Exh. HLR-1T

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-22_____

DOCKET NO. UG-22_____

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 earned 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, safety, Human Resources, 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, distribution planning efforts, 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. Lastly, I will provide information as to how Avista is ensuring it gets the most value and benefits out of our Advanced Metering Infrastructure system for our customers. 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, Capital Business Case documents for each of the 2021-2024 major projects and programs described in my testimony;
- Exh. HLR-3, Avista's Priority Aldyl-A Protocol Report;
- Exh. HLR-4, Study of Aldyl-A Mainline Pipe Leaks - 2018 Update; and,
- Exh. HLR-5, Flowcharts of Comprehensive Planning Efforts.

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 two interstate pipelines, Williams Northwest Pipeline and TC Energy's Gas Transmission Northwest (GTN) pipeline. A map showing the Company's electric and natural gas service area in Washington, Idaho, and Oregon is provided by Company witness Mr. Vermillion (Exh. DPV-2).

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

A. Of the Company's approximate 403,000 electric and 369,000 natural gas customers (as of September 2021), 263,324 and 173,829, 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. Would you please summarize the need for continuing investments in Avista's electric distribution system.

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

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.

Q. Did Avista achieve its Service Quality Measures Program benchmarks for 2020?

A. The Company is pleased to report we exceeded all six Customer Service Measure benchmarks for 2020 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 nine minutes. Table No. 1 below depicts Avista's 2020 Customer Service Measures results:

Table No. 1 – 2020 Results for Avista's Customer Service Measures

Customer Service Measures	Benchmark	2020 Performance	Achieved
Percent of customers satisfied with our Contact Center services, based on survey results	At least 90%	96.5%	✓
Percent of customers satisfied with field services, based on survey results	At least 90%	96.3%	✓
Number of complaints to the WUTC per 1,000 customers, per year	Less than 0.40	0.06	✓
Percent of calls answered live within 60 seconds by our Contact Center	At least 80%	83.4%	✓
Average time from customer call to arrival of field technicians in response to electric system emergencies, per year	No more than 80 minutes	46 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	45 minutes	✓

Electric System Reliability	5-Year Average (2016-2020)	2020 Result	Change in 5-Year Average
Frequency of non-major-storm power interruptions, per year, per customer (SAIFI)	0.94	0.89	-0.03
Length of power outages, per year, per customer (SAIDI)	142 minutes	132 minutes	-9 minutes

Q. Would you please summarize the need for continuing investments in electric transmission infrastructure.

A. The nation's electric utilities are facing unprecedented challenges 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, 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 low load growth due to 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.

As discussed by Mr. Ehrbar, 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. Ehrbar) 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 natural gas distribution system.

A. Natural gas is a foundational energy resource for Avista's customers, and it plays a critical role in our achievement of a clean energy future. In 2020, natural gas provided the clean fuel for approximately 40% for the nation's electric generation fleet,[1] 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

[1] https://www.eia.gov/energyexplained/electricity/electricity-in-the-us.php

growth in natural gas customers in the prior decade, where the annual number of new connects rose dramatically between 2010 and 2020, from approximately 3,000 per year to 5,600 per year. New services in 2021 are expected to be close to what they were in 2020. 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 nearly $80 million in 2021.

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. 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 serve customers effectively and efficiently. 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 remaining structures were built in our early years of service, while many, like our energy delivery infrastructure, was 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 past 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. DISTRIBUTION PLANNING EFFORTS

Q. Please describe Avista's distribution planning process used during the time leading up to this case and the process envisioned to be followed in the upcoming years.

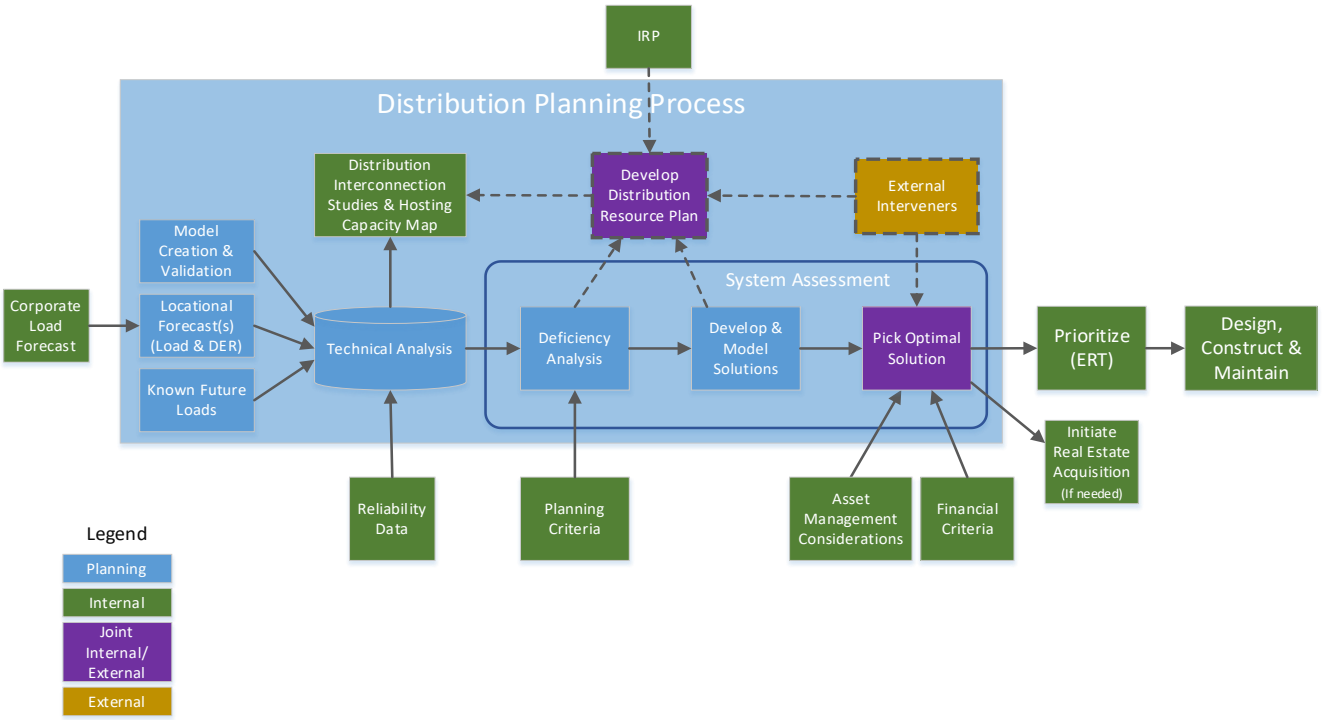
A. Avista's distribution planning process is intended to plan, design, construct, and operate the electric distribution system to assure continuity of service during credible system scenarios and disturbances. In the past, Avista's planning process was more heavily influenced by reactionary needs observed operationally. When capacity issues were observed,

