program is a continuing operation to ensure the safe, efficient and long-term cost effectiveness of this resource.

Q. Can you demonstrate historical spending trends for this program?

A. Historic spending under this business case for the prior five-year period is $1.1 million in 2015, $1.1 million in 2016, $1.5 million in 2017, $2.3 million in 2018 and $2.5 million in 2019. The currently budgeted spending level is approximately $2.3 million in each year, 2020 - 2024.

Q. Are there cost controls for this program?

A. The effective control on costs is the amount of work the joint owners identify as necessary to provide for the safe and reliable maintenance and operation of the facility. An additional level of cost control is executed by the Company's Capital Planning Group in their allocation of capital to priority needs across our enterprise. Because Avista is always responding to a greater demand for capital than is available, the capital planning process aims to meet minimum funding levels to ensure a program is effective while allocating available capital to our other highest priority needs. Put simply, our internal capital constraints, combined with identification of minimum effective funding levels, provides an effective control on costs for this program.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The Company's share of the investment for 2020 is $2,260,081, on a system basis.

<u>Project #24 – Electric Relocation and Replacement Program</u>

Q. Please describe the Company's investments in the Electric Relocation and Replacement Program.

A. Like the natural gas program for street and highway relocation that I described in the previous section of my testimony, the placement of the Company's electric facilities is generally located in easements provided in public rights of way that are governed by jurisdictional franchise agreements. When requested by the local jurisdiction, typically related to transportation projects, the Company must relocate its facilities in the right of way to accommodate these projects. Avista is obligated under terms of its franchise agreements to move its facilities at its own expense and within the timeframe specified by the local jurisdiction.

Q. Has Avista considered alternatives to moving its facilities when required by a local jurisdiction?

A. No, as stated above, <u>the Company is required</u> under its franchise agreements to move its facilities when requested.

Q. How does this investment benefit Avista's customers?

A. Using public rights of way for our many thousands of miles of electric infrastructure provides a cost-effective way to serve our customers, even considering the costs associated with the periodic requirement for their relocation. Agreeing to move our facilities when requested is an important provision that allows the Company to negotiate favorable franchise agreements, which in turn, allows us to provide services to our customers. The investments required for periodic relocation of facilities allows us to continue providing reasonable service to our customers at an affordable cost.

Q. Does the Electric Relocation and Replacement Program have a target completion date?

A. No, this asset maintenance program is required to continue proper operation of our facilities under our local franchise agreements.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. The need for electric relocations and replacements is driven by the plans of our local jurisdictions, and as such, is not an activity that Avista can anticipate in definitive terms, plan for, or manage like a project internal to the Company. Accordingly, the annual spending levels can be quite variable so Avista budgets for this activity in coming years based on the spending levels experienced in the prior five-year period. The actual spending level each year is determined by the number and size of projects the Company is required to complete. Historic spending under this business case for the prior five-year period is $2.7 million in 2015, $3.2 million in 2016, $3.7 million in 2017, $2.2 million in 2018 and $3.2 million in 2019. The currently budgeted spending level ranges from $2.5 million in 2020 to $3.1 million in year 2024.

Q. Are there cost controls for this program?

A. The effective control on costs is the amount of work the Company is mandated by its local jurisdictions to accomplish each year. Avista, of course, seeks to deliver each project in the most cost-effective manner possible in the service of our customers.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $2,409,847, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

<u>**Project #25 – Natural Gas Cathodic Protection Program**</u>

Q. Please describe the Company's investments in its Natural Gas Cathodic Protection Program.

A. The purpose of the cathodic protection program is to provide an additional level of protection[30] to the Company's buried steel natural gas piping from the effects of natural corrosion. The protection is provided by applying a low-voltage direct current to the subject pipe that creates a corrosion free zone at the surface of the pipe. Besides a prudent business practice, Avista is <u>mandated by the U.S. Department of Transportation</u> to provide effective cathodic protection for its steel natural gas pipelines. The Company's Cathodic Protection Group is responsible for the monitoring and annual testing of our cathodic systems.

Q. Has Avista considered alternatives to providing cathodic protection for its steel natural gas pipelines?

[30] This is in addition to providing proper protective coatings to the steel pipe. These provide the primary protection and the cathodic system serves to protect the pipe if the coating deteriorates or is damaged.

A. No, as stated above, the Company is mandated to provide effective cathodic protection systems.

Q. How does this investment benefit Avista's customers?

A. Providing cathodic protection for our steel natural gas piping protects our customers and others from the potential consequence of leaks on our system and helps ensure they also receive the full lifecycle value of the investments made in our natural gas system by avoiding the need to prematurely replace the pipe due to excessive corrosion.

Q. Does the Cathodic Protection Program have a target completion date?

A. No, this ongoing asset maintenance program is required to provide for the continued the safe and effective operation of our natural gas system.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. The need for capital investments in our cathodic protection systems is driven by the results of annual monitoring and testing. Because cathodic systems can have variable service lives, depending on local soil conditions and the propensity for corrosion, and because all the component parts are buried in the earth, the only way to determine whether a system needs to be replaced is through annual performance monitoring. It is often difficult to predict in advance when a specific replacement will be required so the amount of replacement work experienced each year across our system can be somewhat variable. Therefore, the annual funding for this program in future years is based on Avista's experience in prior years. Historic spending under this business case for the prior five-year period is $1.0 million in 2015, $1.1 million in 2016, $1.1 million in 2017, $0.8 million in 2018 and $0.3 million in 2019. The currently budgeted spending level is approximately $0.7 million in each year, 2020 – 2024.

Q. Are there cost controls for this program?

A. The effective control on costs is the amount of work the Company is required to perform each year to remain in compliance with federal mandates based on results of Avista's cathodic protection monitoring and testing program. Avista, of course, seeks to deliver each project in the most cost-effective manner possible in the service of our customers.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $754,474, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

<u>Project #27 – Natural Gas Isolated Steel Replacement Program</u>

Q. Please describe the Company's investments in the Isolated Steel Replacement Program.

A. Related to my description of our cathodic protection systems above, the Company is required to identify portions of its natural gas system where we have "cathodically isolated" sections of steel piping, including natural gas service risers, and to replace them with non-corrosive pipe within a specified timeframe. Isolated steel sections are just that, they are electrically separated from the cathodic protection system by sections of non-corrosive (plastic) pipe. Because these sections are not connected to the cathodic protection system, they are not afforded the extra level of protection beyond their protective coating. Identifying and replacing isolated steel sections of pipe is required by federal regulations and by agreement with the Commission for our system in Washington.[31]

Q. Has Avista considered alternatives to its Isolated Steel Replacement Program?

A. No, as stated above, the Company is mandated to identify and replace sections of isolated steel pipe in its system and is a prudent business practice.

Q. How does this investment benefit Avista's customers?

A. Replacing isolated steel sections protects our customers and others from the potential consequence of leaks on our system and helps ensure customers also receive the full lifecycle value of the investments made by avoiding the need to prematurely replace pipe due to excessive corrosion.

Q. Does the Isolated Steel Program have a target completion date?

A. Yes, Avista expects to have all isolated steel sections identified and replaced in its Washington service area by 2021.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. The need for capital investments in our isolated steel replacement program is driven by the results of our annual surveys of the system and the amount of piping that needs to be replaced each year. It can be difficult to predict in advance the amount of replacements that will be required each year so the annual funding for this program in future years is based on Avista's experience in recent prior years. Historic spending under this business case for the prior five-year period is $1.3 million in 2015, $1.2 million in 2016, $1.4 million in 2017, $1.4 million in 2018 and $1.5 million in 2019. The currently budgeted

[31] In Docket PG-100049.

spending level in Washington for 2020 and 2021 is $1,400,000 for each year.

Q. Are there cost controls for this program?

A. The effective control on costs is the amount of work the Company is required to perform each year based on our annual surveys. The completion of this program in Washington is stipulated in our agreement with the Commission, which drives the amount of our system that must be surveyed and remediated each year. Avista, of course, seeks to deliver each project in the most cost-effective manner possible in the service of our customers.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $1,298,601, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

<u>Project #28 – Natural Gas PMC Program</u>

Q. Please describe the Company's investments in its Natural Gas PMC Program.

A. Avista is required by Commission rules and tariffs in its three state jurisdictions to annually test a portion of its natural gas meters for accuracy and to ensure overall meter performance. This program is known as the Planned Meter Changeout Program (PMC) and uses a statistical sampling methodology[32] to determine the number of meters changeouts that must be completed each year. If samples from a meter "family" are not meeting accuracy standards, then the Company will remove that population of meters from service. Conversely,

[32] ANSI Z1.9 "Sampling Procedures and Tables for Inspection by Variables for Percent Nonconforming."

if the results meet our standards of accuracy then the sample size in the future for that meter family may be reduced. These analytics help control costs and remove meters quickly when not performing well.

Q. Has Avista considered alternatives to the periodic meter changeout program?

A. No, as stated above, the Company is required to perform this work each year, and it's also a prudent practice to ensure the cost of our service is fair for all customers.

Q. How does this investment benefit Avista's customers?

A. Ensuring the accuracy and overall performance of our natural gas meters is in the interest of all customers and helps us minimize the overall cost of maintaining a high standard of service.

Q. Does the periodic meter changeout program have a target completion date?

A. No, this ongoing asset maintenance program is required to maintain a high degree of performance in our fleet of natural gas meters.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. The annual volume of periodic meter changeouts is driven by the determination of sample sizes, as noted above, so there is some year-to-year variability in spending due to the natural change in number of units replaced each year. Historic spending under this business case for the prior five-year period is $1.2 million in 2015, $1.7 million in 2016, $2.1 million in 2017, $2.9 million in 2018 and $2.9 million in 2019.

Q. Are there cost controls for this program?

A. The effective control on costs is the amount of work the Company is required to perform based on the results of the accuracy and overall performance testing. Avista, of course, seeks to operate this program in the most cost-effective manner possible in the service of our customers.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $2,587,271, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

Project #30 – Joint Use Projects[33]

Q. Please describe the Company's investments in Joint Use Projects.

A. Joint Use is the regulated use of utility poles and other structures owned by Avista that are available for use by third-party telecommunications companies to provide their services to customers we have in common. Avista is reimbursed for this joint use by tariffs in each of our jurisdictions, which reimbursement serves to directly lower the price our customers pay for their Avista service. These joint use projects, referred to 'make ready,' meet our obligation to provide adequate clearance for the attachment of third-party infrastructure by installing taller structures (typically wood poles) than would be required for Avista's facilities alone. The Company is subject to regulatory action, penalties, and/or civil litigation if it does not timely perform the mandated make ready work when requested.

Q. Has Avista considered alternatives to investments in Joint Use Projects?

[33] Joint Use is a new business case in 2020. Costs for this project were previously embedded in the Distribution Minor Rebuild business case.

A. No, as noted above, the Company is required to perform make ready work for joint use projects when requested.

Q. How do these investments benefit Avista's customers?

A. Our customers benefit from the shared use of facilities because it helps reduce the cost they pay for both their telecom and electric services.

Q. Does the Joint Use Projects have a target completion date?

A. No, these annual projects are part of a continuing program where the Company responds to the requests of third parties to make our facilities ready for their infrastructure.

Q. Can you demonstrate historical spending trends for this program?

A. The need for joint use projects is driven by the plans and requests of third parties that is beyond the control of the Company. The amount of work performed each year and the resulting spending is therefore variable year-to-year. Historically, the Company included investments supporting joint use as part of the electric Distribution Minor Rebuild program. The level of investment required recently, however, signaled the need to present these activities in a separate business case. While Avista can extract historic joint use investments, they were not previously accounted for separately. The currently-budgeted spending level for years 2020 through 2024 is $1.5 million.

Q. Are there cost controls for this program?

A. The effective control on costs is the amount of work the Company is required to perform based on the requests of third-party telecommunications providers. The telecom providers also provide a form of cost control since they review and pay the direct costs borne by Avista for the performance of make ready work. Avista, of course, seeks to deliver each project in the most cost-effective manner possible in the service of our customers.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $2,725,555, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. Yes, as noted above, the joint use companies reimburse Avista for the actual costs of performing the make ready work, and they also pay a tariffed annual pole rental fee, which flows through to customers through reduced retail rates.

<u>Project #31 – Protection System Upgrades for PRC-002</u>

Q. Please describe the Company's investments in the Protection Systems Upgrade Project.

A. As noted in numerous previous places in my testimony, Avista is subject to a range of planning and operating standards established by NERC, including the standard PRC-002-2, which establishes disturbance monitoring and reporting requirements on our bulk electric transmission system. Each year Avista evaluates every one of its electric transmission busses[34] to determine our obligations under bulk electric system requirements and standards. The subject standard mandates the Company have suitable protection systems to monitor and record all electric disturbances occurring on each portion of our electric transmission system that is within the bulk electric system. The protection systems must have the capability to record electrical quantities for each element connected to every bus identified as being part of

[34] The transmission bus, or more technically 'busbar,' is the heavy electrical conductor used in electric substations that connect high voltage equipment, switch gear, low voltage equipment, etc. In evaluating power flows on the electric transmission system, the bus refers to any graph node of a single-line diagram at which voltage, current, power flow and other quantities are measured and evaluated. The NERC determination of what portions of Avista's electric transmission infrastructure (lines, circuits, substations, and individual busses and pieces of equipment) are part of the "bulk electric system" is based on analysis of our transmission system one-line diagrams.

the bulk electric system.

Q. Has Avista considered alternatives to the Protection Systems Upgrade Project?

A. No, as stated above, the Company is mandated by NERC to comply with the requirement to have the protection systems I have described above.

Q. How does this investment benefit Avista's customers?

A. Avista's compliance with NERC mandates, and the cost borne by our customers, helps to ensure the greater overall long-term reliability of the nation's electric transmission grid.

Q. Does the Protection Systems Upgrade Program have a target completion date?

A. Yes, the Company is required to comply with this standard by July 1, 2022.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $1,275,526, on a system basis.

<u>Project #34 – Transmission NERC Low-Risk Priority Lines Mitigation</u>

Q. Please describe the Company's investments in Transmission NERC Low-Risk Priority Lines Mitigation?

A. Avista's compliance with this mandatory standard requires that we conduct LiDAR surveys[35] on all subject transmission circuits to determine any discrepancies between

[35] Light Detection and Ranging (LiDAR) is a method of measuring distances (ranging) by illuminating a target with laser light and measuring the reflection with a sensor. Differences in in laser light return times to the sensor and wavelengths are used to create a digital three-dimension representation of the target. Typically conducted on electric transmission by aerial flights.

the design specifications and field measurements for conductor sag[36] on these circuits. While the subject NERC standard was offered as a recommendation to the industry, our compliance with minimum clearance requirements is required by the National Electric Safety Code, which has also been adopted as a Code requirement by the State of Washington (WAC). NERC, however, is also closely monitoring the progress made by each utility in complying with these requirements, via a required status report filed with them every six months by each subject utility. When Avista identifies discrepancies through the surveys it evaluates a range of actions to be taken to ensure we meet the stated clearance requirements. The actions include reconfiguring insulator attachments, rebuilding or replacing structures and removing earth below the span of line in question.

Q. Has Avista considered alternatives to its mandatory compliance with clearance requirements under the National Electric Safety Code and Washington State Law?

A. No, there are no reasonable alternatives to this mandatory safety requirement.

Q. How does this investment benefit Avista's customers?

A. Avista's compliance with requirements of the National Electric Safety Code, Washington State Law and NERC monitoring helps to ensure a higher degree of safety and reliability for our electric transmission system.

Q. Does the NERC Low-Risk Priority Lines Project have a target completion date?

A. Yes, Avista is planning to have this work completed by year end 2022.

[36] Sag refers to the lowest point (closest to the earth) of the electrical conductor between any two supporting structures (poles), measured as the vertical distance from the top of the supports to the lowest hanging point of the conductor between them.

Q. What capital additions for this project does Avista plan to make in 2020?

A. The planned level of spending is $4,342,283, on a system basis.

<u>Project #36 – Capital Tools and Stores</u>

Q. Please describe the Company's investments in the Capital Tools and Stores (or "Capital Equipment") Program.

A. This program funds the tools, including equipment to perform new construction, monitoring, ensuring system integrity, and repair and maintenance that are essential for Avista's employees to perform their duties safely and efficiently. This equipment, which needs to be adequate and fully available for both planned work and emergency response, meets the needs of our electric, natural gas, communications, fleet, facilities and generation crews and infrastructure.

Q. Has Avista considered alternatives to funding this program?

A. There are no alternatives to having the specialized tools required to perform the work of providing safe, reliable and affordable service to our customers. The Company, does, however, promote the continuous improvement process of always exploring more efficient and cost-effective ways of performing our work, including its application to the tools and equipment necessary for the tasks.

Q. How does this investment benefit Avista's customers?

A. Ensuring our employees are always equipped with the right tools for the job enables them to meet our customers' needs timely, safely, reliably and at the lowest possible cost, compared with the alternative of not adequately equipping them to be as productive, safe and efficient as possible.

Q. Does the Capital Tools and Stores Program have a target completion date?

A. No, the process of managing our supply of tools and critical equipment, and providing for the investments needed to do so, is an ongoing critical business activity.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. Historic spending under this business case for the prior five-year period is $3.5 million in 2015, $3.7 million in 2016, $2.9 million in 2017, $2.6 million in 2018 and $1.7 million in 2019. The currently budgeted spending level is based on recent experience, inflation, and specific needs that are known to Avista in current and future years, and ranges from $1.8 million in 2020 to $2.0 million by year 2024.