often caused by customer growth in specific areas, projects were developed and constructed to mitigate the performance issue. Typical projects consisted of traditional utility practices which provide increased capacity by the application of larger or additional infrastructure.

During the past several years, however, Avista has been evaluating its planning process to incorporate the changing expectations of policy makers and some customers. The passing of Washington Engrossed House Bill 1126 in 2019 highlights the increased focus to consider the impacts, positive and negative, of distributed energy resources across the distribution system. As noted in the Commission's final order of the Company's 2020 rate case,[2] there is opportunity for Avista to have more comprehensive planning including an improved stakeholder participation forum. Figure No. 1 below (a larger version can be found in Exhibit HLR-5) shows the planning process for upcoming years. The process includes consideration of the need for a Distribution Resource Plan, integration with the existing Integrated Resource Planning process, and stakeholder involvement to contribute towards the selection of the most prudent corrective action plans for issues on the distribution system. Improvements to forecasting methodologies for both customer demand and growth of distributed energy resources are also necessary for this approach.

[2] Final Order 08 / 05 in Dockets UE-200900, UG-200901, and UE-200894 (Consolidated), ¶293.

Figure No. 1 – Distribution Planning Process



As shown in Figure No. 1, implementation of an improved planning process will utilize a more transparent approach, which involves opportunities for stakeholder input and feedback. Stakeholders will be able to provide input through various means (i.e., workshops, surveys, or seminars) to ensure a diverse perspective is considered. Perspectives on policy impacts, economics, implementation of new technologies, and customer expectations will help shape an optimized project plan to address distribution system needs.

Q. As stated in Engrossed House Bill 1126 regarding a distribution plan, "the goal the plan should be to provide the most affordable investments for all customers and avoid reactive expenditures to accommodate unanticipated growth in distributed energy resources. An analysis that fairly considers wire-based and non-wires alternatives on

equal terms is foundational to achieving this goal."[3] How does Avista incorporate the consideration of non-wire alternatives into the planning process?

A. There has been a focus on non-wire alternatives and distributed energy resources, as a subset of non-wire alternatives, by policy makers and utility stakeholders over the past several years. Some portions of the country have shown to have high penetration of distributed energy resources, primarily roof-top and small utility-grade solar generation facilities. Avista has not yet seen a high impact of distributed energy resources within its service territory but is considering what the impacts will be if penetration increases.

The planning process shown in Figure No. 1 is intentionally agnostic concerning what types of alternatives should be considered for addressing system deficiencies. Improvements to the economic evaluation to capture all costs and benefits of alternatives will help ensure Avista continues to select optimal solutions. Implementing pilot projects with scope to include non-traditional methodologies and equipment will allow Avista to gain a better understanding of the associated costs and benefits.

Q. The final order of the Company's last rate case the Commission included a recommendation to consider using the "Jade Cohort" planning process.[4] How does Avista's existing distribution planning process compare to the recommended process?

A. The National Association of Regulatory Utility Commissioners and National Association of State Energy Offices task force effort addressed comprehensive electricity planning needs. The task force developed five distinct roadmaps for an ideal comprehensive electricity planning process. Each roadmap captured perspectives from possible utilities

[3] Washington 2019 Legislative Session, Engrossed House Bill 1126 at ¶ 2 lines 34-39.
[4] Final Order 08 / 05 in Dockets UE-200900, UG-200901, and UE-200894 (Consolidated), ¶293.

residing in different market structures and whether the utilities own generation assets. The Jade Cohort vision, however, represents a planning process for a utility that does not own generation assets and is located within a regional transmission organization or independent system operator market. The flowchart provided in Exhibit HLR-5 is a roadmap summarizing the cohort process.[5] Though Avista's structure does not match the intended utility structure of the Jade Cohort, the process contains certain activities, milestones and actions which may be appropriate for Avista to consider.