Q. Are there cost controls for this program?

A. The driver of this program is the need to have tools and equipment available to our employees, as I have described above. The effective cost control is executed by the Company's Capital Planning Group in their allocation of capital to priority needs across our enterprise. Because Avista is always responding to a greater demand for capital than is available, the capital planning process aims to meet minimum funding levels to ensure a program is effective while allocating available capital to our other highest priority needs. Put simply, internal capital constraints, combined with identification of minimum effective funding levels, provides an effective control on costs for this program.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $1,248,193, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

<u>Project #39 – Downtown Network – Asset Condition</u>

Q. Please describe the Company's investments in its Downtown Electric Network.

A. Avista's Downtown Electric Network provides highly-reliable electric service to our large commercial customers in Spokane's downtown core. The network consists of complex system of underground vaults, underground electrical cable, transformers and network protectors. This is very long-lived infrastructure; as an example, of the approximately 580 underground vaults in service, nearly 80% of them were constructed before 1930, meaning they are now 90 years and older (some up to 120 years). Much of the cable in place was installed in the late 1920's. Because this infrastructure lasts so long it's possible to have it provide very reliable service for many decades before investments for end-of-life replacements become regularly necessary. In recent years the Company has been making increasing investments in the network, particularly in replacing aging transformers and network protectors. And now Avista has engaged in a more comprehensive infrastructure refresh plan for the network based on replacement of the highest-risk end of life assets, which includes transformers, protectors, grounds, cable, vaults, structures and cable duct banks.

Q. Has Avista considered alternatives to making these planned network investments?

A. While it is a certainty that this end-of-life infrastructure must be replaced, the Company has evaluated alternative strategies for doing so. The first alternative would be to essentially run the network assets to fail, that is, replace them once they have failed in service. Though it's meaningful to consider this alternative it is non-starter from the perspective of long-term service reliability impacts, risk, customer costs, practicality and overall prudence.

The second alternative would be to make the investments needed to eliminate the highest known electrical and structural risks. While it's prudent to invest in these known needs today, this approach would fail to identify looming replacement needs until they were manifest as failures or soon-to-fail events that would then be considered for elimination. While much better than the option of running network equipment to fail, this approach does not provide the Company the visibility to forecast our future infrastructure needs and systematically address them before they create critical risks that *must be immediately addressed*. The selected alternative, as implied above, is to perform systematic surveys of our downtown network system, to identify assets beyond or at end-of-life, and to develop a comprehensive, long-term program to address these needs in a manner that helps stabilize and manage our long-term risks and costs for our customers.

Q. How does this investment benefit Avista's customers?

A. Timely replacing downtown network infrastructure provides our customers with continuity in service reliability, managed risk of failures, and at the lowest reasonable lifecycle cost.

Q. Does the Downtown Network – Asset Condition Program have a target completion date?

A. While this project is focused on the prudent long management of our downtown network infrastructure, the level of investment identified in the business case is for the current five-year planning horizon. The Company expects a continuing reassessment of the needs of the network and a corresponding forecast of the investments needed to effectively manage this infrastructure.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. Historic spending under this business case includes $2.7 million in 2018 and $1.8 million in 2019. The currently budgeted spending level ranges from $1.5 million in 2020 to $2.8 million in year 2024.

Q. Are there cost controls for this program?

A. The driver of this program is the need to replace downtown network infrastructure before it fails in service as way to avoid high-risk consequences of failures and to reduce the overall cost of ownership for our customers. The effective cost control is executed by the Company's Capital Planning Group in their allocation of capital to priority needs across our enterprise. Because Avista is always responding to a greater demand for capital than is available, the capital planning process aims to meet minimum funding levels to ensure a program is effective while allocating available capital to our other highest priority needs. Put simply, internal capital constraints, combined with identification of minimum effective funding levels, provides an effective control on costs for this program.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $1,716,542, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

<u>Project #40 – Downtown Network – Performance and Capacity</u>

Q. Please describe the Company's investments in this Program.

A. I have briefly described the Company's downtown electric network in Spokane in my testimony above, with a focus on the need to replace infrastructure that is at or beyond its useful service life based on asset condition. In this network program the Company is focused on investments required to operate the system within safe design standards while meeting an increasing customer and electrical capacity demands being placed on the system. Examples of investments made under this program include constructing larger underground vaults to provide more space for transformers and protectors, larger duct banks for additional cable, and larger transformers to carry additional load. Without this added capacity, network cables and equipment would have to be overloaded, subjecting assets to a greater risk of failure, exceeding equipment ratings and prudent operating limits, reducing the life expectancy of assets, and accepting the risk of shedding customer load during periods of peak demand on the network.

Q. Has Avista considered alternatives to the Downtown Network – Performance and Capacity program?

A. No, there is no alternative to providing the infrastructure needed to safely, reliably and cost-effectively serve our customers' electric needs. In the design and implementation of individual projects, however, Avista is always mindful of evaluating reasonable alternatives to meet the specific needs and selecting the best-optimized solution to the meet the current and long-term needs of our customers.

Q. How does this investment benefit Avista's customers?

A. Keeping up with the increasing electric demands placed on the downtown network allows the Company to ensure we provide expected levels of service to our customers in a manner that ensures they receive the best value optimized for cost, reliability, risk and life expectancy of the network equipment.

Q. Does the Downtown Network – Performance and Capacity Program have a target completion date?

A. No. This program is focused on the prudent long management of our downtown network infrastructure, providing the necessary electric capacity to serve our customers' current and long-term needs. Avista will perform a continuing reassessment of the network performance and capacity requirements and develop a corresponding forecast of the investments needed to timely address them.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. Historic spending under this business case for the prior five-year period is $1.9 million in 2015, $1.7 million in 2016, $1.3 million in 2017, $1.2 million in 2018 and $1.3 million in 2019. The currently budgeted spending level ranges from $1.0 million in 2020 to $1.1 million in year 2024.

Q. Are there cost controls for this program?

A. The driver of this program is the need to meet our customers' capacity needs on the downtown network to avoid exceeding the capacity ratings of our equipment and/or shedding customer load during periods of peak demand. The effective cost control is executed by the Company's Capital Planning Group in their allocation of capital to priority needs across our enterprise. Because Avista is always responding to a greater demand for capital than is available, the capital planning process aims to meet minimum funding levels to ensure a program is effective while allocating available capital to our other highest priority needs. Put simply, internal capital constraints, combined with identification of minimum effective funding levels, provides an effective control on costs for this program.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $2,667,154, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

<u>Project #41 – Electric Storm</u>

Q. Please describe the Company's investments under the category of Electric Storm.

A. These investments cover the cost of restoring Avista's electric transmission, substation, and distribution systems to serviceable condition when damaged during a significant weather (storm) event or other natural disaster. These storm events include high winds, heavy wet snow, ice, lightning strikes, flooding, and wildfire, and various combinations of them, to name a few. Significant storm events are best understood as random forces[37] that often occur with short notice, and that are beyond the control of the Company[38] to prevent. Investments made to restore our electric system after these major events include replacement of wood poles, crossarms, conductor, transformers and customers' secondary service lines. Making the area safe after an event, and quickly replacing damaged equipment is crucial to promptly restoring service to our customers.

Q. Is this project duplicative to what you describe above under Project #20, Electric Storm?

A. No, it is not. Under Project #20, Avista is seeking recovery for the

[37] Though the incidence of major storm events can follow cyclical patterns based on season of the year, we refer to them as random events because their occurrence, timing and magnitude cannot be predicted.

[38] Beyond the control of the Company refers to the fact that these "outside forces" exceed the ability of our system to withstand them without some resulting failures. While it is possible to have a system capable of better withstanding these events it would require a substantial redesign of our system and massive capital investments to rebuild it. One example of 'system redesign' would be to convert substantial portions of our electric distribution system from overhead to underground service where it would be relatively more immune to these outside forces.

extraordinary costs associated with the Labor Day 2020 storm, including the devastation of a large portion of our Chelan-Stratford 115kV Transmission Line, and extensive damage to our electric distribution infrastructure. Because of the severity of the Labor Day storm damage and the extraordinary restoration costs, we have included them in this case as a new project incremental to our annual planned spending for storm-related repair to the electric system.

Q. Has Avista considered alternatives to investing in the repair of storm-damaged infrastructure?

A. No, there is no alternative. The Company does consider on a case-by-case basis, however, investments that help reduce outage events in problem areas of our system, such as undergrounding certain line segments, or installing steel structures in areas prone to wildfire. The wholesale redesign of our system, however, to completely avoid the impact of these events, along with the investments that would be required to carry it out, are simply impractical.

Q. How does this investment benefit Avista's customers?

A. Quickly restoring electric service following major outage events meets a fundamental service expectation our customers have of Avista.

Q. Does the Electric Storms Program have a target completion date?

A. No, this asset maintenance program is required to continue the proper operation of our system and service to our customers.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. The need for investments in infrastructure restoration is difficult to predict year-to-year, requiring the Company to consider recent history and long-term trends in setting forecast budgets. Historic spending under this business case for the prior five-year period is

$28.3 million in 2015, $6.2 million in 2016, $6.8 million in 2017, $3.6 million in 2018 and $6.3 million in 2019. The currently budgeted spending level ranges from $3.0 million in 2020 to $2.5 million in year 2024.

Q. Are there cost controls for this program?

A. The effective control on costs is the amount of work the Company is required to perform each year to restore storm-damaged infrastructure. Avista, of course, seeks to perform this restoration work in the most cost-effective manner possible in the service of our customers.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $3,819,231, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

<u>Project #42 – Fleet Services Capital Plan</u>

Q. Please describe the Company's investments in the Fleet Services Capital Plan?

A. Fleet vehicles and equipment simply do not age well, as they are subject to a duty cycle that most vehicle owners would not imagine for their personal car or truck. Avista's fleet of vehicles operate in environments that are often at the extreme; the hottest or the coldest, the dustiest, constant in and out, starting and stopping, high idle time and high loads. These factors lead to substantial wear and tear on our vehicles, <u>even under our prudent and proper use</u>, which over time leads to substantial maintenance and repair costs, and reduced reliability/availability.