The NARUC-NASEO task force also had a Turquoise Cohort which was seeking to align distribution, resource, and transmission planning processes for utilities which own generation assets and are located outside RTO/ISO markets. The flowchart is provided in Exhibit HLR-5. Several of the identified activities include the combining of processes across multiple departments of a vertically integrated utility like Avista.

As encouraged by the Commission, Avista is reviewing the Jade Cohort recommendation as well as other cohort recommendations from the NARUC-NASEO Task Force. Components of the recommendations will be incorporated into the distribution planning process shown in Figure No. 1 above. The outcome is intended to achieve, overtime, the ideal process which addresses impacts of distributed energy resources, alternative resource selections, and policy requirements for a reliable, least-cost power system.

Q. In late June 2021, Avista experienced a heat event that caused customer outages. What has Avista done in response to the observed events in preparation for future similar scenarios?

[5] https://pubs.naruc.org/pub/151E6947-155D-0A36-3190-C87F6548D4C2

A. The heat event occurring June 28 to July 1, 2021, caused several undesirable impacts to Avista's electric system, which ultimately lead to some customers to experience service interruptions. The combination of reduced equipment capacity from the high ambient temperatures, and increased customer power demand due to the heat and working from home during COVID, led to capacity constraints on specific distribution equipment in the greater Spokane area, and a portion of Lewiston, Idaho. Three 115/13kV distribution transformers exhibited major alarms to Avista's control centers leading to a preemptive disconnection of customers to reduce loading on the transformers. The cause of the alarms ranged from a cooling equipment malfunction to unanticipated transformer capacity limitations. A fourth distribution transformer reached 96% of its capacity and customers were disconnected to prevent potential equipment issues. Additionally, two distribution feeders reached loading levels requiring customers to be disconnected to prevent equipment damage. Table No. 2 provides a summary of feeders which reached or exceeded 80% of their rated capacity between June 28 and June 30.

Table No. 2 – Summary of Feeders that Exceeded 80% of their Rated Capacity Between June 28, 2021 and June 30, 2021

	Peak Load		
Feeder	June 28	June 29	June 30
3HT12F2	95%	94%	87%
3HT12F4	93%	94%	86%
9CE12F6	85%	89%	84%
AIR12F1	80%	83%	78%
APW112	85%	86%	82%
AVD152	76%	82%	79%
BEA12F2	65%	88%	84%
BEA12F5	86%	95%	82%
BKR12F1	94%	87%	86%
C&W12F6	74%	80%	78%
CDA125	--	96%	--
CDA126	85%	59%	24%
CFD1210	88%	90%	85%
CHE12F1	82%	86%	84%
COB12F1	79%	83%	78%
DAL132	95%	88%	84%
DEP12F1	83%	87%	83%
EFM12F1	83%	87%	86%
F&C12F1	98%	96%	85%
F&C12F2	90%	92%	87%
F&C12F4	94%	99%	97%
FWT12F3	79%	80%	76%
GLN12F2	89%	94%	90%
GRA12F1	75%	82%	78%
HUE141	82%	82%	79%
HUE142	90%	82%	79%
IDR253	82%	89%	79%
INT12F1	82%	87%	83%

	Peak Load		
Feeder	June 28	June 29	June 30
L&S12F4	84%	89%	79%
LIB12F1	87%	95%	91%
LIB12F3	81%	87%	79%
LMR1530	87%	92%	83%
LOL1359	86%	87%	84%
M15512	79%	82%	79%
M15514	68%	87%	82%
MEA12F1	78%	82%	80%
MEA12F2	98%	73%	68%
MIL12F2	77%	84%	79%
MIL12F3	76%	82%	79%
NE12F1	96%	99%	94%
NE12F4	85%	83%	74%
NW12F3	80%	85%	81%
PF212	79%	83%	80%
PF213	77%	83%	79%
PRA221	85%	92%	83%
SE12F1	76%	80%	76%
SE12F2	88%	91%	85%
SE12F3	76%	81%	76%
SE12F4	78%	84%	79%
SLW1358	89%	78%	75%
SOT523	74%	80%	75%
SUN12F2	90%	78%	--
TEN1254	84%	87%	84%
TEN1257	96%	101%	98%
TUR116	89%	91%	85%
WAK12F1	83%	79%	79%

After reviewing the impacts of the heat event, Avista is implementing specific measures to reduce the probability of customer outages if a similar weather event occurs in the future. The first measure is targeted capacity improvement projects on feeders which experience heavy loading during the event. Project scope generally includes replacing distribution regulators within substations with higher capacity regulators. The second measure is an increased focus on the distribution planning process as previously discussed. Distribution system performance criteria used in the process are under review and will consider appropriate weather extremes to evaluate. Another measure is to implement a feeder phase balancing program to promote optimizing available capacity on Avista's distribution equipment. The final measure is an improved operational approach to ensure major equipment can be operated at full capacity. Maintenance practices and procedures have been reviewed to verify that equipment cooling and auxiliary systems are functioning leading up to a forecasted extreme weather event. If each measure is fully implemented, it is anticipated that we will have no customer outages related to equipment loading, if a similar heat wave occurs in the future.