The Company's fleet replacement program optimizes the life of each vehicle allowing us to extract the right amount of useful value from our vehicles before they experience an accelerating rate of repair expenses. The investments made under this plan represent the annual investments needed to replace a portion of our service fleet each year based on asset condition (replacement at end-of-life). Avista's fleet group uses industry best practices, data and a proprietary, third-party asset management system[39] to identify when to replace equipment in order to achieve the lowest total cost of ownership for our customers. The analysis is based on the initial cost of each fleet unit, actual maintenance and repair costs, depreciation expense and salvage/resale value to establish the lowest lifecycle cost for each class of vehicle in the Company's fleet. In addition to achieving the lowest cost for customers, this strategy allows our fleet services group to achieve an equipment reliability/availability of 96%. Having equipment that is available when needed allows Avista to provide efficient, timely and cost-effective service to our customers.

Q. Has Avista considered alternatives to making capital investments under its Fleet Services Capital Plan?

A. In the absence of good data and analytics, it can be tempting to keep equipment in service beyond its optimum service life. After all, the equipment can appear to be in relatively good shape, and the repair and maintenance costs may not yet have begun to accelerate. In years past, Avista, like many organizations, did not have access to good data and analytical tools for determining the optimum replacement strategy. And, we often kept equipment in service because it represented the lowest incremental cost for operating 'the next day.'

[39] Avista uses the services of Utilimarc, a utility focused data analytics company that benchmarks and performs similar analysis for over 50 investor-owned utility fleets nationwide. https://www.utilimarc.com/

Once the Company had better access to good data and analytics, and the asset management culture and focus on lifecycle cost management, we became better at recognizing the value of replacing fleet assets based on condition and developing the capital budgets needed to support that philosophy and practice. Put simply, the Company could either replace fleet equipment before the optimum window of replacement or could keep equipment in service longer (beyond the optimum replacement), but either alternative would simply cost our customers more money for the same or reduced level of service from the Company.

Q. How does this investment benefit Avista's customers?

A. Our fleet equipment is available to serve our customers when its needed, to perform the full range of functions required for the job, and at the lowest lifecycle cost they ultimately pay in their rates.

Q. Does the Fleet Services Capital Program have a target completion date?

A. No, this asset maintenance program is required to continue the proper maintenance and operation of Avista's electric and natural gas service fleet, so that we can continue to provide safe and reliable service to our customers.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. The budget for this program is based on the number of fleet units we have in service and the portion of those slated to be retired from service each year, as well as the expected cost of new replacement units. Historic spending under this business case for the prior five-year period is $8.1 million in 2015, $5.8 million in 2016, $8.0 million in 2017, $7.8 million in 2018 and $4.6 million in 2019. The currently budgeted spending level is $6.2 million for each year of the current five-year capital plan.

Q. Are there cost controls for this program?

A. The effective cost control is the optimized lifecycle cost strategy employed by the Company, that I have described above, that ensures we're investing the right amount of capital at the right time to achieve the lowest cost of service for our customers.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $7,057,566, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

<u>Project #44 – Natural Gas Regulator Station Replacement Program</u>

Q. Please describe the Company's investments in the Natural Gas Regulator Station Replacement Program?

A. This program addresses needed replacements of existing 'at-risk' natural gas gate stations, regulator stations and industrial customer meter sets ("stations") located across Avista's natural gas service territory. These stations to be replaced have reached the end of their useful service life, fail to meet the Company's current natural gas standards, and can no longer be properly maintained because of obsolete equipment. These replacements improve system operating performance, enhance operating safety, remove operating equipment that is no longer supported (obsolescence), and ensure the reliable operation of metering and regulating equipment.

Q. Has Avista considered alternatives to its Natural Gas Regulator Station Replacement Program?

A. There are no practical alternatives to providing for the compliant, safe and reliable operation of our natural gas stations. As a hypothetical, the Company did consider the option of responding to station needs only when equipment failed in service, however, this approach would expose our customers to greater risk, would expose Avista to compliance violations and financial penalties for failure to properly maintain station equipment, and would cost our customers substantially more than the cost associated with our current proper lifecycle management. Our Gas Engineering department also considered the options of not replacing end-of-life stations, but only replacing obsolete and failed components. This option would result in higher lifecycle costs for our stations because we would be making many more service calls to each station, and eventually, would be required to replace an increasing number of stations on a crisis basis each year as the backlog of required work became unsustainable. This option, too, would drive up the lifecycle cost of our stations, result in an increasing service and regulatory risk, and would increase our customers' cost of natural gas service.

Q. How does this investment benefit Avista's customers?

A. Our natural gas customers benefit from having this critical infrastructure properly operated and maintained and done so in a manner that optimizes the lifecycle cost of their investment in the system.

Q. Does the Regulator Station Replacement Program have a target completion date?

A. No, this asset maintenance program is required to continue safe, reliable and compliant proper operation of our natural gas stations.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. Historic spending under this business case for the prior five-year period is $0.9 million in 2015, $0.9 million in 2016, $0.9 million in 2017, $1.1 million in 2018 and

$1.1 million in 2019. The currently budgeted spending level ranges from $0.8 million in 2020 to $1.0 million in year 2024.

Q. Are there cost controls for this program?

A. The effective cost control is first performed by our natural Gas Engineering department in the identification of a level of investment that helps us achieve the lowest lifecycle cost for our fleet of natural gas stations. Effective cost control is also performed by the Company's Capital Planning Group in their allocation of capital to priority needs across our enterprise. Because Avista is always responding to a greater demand for capital than is available, the capital planning process aims to meet minimum funding levels to ensure a program is effective while allocating available capital to our other highest priority needs. Put simply, internal capital constraints, combined with identification of minimum effective funding levels, provides an effective control on costs for this program.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $861,927, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

<u>Project #45 – Natural Gas Reinforcement Program</u>

Q. Please describe the Company's investments in the Natural Gas Reinforcement Program?

A. Avista systematically monitors and models natural gas system operating pressures throughout our system in an ongoing effort to ensure we have the capacity needed to serve our firm customer loads on our coldest expected winter design days. Investments made under this program are needed to provide capacity reinforcement on parts of our system identified as capacity constrained. This program represents a system-wide assessment and reinforcement effort that addresses precisely the same issues I explained in the prior section of my testimony for the Cheney High Pressure Reinforcement Project (#14).

Q. Has Avista considered alternatives to the Natural Gas Reinforcement Program?

A. There is no alternative to providing for the capacity needs of our firm natural gas customers. The Company does, however, carefully evaluate a range of alternatives for solving each identified capacity issue. As an example of these alternatives evaluated, please see my response to this question for Project #14 in the prior section of my testimony.

Q. How does this investment benefit Avista's customers?

A. Providing adequate capacity for our natural gas customers is an essential requirement of our service. Customers rely on Avista to ensure they have the supply needed to heat their homes and businesses and supply a range of industrial needs, most especially during extreme weather conditions. The natural gas reinforcement program helps ensure the Company meets this need, and to deliver an adequate supply at the most reasonable cost.

Q. Does the Natural Gas Reinforcement Program have a target completion date?

A. No, this performance and capacity program is required to ensure we are always aware of emerging and critical capacity constraints and that we have the right solutions and capital needed to timely address them.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. The need for these investments is driven by results of our system monitoring and modeling and the resulting investments needed to address constraints. Because of this the amount spent in each year can be variable depending on specific project needs. Historic spending under this business case for the prior five-year period is $1.4 million in 2015, $1.5 million in 2016, $1.2 million in 2017, $1.8 million in 2018 and $1.1 million in 2019. The currently budgeted spending level ranges from $1.0 million in 2020, rising to $1.5 million in 2022, and returning to $1.0 million by year 2024.

Q. What are the cost controls for the Natural Gas Reinforcement Program?

A. Effective cost control is first performed by our natural Gas Engineering department in the identification of a level of investment needed to deliver sufficient natural gas capacity to our customers at the lowest lifecycle cost. Effective cost control is also performed by the Company's Capital Planning Group in their allocation of capital to priority needs across our enterprise. Because Avista is always responding to a greater demand for capital than is available, the capital planning process aims to meet minimum funding levels to ensure a program is effective while allocating available capital to our other highest priority needs. Put simply, internal capital constraints, combined with identification of minimum effective funding levels, provides an effective control on costs for this program.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $1,161,519, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

<u>Project #46 – SCADA - SOO and BuCC</u>

Q. Please explain the SCADA – SOO and BuCC Program and the need for planned investments?

A. The Company increasingly relies on comprehensive digital monitoring of critical power system infrastructure and communication interconnectivity that provides real-time visibility, status, alarms, and the ability for remote and automated operations. Avista relies on the industry-standard system known as Supervisory Control and Data Acquisition (or SCADA) to provide this functionality.[40] The Company is required to continuously upgrade and enhance its SCADA systems to replace end-of-life technology and to meet constantly-expanding regulatory requirements and business needs. This particular project, the System Operations Office (SOO) and Backup Control Center (BuCC) is replacing and upgrading existing SCADA communications for our electric and natural gas control centers. The control systems addressed under this program provide real-time visibility and situational awareness and remote operation and control of these systems. Business groups who rely on these systems include Avista's system operators, power schedulers, distribution dispatchers, gas controllers, energy accounting and risk management, Protection Engineering, Substation Engineering, Generation Engineering, Distribution System Operations, Oracle database administration, Security Engineering, Network Engineering and Network Operations. Additionally, organizations outside Avista who also rely on these systems include the control centers of our neighboring electric and natural gas utilities, and our regional reliability coordinator. The investments made in our SCADA systems ensure we can continue to operate our energy

[40] SCADA, and extension of industrial process control, has been around since the early 1960s, and the term "SCADA" became commonly used by the mid-1970s. SCADA systems, naturally, have evolved through several major generations as computing and communications technologies have evolved and advanced.

delivery systems safely and remain in compliance with a broad range of NERC standards and federal pipeline safety requirements under PHMSA.

Q. Has Avista considered alternatives to investing is its SCADA systems to provide needed capability for its system operations offices and backup control center?

A. There is no practical alternative to providing adequate and compliant digital systems for our energy delivery infrastructure, however, the Company is always evaluating least-cost alternatives for solving each identified need.

Q. How does this investment benefit Avista's customers?

A. Our customers benefit from the Company's investments to ensure greater resiliency in our electric system and our compliant operation within federal operating standards.

Q. Does the Company's SCADA – SOO and BuCC Program have a target completion date?

A. No, this asset maintenance program is required to continue the safe, reliable and compliant operation of our electric and natural gas energy delivery infrastructure.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. The need for projects like the system operations office and backup control center is driven by specific plans and the funding level required each year is variable based on the work that needs to be completed. Historic spending under this business case for the prior five-year period is $0.6 million in 2015, $0.7 million in 2016, $0.6 million in 2017, $0.6 million in 2018 and $0.9 million in 2019. The currently budgeted spending level ranges from $2.1 million in 2020 to $0.7 million in year 2024.

Q. Are there cost controls for this program?

A. The driver of this program is the need to provide adequate SCADA systems to that meet the current and long-term needs of our business. Effective cost control is first performed by our SCADA and Energy Management Systems (EMS) Engineering group in the identification of the level of investment needed to meet our operating system and compliance requirements at the lowest lifecycle cost. Another margin of effective cost control is provided by the Company's Capital Planning Group in their allocation of capital to priority needs across our enterprise. Because Avista is always responding to a greater demand for capital than is available, the capital planning process aims to meet minimum funding levels to ensure a program is effective while allocating available capital to our other highest priority needs. Put simply, internal capital constraints, combined with identification of minimum effective funding levels, provides an effective control on costs for this program.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $1,975,748, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

<u>Project #47 – Segment Reconductor and Feeder Tie Program</u>

Q. Please describe the Company's investments in the Segment Reconductor and Feeder Tie Program.

A. Avista's electric distribution system is composed of 347 individual 'feeder' lines that carry primary electric power to customers across our service area in Idaho and Washington. As new customers are added to these feeders, and as existing customers add new and different types of loads to their service, the carrying capacity of feeders, and often segments of feeders, is reached or exceeded. When the capacity of a circuit has been exceeded it creates excess heat in the conductor and components resulting in the conductor sagging closer to the earth, and violation of NESC prescribed safety limits. In extreme situations the conductor itself can melt and fail, dropping energized lines to the ground and creating a very significant safety and fire hazard.

Avista determines the carrying capacity margin for its feeders based on SCADA monitoring, where it is available, and system load modeling and analysis using the Synergee load flow program. When the Company identifies a feeder or segment with capacity limitations the local engineer evaluates alternatives for solving the problem, which most often include the installation of larger, higher-capacity conductor on the target segment(s) or construction of a "tie" line to an adjacent feeder that has sufficient capacity to carry a portion of the customer load of the first feeder.

Q. Has Avista considered alternatives to making investments in the Segment Reconductor and Feeder Tie Program?

A. No, as I have stated above, the Company is required ensure it operates its electric feeders within prudent and regulatory standards, and to act when feeders are at or have exceeded capacity. The Company is, however, careful to evaluate alternatives in each situation to ensure we are meeting our capacity requirements in the manner most cost effective for our customers.

Q. How does this investment benefit Avista's customers?

A. Managing our electric distribution system in manner that ensures our service is adequate, safe, reliable and compliant, and at a reasonable cost, is in the interest of our electric system customers.

Q. Does the Segment Reconductor and Feeder Tie Program have a target completion date?

A. No, this ongoing asset maintenance program is required to continue proper operation of our electric system.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. The need for electric investments under this program is driven by the investment needs identified by system modeling and analysis, and because of this nature annual spending can be variable. Historic spending under this business case for the prior five-year period is $5.6 million in 2015, $5.7 million in 2016, $4.5 million in 2017, $5.8 million in 2018 and $3.6 million in 2019. The currently-approved spending level is set at $6.0 million in each year, 2020 – 2024.

Q. Are there cost controls for this program?

A. Effective cost control is first performed by our area and distribution planning engineers, our Distribution Standards Engineering group, and others, in the identification of capacity deficits and the evaluation of alternatives best suited for each situation. This approach helps assure we provide our customers adequate service at the lowest lifecycle cost. Another margin of effective cost control is executed by the Company's Capital Planning Group in their allocation of capital to priority needs across our enterprise. Because Avista is always responding to a greater demand for capital than is available, the capital planning process aims to meet minimum funding levels to ensure a program is effective while allocating available capital to our other highest priority needs. Put simply, internal capital constraints, combined with identification of minimum effective funding levels, provides an effective control on costs for this program.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $6,859,809, on a system basis.

Q. Are there any direct offsetting costs associated with this program?

A. No, there are none.

<u>Project #48 – Structures and Improvements/Furniture</u>

Q. Please describe the Company's investments in the Structures and Improvements/Furniture Program?

A. Yes. These investments fund the capital maintenance, site improvement, security, and other needs related to the Company's 40 building facilities that provide office, operations, storage space and other business functions. These capital maintenance projects include roofing, siding, asphalt, electrical and plumbing work, remodeling, furniture replacements and new furniture for growth in operations. Approximately half the investments fund asset replacements based on end-of-life condition and the Company's facilities management group uses a specialized application to help determine the optimum timing for these replacements. Approximately 30% of the annual funding supports immediate needs identified by the Avista work groups with responsibility for each facility, and the remainder funds emergent needs that could not be anticipated in the planning process. The level of funding approved to meet these needs in prior years has only been adequate to address the highest priority projects, which has required the facilities group to keep beyond end-of-life assets in service in a manner with the least impact on our overall lifecycle cost.

Q. Has Avista considered alternatives to the investments made under this program?

A. Yes. The primary alternative is to keep end-of-life assets in service and to perform emergency repairs and replacements as components fail in service. This is similar to the alternative I described above for fleet services where it is possible to keep beyond end-of-life assets in service with the consequence of building a 'bow wave' of deferred investment that must be addressed in the future, driving higher long-term lifecycle costs for our customers. Another alternative would be to fully fund this program to replace all assets at end of life and meet all other identified business needs. The selected alternative is to fund only the highest priority needs, which allows the Company's Capital Planning Group to allocate funding to other highest-priority projects that have greater risk if not adequately funded. This approach, as I noted just above, requires Avista's facilities group manage the backlog of unfunded needs in a way that minimizes the long-term lifecycle cost impact to our customers.

Q. How does this investment benefit Avista's customers?

A. As noted earlier in my testimony, having adequate office and operations facility space is at the heart of our ability to effectively and efficiently serve customers. These investments represent prudent actions needed to support the current and long-term service we provide our customers.

Q. Does this program have a target completion date?

A. No, the investments made under this asset maintenance program are required to continue Avista's efficient and cost-effective operations.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. Historic spending under this business case for the prior five-year period is $4.4 million in 2015, $3.7 million in 2016, $2.8 million in 2017, $2.4 million in 2018 and $1.8 million in 2019. The currently budgeted spending level ranges from $2.0 million in 2020 to $2.8 million in year 2024.

Q. Are there cost controls for this program?

A. As I have described above, only the highest-priority facility needs are funded by the Company year-to-year. As a mitigating strategy for this cost control, our facilities group works to identify the assets that can be maintained in service beyond end-of-life with the minimum long-term cost impact to our customers. Another margin of effective cost control is executed by the Company's Capital Planning Group in their allocation of capital to priority needs across our enterprise. Because Avista is always responding to a greater demand for capital than is available, the capital planning process aims to meet minimum funding levels to ensure a program is effective while allocating available capital to our other highest priority needs. Put simply, internal capital constraints, combined with identification of minimum effective funding levels, provides an effective control on costs for this program.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $2,597,517, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

Project #49 – New Distribution Station Capacity Program

Q. Please describe the Company's investments in the New Distribution Station Capacity Program?

A. As I've noted in several areas of my above testimony, Avista actively monitors the customer loads placed on its energy delivery systems, identifies portions of its infrastructure where capacity has been reached or exceeded, evaluates options for best addressing these priority capacity constraints and invests in solutions to ensure we meet current and long-term customer needs. This program is focused on investments needed to add new electrical capacity to our distribution substations in response to growth in demand on the feeders supported by these stations. Beyond just meeting capacity requirements these investments provide the Company greater operational flexibility, ease of maintenance, and electric service reliability for our customers.