Q. How will the advancements in distribution planning, consideration of non-wire alternatives, stakeholder input and the 2021 heat event impact expected capital expenditures in the upcoming years?

A. An improved distribution planning process which incorporates the components already discussed will lead to more quantifiable prioritization of capital projects intended to mitigate capacity related issues on the distribution system. The existing business cases "Substation – New Distribution Station Capacity Program" and "Substation – Station Rebuilds Program" contain projects which will alleviate capacity issues, and those cases demonstrate the need for increased spending in the future.

IV. MAJOR INVESTMENTS IN FACILITIES FOR 2021

Q. Are there any specific 2021 investments you sponsor that you would like to elaborate on?

A. Yes. As discussed by Company witness M. Baldwin-Bonney, Avista's capital witnesses, including myself, describe certain major projects completed in 2021 and planned to be completed in 2022 through 2024. Although only nine months of 2021 is included in the test period for this case, all capital witnesses will be discussing capital projects for the entirety of 2021 in their respective testimony, including pro forma additions from October through December 2021. For these major projects, my testimony and exhibits provide an overview of the need for the investments and detail how those projects benefit our customers. Additionally, many of the 2022-2024 projects discussed later in my testimony are similar to projects and programs which occurred in 2021 and simply represent a continuation of the projects. Accordingly, the information that supports those 2021 projects and programs also help to support several projects and programs that will be transferred in 2022-2024.

Q. Please list the major projects and dollars transferred to plant in 2021.

A. Table No. 3 below lists the projects and dollars transferred to plant in 2021 for projects in my area of responsibility. I will describe each project and reference the "Project #" before each item, which refers back to Table No. 3, below. The table also provides where the Business Case supporting the project can be found in Exh. HLR-2.

Table No. 3 – Major Projects for 2021

Project #	Business Case	2021 TTP (System)	Exh. HLR-2 Page #
Electric			
1	Clearwater Wind Generation Interconnection	$ 1,665	3
2	Colstrip Transmission	557,181	10
3	Distribution Grid Modernization	1,439,020	18
4	Distribution Minor Rebuild	10,704,598	30
5	Distribution System Enhancements	10,882,898	39
6	Distribution Transformer Change Out Program	146,381	53
7	Downtown Network - Asset Condition	1,739,460	61
8	Downtown Network - Performance & Capacity	1,802,785	77
9	Elec Relocation and Replacement Program	5,290,025	88
10	Electric Storm	16,878,877	95
11	Joint Use	2,140,043	102
12	LED Change-Out Program	249,741	109
13	Meter Minor Blanket	258,680	118
14	New Revenue - Growth	44,512,539	124
15	Primary URD Cable Replacement	30,463	131
16	Protection System Upgrade for PRC-002	6,275,878	135
17	Saddle Mountain 230/115kV Station (New) Integration Project Phase 1	2,345,100	141
18	Saddle Mountain 230/115kV Station (New) Integration Project Phase 2	16,997,122	144
19	SCADA - SOO and BuCC	1,768,448	151
20	Spokane Smart Circuit	550,569	159
21	Spokane Valley Transmission Reinforcement Project	15,066,069	161
22	Substation - New Distribution Station Capacity Program	2,154,498	168
23	Substation - Station Rebuilds Program	4,928,628	175
24	Transmission - Minor Rebuild	3,758,818	182
25	Transmission Construction - Compliance	2,133,304	188
26	Transmission Major Rebuild - Asset Condition	16,128,097	197
27	Transmission NERC Low-Risk Priority Lines Mitigation	1,025,277	204
28	Westside 230/115kV Station Brownfield Rebuild Project	7,019,954	210
29	Wood Pole Management	14,411,440	217
30	WSDOT Control Zone Mitigation	505,854	229
Total Electric		**$ 191,703,414**	
General Plant and Other Plant			
31	Apprentice/Craft Training	$ 76,115	236
32	Capital Tools & Stores	2,436,781	241
33	Fleet Services Capital Plan	5,533,378	252
34	Gas Operator Qualification Compliance	49,470	264
35	Jackson Prairie Joint Project	2,197,634	270
36	Strategic Initiatives	(271,509)	275
37	Structures and Improvements/Furniture	3,597,435	281
38	Telematics 2025	959,250	297
39	Washington Advanced Metering Infrastructure Project	2,430,992	308
Total General Plant and Other Plant		**$ 17,009,545**	

Natural Gas				
40	Gas Cathodic Protection Program	$	94,812	315
41	Gas Cheney HP Reinforcement		2,841,302	318
42	Gas Facility Replacement Program (GFRP) Aldyl A Pipe Replacement		22,555,185	323
43	Gas HP Pipeline Remediation Program		706,188	337
44	Gas Isolated Steel Replacement Program		1,041,477	340
45	Gas Non-Revenue Program		9,538,316	343
46	Gas Overbuilt Pipe Replacement Program		204,526	348
47	Gas PMC Program		2,507,677	352
48	Gas Regulator Station Replacement Program		1,161,440	355
49	Gas Reinforcement Program		883,675	359
50	Gas Replacement Street and Highway Program		3,345,236	363
51	Gas Telemetry Program		219,574	366
52	New Revenue - Growth		34,169,147	124
Total Natural Gas		**$**	**79,268,557**	
Exh. HLR-1T Total 2021 Capital Additions		**$**	**287,981,516**	

Q. For the 2021 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.

Q. Please describe Avista's approach for evaluating and managing these 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. Ehrbar). 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. 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-2).