Q. Has Avista considered alternatives to this program as currently funded?

A. Yes, the Company's Substation Engineering group evaluated the hypothetical alternative of not adding new capacity when needed and repairing and replacing equipment on an emergency basis only as it failed in service. I say 'hypothetical' because some obsolete equipment in its present configuration could neither be repaired or replaced. Under this alternative, our customers would experience more frequent and much longer service outages and they would pay higher rates because Avista would be unable to provide service at an optimized lifecycle cost. Another alternative would be to extend feeders from adjacent substations and tie them into feeders served from the overloaded station as way to relieve some of the capacity constraint. Naturally, this alternative assumes the adjacent station has the needed capacity to meet current and near-term customer loads without having to be upgraded. Clearly, there are circumstances where this approach is practical (see Segment Reconductor and Feeder Tie Program, above) for relieving overloading <u>on a single feeder</u>, but as strategy for meeting new capacity needs for an entire substation, it is very limited and would tend to de-optimize our distribution system. It would also result in reduced service reliability for our customers,[41] reduced operational flexibility and increased maintenance costs. The approach selected by the Company ensures we have the capacity to serve our customers' current and long-term electric loads in an efficient and cost-effective manner.

Q. How does this investment benefit Avista's customers?

A. Our customers benefit from prudent investments to ensure they have an energy delivery system that will meet their needs in a safe, reliable and cost-effective manner.

Q. Does the New Distribution Station Capacity Program have a target completion date?

A. No, this asset maintenance and capacity improvement program is required to ensure the prudent long-term operation of Avista's electric distribution system.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. The need for these capacity investments is driven by the identification of system constraints and the timing and magnitude of the solutions identified. This process naturally leads to some year-to-year variability in actual spending levels. Historic spending under this business case for the prior five-year period is $3.8 million in 2015, $0.7 million in 2016, $0.1 million in 2017, $0.8 million in 2018 and $7.0 million in 2019. The currently budgeted spending level ranges from $7.7 million in 2020 to $13.0 million in year 2024.

Q. Are there cost controls for this program?

A. The Company's Substation Engineering group develops the optimized solution from alternatives to address each capacity issue identified. This solution ensures our customers have the timely capacity needed to meet their loads at the optimized lowest cost.

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[41] This would occur because you would now have feeders of greater overall length and feeder length is negatively correlated with service reliability performance.

Another margin of effective cost control is executed by the Company's Capital Planning Group in their allocation of capital to priority needs across our enterprise. Because Avista is always responding to a greater demand for capital than is available, the capital planning process aims to meet minimum funding levels to ensure a program is effective while allocating available capital to our other highest priority needs. Put simply, internal capital constraints, combined with identification of minimum effective funding levels, provides an effective control on costs for this program.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $11,629,936, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

<u>Project #51 – Transmission – Minor Rebuild Program</u>

Q. Please describe the Company's investments in the Transmission Minor Rebuild Program.

A. Through this program, Avista's Transmission Engineering group performs the transmission line rebuild and reconductoring work necessary to maintain compliance with NERC reliability standards, particularly the requirement for annual inspections and implementation of any corrective actions identified. Corrective or mitigation actions focus on equipment that has failed in service or is nearing the end of its useful service life based on asset condition and the rating for probability of a failure and magnitude of the consequence. Only a portion of the mitigation work is recognized as mandatory under the standard and the balance of the needed investments is funded under the program Transmission Major Rebuild

– Asset Condition (#8), described in the previous section of my testimony.

Q. Has Avista considered alternatives to the investments made under this program?

A. There is no alternative to providing the investments needed to ensure Avista's compliance with NERC transmission standards and provide for the prudent long-term maintenance and operation of our electric transmission system. The Company is of course careful to evaluate reasonable solutions for the needed repairs to ensure we meet our obligations at the optimized lowest cost for our customers.

Q. How does this investment benefit Avista's customers?

A. Our customers benefit from Avista's prudent, compliant and cost-effective maintenance and operation of our electric transmission system.

Q. Does the Transmission Minor Rebuild Program have a target completion date?

A. No, this asset maintenance program is required to continue the ongoing proper operation of our electric transmission system.

Q. Can you demonstrate historical spending trends for this program?

A. Yes. The need for investments in our electric transmission system is driven by findings of our annual inspections, which can be variable from year-to-year. Historic spending under this business case for the prior five-year period is $3.2 million in 2015, $8.4 million in 2016, $1.8 million in 2017, $2.2 million in 2018 and $2.2 million in 2019. The currently budgeted spending level ranges from $1.7 million in 2020 to $2.6 million in year 2024.

Q. Are there cost controls for this program?

A. The driver of this program is the need to ensure Avista's compliance with applicable NERC standards, and the prudent maintenance of our transmission system based on asset condition. The Transmission Engineering group identifies the threshold for required actions, ensuring we meet our obligations and balanced with other high priority investment needs for electric transmission and across the enterprise. Effective cost control is also executed by the Company's Capital Planning Group in their allocation of capital to priority needs across our business. Because Avista is always responding to a greater demand for capital than is available, the capital planning process aims to meet minimum funding levels to ensure a program is effective while allocating available capital to our other highest priority needs. Put simply, internal capital constraints, combined with identification of minimum effective funding levels, provides an effective control on costs for this program.

Q. What capital additions for this program does Avista plan to make in 2020?

A. The planned level of spending is $1,778,571, on a system basis.

Q. Are there any direct offsetting costs associated with this project?

A. No, there are none.

Q. Does this conclude the pro forma 2020 capital additions included in the Company's case for your areas of responsibility?

A. Yes, it does. As noted above, and discussed by Ms. Andrews, the Company typically has approximately 120 plus projects (business cases) completed on an annual basis which represent the approximate $405 million of capital spending for any given year. However, in order to minimize the projects pro formed in this case for calendar 2020, the Company only selected certain 2020 projects to be included, not all projects, even though the projects not captured will be in-service serving customers well in advance (a minimum of nine months or more) of the rate effective period.

In addition, as also discussed by Ms. Andrews, although the rate effective period is October 1, 2021 through September 30, 2022, with the exception of 4 projects (Advanced Metering Infrastructure (AMI), Western Energy Imbalance Market (EIM), Wildfire Resiliency Plan and Colstrip Units 3 and 4 capital additions[42]) the Company also excluded all 2021 and 2022 capital additions that will be in-service and used and useful, prior to or during the rate-effective period, even though many of the excluded projects are "on-going" programs that transfer to plant in-service annually. Because of the 2020-2022 excluded projects, the Company has included a very conservative level of net plant in its pro forma adjustments. Ms. Andrews discusses the regulatory lag that the Company will experience related through December 31, 2021 alone, of approximately $154 million, or $117.2 million for Washington electric operations and $36.8 million for Washington natural gas operations.

V. ADVANCED METERING INFRASTRUCTURE

Q. Ms. Rosentrater, what has been your involvement with the AMI Project ("Project")?

A. I have been involved with it since its inception and I am the Officer primarily responsible for its implementation. As such, I have actively participated in all phases of Project planning, design and execution.

[42] The 2020 – 2022 EIM projects are discussed by Mr. Kinney at Exh. SJK-1T, the 2020 – 2021 Wildfire Plan projects are discussed by Mr. Howell at Exh. DRH-1T, and Mr. Thackston discusses the Colstrip Unit 3 and 4 capital projects completed through 2022 at Exh. JRT-1T.

Q. What will your testimony address with regard to AMI, and what will be addressed by your fellow Company witness Mr. DiLuciano?

A. I will provide a Project overview that discusses the implementation of the various phases of the Project, including the completion dates of each, attesting to its "used and useful" status. I will discuss, generally, Project costs and benefits which have become better defined over time, as we have implemented the Project over the last four years. Finally, I will speak to the net benefits of AMI, both quantified and unquantified, and explain why it is such an essential platform for meeting customer needs

Q. Who else will be testifying on behalf of the Company with respect to AMI?

A. Mr. DiLuciano, as Director of Electrical Engineering, will sponsor the detailed report entitled "Avista Utilities Advanced Metering Infrastructure (AMI) Project Report", (hereafter referred to as "Report"), that was originally filed with the Commission on August 31, 2020. After filing the Report, and as the Company was accounting for revenue requirement offsets for avoided costs, Avista found an inadvertent error overstating the amount of savings achieved for manual meter reading in 2018. Financial benefits in the Report (on a nominal and net present value basis) have been adjusted accordingly, in addition to making several non-substantive grammatical edits. The updated Report is marked as Exh. JDD-2. While Mr. DiLuciano will address the specifics of that Report, my testimony will draw from the Report's findings and conclusions.[43]

[43] As discussed by Company witness Ms. Andrews in Exh. EMA-1T, the Company pro forms the Washington electric and natural gas portions of the AMI project into its Electric and Natural Gas Pro Forma Studies, reflecting net plant additions, incremental expenses and savings above historical 2019 test period levels, as well as the impact of the Company's proposed amortization of regulatory deferral balances, associated with the deferral of all depreciation expense on the new AMI investment and deferral of retired electric and natural gas meters, during the rate effective period.