Q. How is Avista's leadership informed of the project and 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.

Q. Has the Company calculated and included a description of any offsetting benefits to the capital projects in this case?

A. For those capital projects that have direct offsetting benefits, I have included a

description of the offsets in the project description. Company witness Ms. Andrews provides an explanation of how the direct offsets are factored into the revenue requirement of this case, an explanation of the Company's 2% efficiency adjustment for investments that have no direct offsets and are not a required investment, and a description of indirect offsets associated with the capital projects in this case.

Project #1 – Clearwater Wind Generation Interconnection

Q. Please describe the Company's Clearwater Wind Generation Interconnection project.

A. Avista is a joint owner in the 500kV Colstrip Transmission System and party to the Colstrip Project Transmission Agreement. Under Federal Energy Regulatory Commission (FERC) rules and the Agreement, Avista must comply with all rules and procedures governing the interconnection of new generation facilities with the Colstrip Transmission System. Clearwater Energy Resources, LLC requested interconnection of a 750MW wind project at Broadview. All required study processes were completed, and Avista executed a Large Generator Interconnection Agreement with the developer on May 22, 2019.

Pursuant to the Colstrip Project Transmission Agreement, Avista and the joint owners of the Colstrip Transmission System are obligated to fund their respective shares of all Transmission Provider Interconnection Facilities and Network Upgrades applicable to the interconnection of a Large Generator Interconnection project. Failure to fund this project would result in Avista being in breach of both the Colstrip Project Transmission Agreement and the Large Generator Interconnection Agreement and would be a violation of FERC rules governing generation interconnection. Such obligations arise from Avista's ownership in the

Colstrip Transmission System, which has benefited Avista retail native load customers over the life of the Colstrip Project. Please see the Business Case for more information on this project.

Q. What capital additions for this project did Avista make in 2021?

A. The total capital investment was $1,665 on a system basis in 2021.

Project #2 – Colstrip Transmission

Q. Please describe the Company's Colstrip Transmission project.

A. As noted above, Avista is a joint owner in the 500kV Colstrip Transmission System and party to the Colstrip Project Transmission Agreement. Avista and the joint owners are obligated to fund their respective shares of the Colstrip Transmission System construction and maintenance budgets, as approved by the Colstrip Transmission Committee, which consists of representatives of each of the parties to the Agreement. The Colstrip Transmission Committee reviews and approves, on an annual basis, the capital and O&M expense program proposed by NorthWestern Energy ("NWE") (the designated Transmission Operator under the Agreement). Pursuant to Section 22 of the Colstrip Project Transmission Agreement, Avista provides annual input to, and approval for, the Colstrip Transmission System capital and O&M expense program commensurate with its ownership shares in the Colstrip Transmission System.

In conjunction with the Company's ownership interest in Colstrip Project Units 3 and 4, the Colstrip Transmission System has benefited the Company's retail native load customers since the early 1980's. To continue to reliably integrate the Company's Colstrip Project resources to native load and to meet applicable NERC transmission planning and operational

reliability standards, the Colstrip Transmission System must be maintained. Examples of recent and pending capital expenditures in the Colstrip Transmission System include end-of-life replacement of 500kV power circuit breakers at the Colstrip 500/230kV Station and 500kV structure relocation to mitigate erosion risk caused by high runoff in the Little Big Horn River.

Q. Did Avista consider alternatives to this project?

A. There are no alternatives to this work.

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

A. Avista customers benefit from this work as it is required per the contractual obligations under the Colstrip Project Transmission Agreement. If Avista did not pay for its share of this work, then it would be in default of its obligations.

Q. When was the Colstrip Transmission project completed?

A. The Colstrip Transmission project is an ongoing project with no targeted date of completion.

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

A. No, there are not. However, the Company has included a 2% efficiency adjustment for this project in 2024. That adjustment for this project is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $557,181 on a system basis in 2021.

Project #3 – Distribution Grid Modernization

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.[6] 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).

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 program, vegetation management program, segment reconductor and feeder tie program,

[6] 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.

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. Are there any direct offsetting benefits associated with this program?

A. Yes. As a result of this program there are direct O&M savings of $26,684 in 2022 and $33,673 in 2023, related to capital offsets. Please see Company witness Ms. Andrews Exh. EMA-5 for further detail.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $1,439,020 on a system basis in 2021.

Project #4 – 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.

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[7] 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,[8] "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 design phase by the individual project designer. In general, however, there is no reasonable

[7] 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.
[8] 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.

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. Are there any direct offsetting benefits associated with this program?

A. No, there are not. However, the Company has included a 2% efficiency adjustment for this program in 2022, 2023 and 2024. That adjustment for this program is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $10,704,598 on a system basis in 2021.

Project #5 – Distribution System Enhancements

Q. Please describe the Company's Distribution System Enhancements.

A. Avista's electric distribution system consists of 357 discrete primary electric circuits encompassing over 19,000 miles of overhead conductors and underground cables. The distribution grid is managed by division or 'area engineers' and centralized distribution planning. Load Demands on the grid are dynamic with load patterns changing as a result of

many factors including weather, temperature, economic conditions, conservation efforts, and seasonal variations. Avista operates a radial distribution system using a trunk and lateral configuration (industry standard). Though many circuits are monitored at the source substation (SCADA), downstream trunk and lateral branch circuits loading are analyzed via computer simulation. At Avista, distribution analysis is performed with the Synergi load flow program. AMI data is also used to analyze service voltages and transformer loading. AMI data has shown system issues in the form of service voltage problems and transformer overloading. In the near future, AMI load data will be exported to Synergi and used in the computer simulation.

Additionally, power quality investigation and subsequent mitigation projects are initiated by customer inquiries or analysis work. Work is also driven by reliability and safety concerns that are identified by our engineers and/or operation personnel. Operational flexibility can also drive the need to upgrade electric circuits, install switching equipment, and other infrastructure as needed.

In a manner similar to substation rebuilds, expansions, and additions that are planned for and scheduled years in advance, the distribution system also requires rebuilds, expansions, and additions. The Distribution System Enhancements business case allows for a methodical and planned out approach to needed feeder enhancements. Secured funding for future years allows for planning large projects in a multi-year approach, with completion of a portion of the overall project happening over a series of years. In absence of this business case, critical issues would be resolved in a reactionary and haphazard fashion, funded through the Minor Blanket, and completed outside the confines of a “big picture” plan and approach to feeder management.

Q. Did Avista consider alternatives to this approach?

A. There are no viable alternatives to Distribution System Enhancements. If the Company were to not make necessary distribution grid enhancements, it would violate regulations the Company must follow and industry standards. It would also represent an unacceptable level of risk to public safety and infrastructure.

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

A. Most of the funds provided by this business case are used to complete projects that solve performance and capacity issues driven by system wide electric load growth. Other projects address power quality mitigation, reliability improvements, operational flexibility, system protection improvements, and safety enhancements. As such, the risk in not funding this business case is the inevitable decline in the overall health and operation of Avista's electric distribution system, e.g. overloading conductor to the point of failure.

Q. Does the Distribution System Enhancements have a target completion date?

A. The Distribution System Enhancements does not have a targeted completion date as the work is ongoing based on need.

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

A. Yes. As a result of this project there are direct O&M savings of $32,907 in 2022 and $25,315 in 2023, related to wood pole management and outage savings. Please see Company witness Ms. Andrews Exh. EMA-5 for further detail.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $10,882,898 on a system basis in 2021.

Project #6 – Distribution Transformer Change Out Program

Q. Please describe the Company's Distribution Transformer Change Out Program.

A. The Transformer Change Out Program (TCOP) was originally implemented in 2011. The Program has focused on eliminating transformers containing or potentially containing Polychlorinated Biphenyls (PCB) oil. The areas initially targeted were near the Spokane and Pend Oreille River watersheds and has since moved to all transformers containing PCBs. These transformers have specific work plans for removing them from the system. For 2021, an estimated carryover-total of 150 targeted transformers are expected to be replaced. Please see the Business Case for more information on this project.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $146,381 on a system basis in 2021.

Project #7 – Downtown Network – Asset Condition

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 is possible to have

it provide very reliable service for many decades after the investment is fully depreciated. In recent years, the Company has been making increasing investments in the network, particularly in replacing aging transformers and network protectors. More recently 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, network 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. Are there cost controls for this project?

A. The driver of this project 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 project 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 project.

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

A. No, there are not. However, the Company has included a 2% efficiency adjustment for this project in 2022, 2023 and 2024. That adjustment for this project is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $1,739,460 on a system basis in 2021.

Project #8 – Downtown Network – Performance & Capacity

Q. Please describe the Company's investments in the Downtown Network – Performance & Capacity project.

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 additional 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 project?

A. No, there is no alternative to providing the infrastructure needed to serve our customers' electric needs safely, reliably, and cost-effectively. 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 project have a target completion date?

A. No. This project 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. Are there cost controls for this project?

A. The driver of this project 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 project.

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

A. Yes. As a result of this project there are direct O&M savings of $79,200 in 2022 and 2023, related to labor savings. Please see Company witness Ms. Andrews Exh. EMA-5 for further detail.

Q. What capital additions for this project did Avista make in 2021?

A. The total capital investment was $1,802,785 on a system basis in 2021.

Project #9 – Electric Relocation and Replacement Program

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

A. 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, the Company is required 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. 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. Are there any direct offsetting benefits associated with this program?

A. No, there are no direct offsets as this is a required investment.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $5,290,025 on a system basis in 2021.

Project #10 – Electric Storm

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[9] that often occur with short notice, and that are beyond the control of the Company[10] 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. 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,

[9] 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.

[10] 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, but which would be cost-prohibitive, and introduce other maintenance concerns.

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, is 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 Storm project have a target completion date?

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

Q. Are there cost controls for this project?

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. Are there any direct offsetting benefits associated with this project?

A. No, there are no direct offsets as this is a required investment.

Q. What capital additions for this project did Avista make in 2021?

A. The total capital investment was $16,878,877 on a system basis in 2021.

Project #11 – Joint Use

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?