Q. Would you please summarize the conclusions of the Report?

A. Yes. The following summary highlights are discussed at page 1 of the Report (Exh. JDD-2):

- Advanced metering infrastructure (AMI) will actively promote the objectives of the Clean Energy Transformation Act (CETA) by creating the necessary platform for changing customer behaviors, as well as furthering necessary system modifications and efficient and cost-effective delivery of service.

- The "quantifiable" net benefits to customers over time are real — and will only increase over time as the Company "maximizes" the full potential of AMI (perhaps in ways not yet imagined).

- AMI is, in effect, already operational on Avista's system, with 98% of electric meters and 95% of natural gas modules deployed as of September 1, 2020. The remaining 20,000 natural gas modules will be installed and functioning in the second quarter of 2021 (during pendency of this general rate case). The remaining capital cost to deploy modules and communications in the second quarter of 2021 is estimated to be $1.3 million, well under one percent of total capital costs.

- Accordingly, "costs" have already been essentially "locked down" (and are $45 million under what was anticipated in the 2016 information provided in Avista's prior rate case).[44]

- The "benefits" have been refined, and in some cases expanded, as the Company has gained additional experience, and are sufficiently known to demonstrate a "net benefit" over time. The overall nominal value net benefit is $238.2 million,[45] and on a net present value basis is $50.3 million. These "benefits" are only the hard-dollar benefits that have thus far been quantified, without taking into account many other "non-quantified" (but real) benefits such as safety, power quality, convenience, and service.

[44] The current net present value of Avista's combined capital and operations and maintenance (O&M) costs is $169.7M, representing more than a 20% reduction in total costs compared with the Company's earlier 2016 estimate of $215.1M.

[45] Nominal net benefits are the total value of nominal benefits shown at the bottom of Table 4-2 ($496.5 million) of the Report (Exh. JDD-2 at p. 51) minus the total of nominal capital and O&M costs shown at the bottom of Table 3-1 ($156.6 million + $101.7 million). (Id. at pgs. 32-33)

- Lastly, the Company fully appreciates the Commission's reluctance in two of Avista's prior rate cases to address the prudency of AMI — it was early in Avista's implementation process and much was yet to be learned (indeed, Avista experienced challenges along the way, as should be expected, but made necessary course corrections). Nearly four years later, the AMI program has sufficiently matured to allow for a determination of prudency and cost-recovery (both of and on investment). In order to be transparent, we have provided a comparison of costs and benefits between 2016 estimates and current figures, as the Project has matured.

Q. Would you please provide an overview of the implementation of AMI?

A. Yes. In 2016, Avista completed its competitive selection process for advanced metering software and hardware systems and announced its selection of the firm Itron as the winning bidder. Execution of this contract provided a basis for the Company's request (and subsequent approval) for deferred accounting for retired meters. This was followed by initiation of work on the meter data management and head end systems described elsewhere. Avista continued to refine its plans for comprehensive customer engagement and communication and initiated customer outreach in 2017. Our initial Project schedule called for a pilot deployment of communications infrastructure, advanced electric meters and natural gas communicating modules in 2017, with completion of the Project slated for early 2020. For reasons discussed elsewhere in testimony and in the Report (Exh. JDD-2 at p. 2), the full implementation of AMI was delayed by approximately one year.[46]

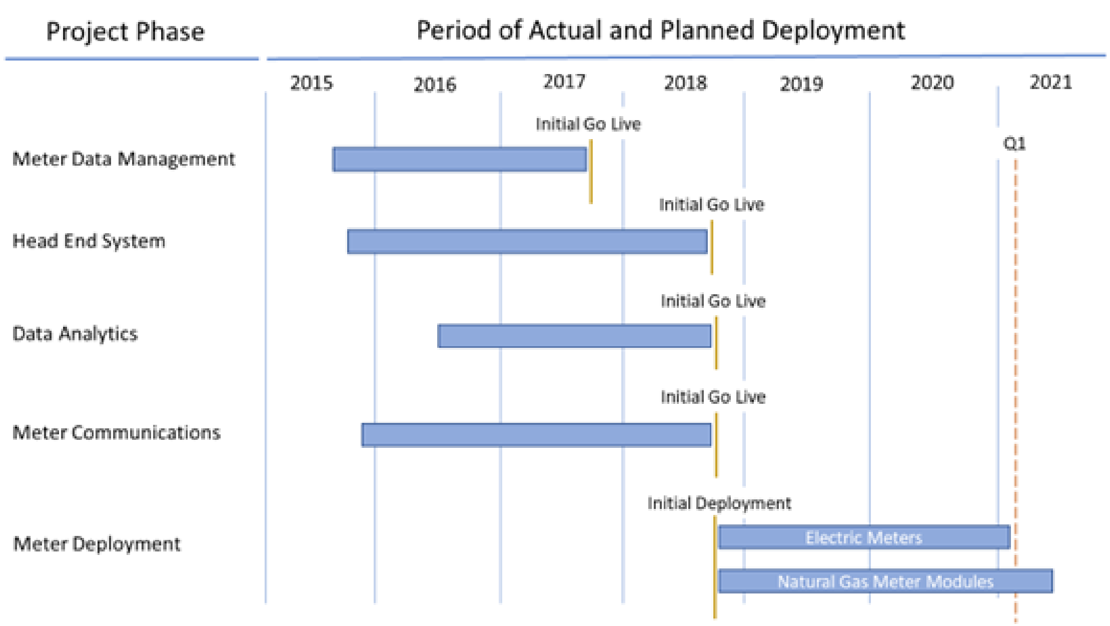
[46] The setback encountered during deployment arose from the need for additional software and hardware releases from Itron based on the product maturity of the RIVA metering platform. Avista understood when it elected to move forward with this system that its new generation capability for grid edge computing might result in such issues. In response to these delays we made the decision to delay the meter deployment phase of the Project and to optimize other activities around this shift in timing. Because this optimization reflected careful, integrated and prudent decisions, the overall cost of the Project still comes in well below the 2016 estimated cost.

Our meter data management system and head end systems projects have been in operation for nearly two years and our meter communications systems have been deployed and are functioning as needed as we complete each new phase of meter installation. As of September 1, 2020, the deployment of electric meters is 98% completed and natural gas modules is 95% compete. The remaining 20,000 natural gas meter modules will be in service by the end of the second quarter of 2021. The Company will update this information during the pendency of this case.

Q. Have you illustrated the Project timeline in the Report?

A. Yes. Illustration No. 3, which is a reproduction of Figure 3-2 that appears at page 3 of the Report, provides a Project timeline.

<u>Illustration No. 3 - Deployment Of Avista AMI Project Over Time</u>



Q. Has this Commission provided guidance with respect to AMI?

A. Yes. In its recent Puget Sound Energy (PSE) Order (para. 153),[47] the Commission determined that the operational decision to install AMI was prudent, noting that "moving to a smart meter platform has become the industry standard, and the Company is appropriately on pace to keep up with this evolving technology." (Ibid.) As Avista's Report demonstrates, the AMI platform has been embraced throughout the industry, as outdated metering systems are replaced. The operational decision by Avista to install AMI was prudent and in-line with industry practice; indeed, had it not done so, the fair question to have been asked is why not? Whether the Company has done so in a prudent and sensible manner is, of course, always pertinent — and the Report describes the great care taken by Avista over the last several years in identifying costs and benefits, and in responding to challenges and lessons learned as it completes this Project.

The recently-issued Order in PSE's general rate case (Dockets UE-190529, et.al.) also provides some guidance with respect to the Commission's views on implementation and cost recovery for AMI.[48] In its Order 08, issued on July 8, 2020, the Commission reviewed PSE's request for cost recovery of its ongoing AMI program, slated to be completed in 2023. While the Commission allowed recovery of investment on AMI, it ordered the continued deferral of the recovery of the return on investment until the AMI Project is complete (estimated to be 2023). (PSE Order at para. 156). This expressed the Commission's view that PSE "will not be able to demonstrate a significant portion of AMI benefits until the system is fully deployed." (Ibid.) It went on to observe that "[t]he final prudency determination thus rests on PSE's ability to live up to its promises of multiple customer benefits." (Ibid.)

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[47] Washington Utilities and Transportation Commission v. Puget Sound Energy, Dockets UE-190529 et al. (*consolidated*), Final Order 08, July 8, 2020 (hereinafter "PSE Order")
[48] Ibid.