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 costs 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. 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. Are there any direct offsetting benefits 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 ("other revenue" that offsets the total revenue requirement supported in this filing).

Q. What capital additions for this project did Avista make in 2021?

A. The total capital investment was $2,140,043 on a system basis in 2021.

Project #12 – LED Change-Out Program

Please see the 2022 through 2024 transfers to plant section below for a description of this project. The total capital investment was $249,741 on a system basis in 2021.

Project #13 – Meter Minor Blanket

Q. Please describe the Meter Minor Blanket.

A. The meter minor blanket is used to charge the labor associated with new electric meter installations in Washington and Idaho due to the replacement of failed plant (meters) that can no longer gather or communicate accurate consumption data. Failed plant is a result of various reasons including but not limited to, age, weather/environmental damage, hardware failure, or radio communication failures. A meter must be installed as soon as possible to accurately capture customer energy consumption data. For this reason, Avista must sustain a continuous stock of each electric meter type and budget the required labor to install

these meters. The Meter Minor Blanket Business Case is driven by tariff requirements that mandate Avista's obligation to serve existing customer load within our franchised area. Please see the business case for more information on this project.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $258,680 on a system basis in 2021.

Project #14 – New Revenue – Growth (Electric)

Q. Please describe the Company's New Revenue – Growth investments.

A. Avista defines these investments as "customer requests for new service connections, line extensions, transmission interconnections, or system reinforcements to serve a single large customer." We have often in the past referred to new service connects as "growth," as in growth in the number of customers, however, these investments are beyond the control of the Company, and as such they do not reflect a plan or strategy on the part of Avista. Responding quickly to these customer requests is a requirement of providing utility service. Typical projects include installing electric facilities in a new housing or commercial development, installing, or replacing electric meters, or adding street or area lights per a request from an individual customer, a city, or county agency. As would be expected, fluctuation in the number of new customer connections is largely dependent on local economic conditions both in the housing and business sectors.

The New Revenue – Growth Business Case is driven by requirements that mandate Avista's obligation to serve new customer load when requested within our franchised area. Growth is also seen as a method to spread costs over a wider customer base, keeping rate pressure lower than would otherwise be experienced.

Q. Did Avista consider alternatives to this approach?

A. There are no alternatives to this approach as Avista is required to take reasonable steps to serve customers who request service as part of our obligation to serve.

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

A. Avista seeks to serve the interests of its customers, in a safe and responsible manner, while strengthening the financial performance of the utility. Our growth contributes to strong communities, ongoing value to our customers, and the device portion of the business case keeps our system safe and reliable. All new customers on Avista's system are benefitted by this Business Case. In addition, all customers who have their metering or regulation changed, or who have transformers replaced, benefit from this Business Case.

Q. Does the New Revenue – Growth Business Case have a targeted completion date?

A. No, it does not as growth is driven by customer demand.

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

A. No, there are no direct offsets as this is a required investment.

Q. What capital additions for this project did Avista make in 2021?

A. The total capital investment was $44,512,539 on a system basis in 2021.

<u>Project #15 – Primary URD Cable Replacement</u>

Q. Please describe the Primary URD Cable Replacement Program.

A. The primary driver for the Underground Residential Development (URD) Cable Replacement Program is to improve system reliability by removing URD cable with a high failure rate. The other driver is to reduce O&M costs related to responding to customer

outages caused by the failed cable. This work is needed to complete the replacement of the un-jacketed first generation underground primary distribution cable referred to as URD cable. This first generation URD cable was installed from 1971to 1982. There was over 6,000,000 feet of URD cable installed during this time period. Subsequent to installation, the URD cable began to experience an increasing failure rate. From 1992 to 2005 the cable failure rates quadrupled from 2 faults to I faults per 10 miles of cable. The faults reached a peak of 238 annual failures in 2007. Increased capital funding to replace this URD cable from 2005 through 2009 helped stabilize the failure rates. Continued funding and replacement of the cable has enabled a downward trend in failures. Cable installed after 1982 has not shown the high failure rate. Please see the Business Case for more information on this project.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $30,463 on a system basis in 2021.

Project #16 – Protection System Upgrade for PRC-002

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[11] to determine our obligations under bulk electric system requirements and standards.

[11] 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

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 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 project have a target completion date?

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

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

A. No, there are no direct offsets as this is a required investment.

Q. What capital additions for this project did Avista make in 2021?

A. The total capital investment was $6,275,878 on a system basis in 2021.

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.

Project #17 – Saddle Mountain 230/115kV Station Integration Project Phase 1

Q. Would you please describe the Company's Saddle Mountain 230/115kV Station Project Phase 1?

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.

Phase 1 of this project included the following activities:

- Construct a 3-position 230 kV double bus breaker arrangement with space for two future positions at the line crossing of the Walla Walla – Wanapum 230 kV and Benton – Othello 115 kV transmission lines.
- Construct a 3-position 115 kV breaker and a half arrangement with space for three future positions.
- Install a 250 MVA transformer.
- Rebuild entire 8.28 miles of Othello – Warden No. 1 115 kV line with minimum 205 MVA capacity.
- Rebuild 2.88 miles of Othello – Warden No. 2 115 kV line with minimum 205 MVA capacity.

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 Phase 1 have any target completion date?