Given the maturity of Avista's ongoing AMI completion and experience gained since 2015, it has essentially "buttoned-up" the cost-side of the equation (as AMI is fully implemented in early 2021) and has fine-tuned its "quantified" financial benefits, sufficient to demonstrate that it will meet the "net benefit" test, even without fully realizing other benefits yet to be quantified and other "softer" (but important) benefits not easily quantifiable. Importantly, Avista will continue to maximize benefits for customers over time — perhaps in ways that cannot yet be anticipated. As such, it is already "maximizing" its benefits of the six "use cases" identified in the Commission's PSE Order (See PSE Order at para 157). This is discussed in more detail in the Report and in Mr. DiLuciano's testimony.

Avista has already identified nearly $52.6M of benefits associated with these "six use cases,"[49] and it has plans to maximize the additional value of these use cases, as discussed in this Report. We too share the Commission's concerns that the customers receive the maximum value for AMI — not just the bare minimum necessary to satisfy the "net benefit" test. Avista has had the advantage of early planning and execution (not to mention experience gained) since 2015, with the start of the program—and it will continue to build on this experience until it has maximized the value of its AMI system over time (perhaps in ways not yet anticipated).

Q. What are the overall net benefits that have been quantified so far?

A. The following table (excerpted from page 6 of the Report (Exh. JDD-2)), summarizes the Project costs and benefits, on both a nominal and net present value (NPV) basis, revealing net financial benefits inuring to customers of $50.3 million.

[49] See, pages 4-5 of Report (Exh. JDD-2)

Table 4 - Actual And Forecast Costs And Customer Financial Benefits For Avista's Advanced Metering Infrastructure Project, Estimated In Nominal (Cash) And Net Present Value (NPV) Basis.

Nominal	Net Present Value (NPV)
Project Costs $258.3 million[50]	**Project Costs** $169.7 million[51]
Customer Financial Benefits $496.5 million[52]	**Customer Financial Benefits** $220.0 million[53]
Project Net Financial Benefits $238.2 million[54]	**Project Net Financial Benefits** **$50.3 million**[55]

As shown above, whether expressed in nominal or net present value terms, the net benefits quantified thus far are substantial—without considering the non-quantifiable benefits discussed herein.

Q. And how do net benefits now compare with what was anticipated in 2016?

A. Examining only the quantifiable benefits, we have seen a modest reduction in anticipated benefits ($241.7 million vs. $220.0 million) as we have fine-tuned our analysis. (See Table 1-4 of Report, Exh. JDD-2, at p. 8). Nevertheless, the lower costs have more than offset the reduction in benefits, resulting in $50.3 million of net benefits (an increase in the level anticipated in 2016 of $26.6M).

[50] Total of the actual and forecast lifecycle capital costs of $156.6 million and operating (O&M) costs of $101.7 million on a nominal (cash) basis, as summarized in Table 3-1 of the Report.
[51] Total Net Present Value (NPV) of the nominal actual and forecast lifecycle capital costs of $122.6 million and operating (O&M) costs of $47.1 million, as summarized in Tables 1-2 and 1-3 of the Report.
[52] Total actual and forecast lifecycle customer financial benefits of $496.5 million on a nominal (cash) basis, as summarized in Table 4-2 of the Report.
[53] Total NNPV) of the nominal actual and forecast lifecycle customer financial benefits of $220.0 million, as summarized in Table 1-4 of the Report.
[54] Total net Project benefits on a nominal (cash) basis (nominal customer financial benefits - nominal Project costs).
[55] NPV of total net Project benefits (NPV customer financial benefits - NPV Project costs).

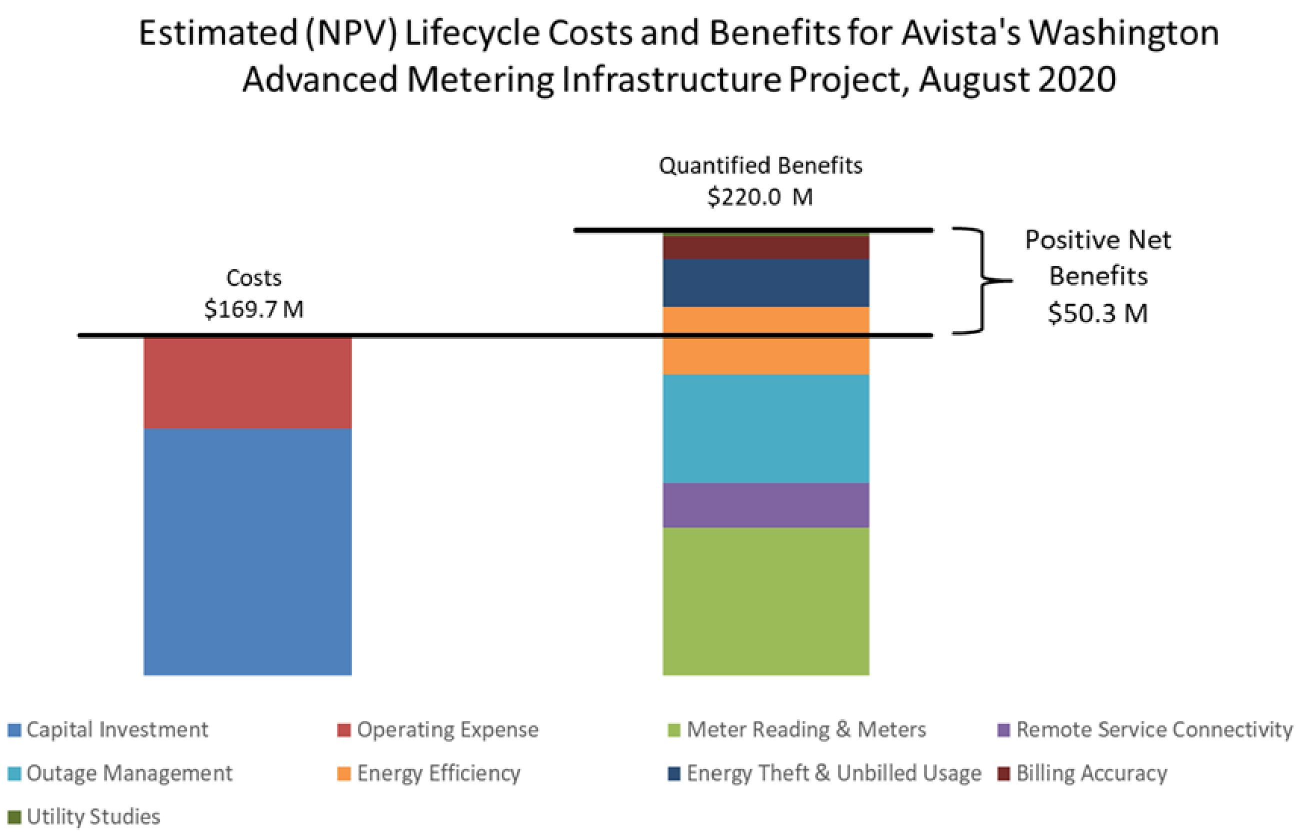
Q. How does the level of capital and O&M costs compare with the earlier projections in 2016?

A. The current net present value of our <u>combined capital and operations and maintenance costs</u> is $169.7 million, representing more than a 20% reduction in total cost compared with our 2016 estimate of $215.1 million.

Q. Have you illustrated the level of net benefits currently anticipated in a "waterfall" chart?

A. The illustration below (Figure 7-1 from the Report) is excerpted from page 10 of the Report (Exh JDD-2).

<u>Illustration No. 4</u>



As noted above, in our 2016 business case we estimated net financial benefits of $26.6 million, compared with our current estimate of $50.3 million. We also completed a sensitivity analysis on currently estimated financial benefits, as shown in Figure 4-1 of the Report, and as discussed by Mr. DiLuciano. Even if Avista were to only achieve the extreme lower end of the range in variability, which is now highly unlikely, the project would still produce positive net benefits exceeding $33 million, not including any new financial benefits, such as those described for demand response through variable peak pricing and time of use rates. Though we believe the prudence of our investment in advanced metering should be judged on the merits of all customer benefits provided by the system (both quantified and unquantified benefits), our current case clearly demonstrates the cost-effective value delivered for our customers based on a conservative showing of existing quantifiable financial net benefits alone.

Q. Are there other non-quantifiable benefits as well?

A. Yes. The primary benefits discussed in Avista's advanced metering project are those quantified for inclusion in the financial cost-benefit analysis performed for the business case. Additional benefits, which have real value to our customers, such as safety, power quality, convenience, and service, can be more difficult to assign a financial value, but they do need to be included in the consideration of the prudence of our investment. In our 2016 advanced metering business case we briefly noted several areas of customer benefits that were not financially quantified. With our initial experience operating the system, we have identified several additional customer benefits that are being delivered today and that will be offered over the life of the project. These new areas of benefit and their importance to customers are described in the Report.

Q. Do you have any concluding remarks regarding AMI?

A. Yes. Avista appreciates the Commission's acknowledgement of our leadership role in the deployment of smart grid technologies, including advanced metering. We were also mindful of your admonition that we continue planning and carefully evaluating the costs and benefits of advanced metering for our customers. Company testimony and the Report demonstrate the quality of analysis and planning developed to support AMI. Avista's Washington advanced metering project meets the Commission's interests of deploying new technology to improve the level and quality of services we provide our customers, and that such investment is cost effective, prudent, and demonstrated to be used and useful as deployed.

Q. Does this conclude your direct testimony?

A. Yes.