A. The vast majority of Phase 1 was completed in 2020 with the remainder being completed in 2021.

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

A. No, there are not. However, the Company has included a 2% efficiency adjustment for this project in 2022. That adjustment for this project is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions for this project did Avista make in 2021?

A. The total capital investment was $2,345,100 on a system basis in 2021.

Project #18 – Saddle Mountain 230/115kV Station Integration Project Phase 2

Q. Would you please describe the Company's Saddle Mountain 230/115kV Station Project Phase 2?

A. Yes. Phase 2 of the Saddle Mountain 230/115 kV Station Project was a continuation from Phase 1 described above. Phase 2 includes the following activities:

- Rebuild Othello substation to 115 kV ring bus with five positions.
- Build new transmission line from Saddle Mountain 115 kV to Othello substation 115 kV.

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

A. Yes, see the alternatives described above for Phase 1.

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

A. Yes, see the narrative above for Phase 1.

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

A. The vast majority of Phase 2 was completed in 2021 with the remainder scheduled to be completed in 2022.

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

A. No, there are not. However, the Company has included a 2% efficiency adjustment for this project in 2022. That adjustment for this project is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions for this project did Avista make in 2021?

A. The total capital investment was $16,997,122 on a system basis in 2021.

Project #19 – SCADA – SOO and BuCC

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.[12] 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

[12] 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. 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. Are there any direct offsetting benefits associated with this program?

A. No, there are no direct offsets as this is a required investment.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $1,768,448 on a system basis in 2021.

Project #20 – Spokane Smart Circuit

The Spokane Smart Circuit project was completed in 2013 with the associated capital investments being included for recovery in the Company's 2012[13] and 2014[14] general rate cases. Due to a change in accounting policy/requirements in, it necessitated recognizing excise tax on grant receipts such as this project in 2021. As a result, in 2021 the Company recognized excise tax of $550,569 for the Spokane Smart Circuit Project.

Project #21 – Spokane Valley Transmission Reinforcement Project

Q. Please describe the Company's Spokane Valley Transmission Reinforcement Project.

A. Completion of the Spokane Valley Transmission Reinforcement Project is required to mitigate a NERC TPL-001-4 system deficiency. The transmission system in the

[13] Dockets UE-120436 and UG-120437 (*Consolidated*)
[14] Dockets UE-140188 and UG-140189 (*Consolidated*)

Spokane Valley currently fails TPL-001-4(P2.4), which is an internal Breaker Fault (Bus-tie Breaker) on A717 at the Boulder Station. In addition, the system fails the NERC TPL-001-4 P2 Contingency for the 2017 Heavy Summer Scenario. Completion of this project is required to ensure Avista maintains compliance with NERC regulations and Avista's planning documents.

Q. Did Avista consider alternatives to this approach?

A. Yes. The Company considered maintaining the system as is, which was not recommended because the capacity constraints would not be mitigated nor would this alternative adhere to NERC compliance regulations.

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

A. This project provides additional capacity, adheres to NERC compliance regulations, and prevents reliability issues which are all benefits to Avista's customers.

Q. When was the Spokane Valley Transmission Reinforcement Project completed?

A. This project was completed in 2021.

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

A. No, there are no direct offsets as this is a required investment.

Q. What capital additions for this project did Avista make in 2021?

A. The total capital investment was $15,066,069 on a system basis in 2021.

<u>Project #22 – Substation - New Distribution Station Capacity Program</u>

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

A. 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 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,[15] 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. 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. 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,

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

combined with identification of minimum effective funding levels, provides an effective control on costs for this program.

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

A. No, there are not. However, the Company has included a 2% efficiency adjustment for this program in 2022, 2023, and 2024. That adjustment for this program is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $2,154,498 on a system basis in 2021.

Project #23 – Substation - Station Rebuilds Program

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.[16]

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. Are there any direct offsetting benefits associated with this program?

[16] 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. No, there are not. However, the Company has included a 2% efficiency adjustment for this program in 2022, 2023 and 2024. That adjustment for this program is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions under this program did the Company make in 2021?

A. The capital investment was $4,928,628 on a system basis in 2021.

Project #24 – Transmission - Minor Rebuild

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 (#26), described below.

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. 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. Are there any direct offsetting benefits associated with this program?

A. No, there are not. However, the Company has included a 2% efficiency adjustment for this program in 2022, 2023 and 2024. That adjustment for this program is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $3,758,818 on a system basis in 2021.

Project #25 – Transmission Construction - Compliance

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

A. This program covers the transmission rebuild and reconductor work identified by the Company as necessary to maintain compliance with the NERC reliability standards.[17] 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.

[17]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.

Q. Did Avista consider alternatives to this program?

A. 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 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. Are there any direct offsetting benefits associated with this program?

A. No, there are not. However, the Company has included a 2% efficiency adjustment for this program in 2022 and 2023. That adjustment for this program is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions under this program did the Company make in 2021?

A. The capital investment was $2,133,304 on a system basis in 2021.

Project #26 – Transmission Major Rebuild – Asset Condition

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. Are there any direct offsetting benefits associated with this program?

A. No, there are not. However, the Company has included a 2% efficiency adjustment for this program in 2022, 2023 and 2024. That adjustment for this program is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $16,128,097 on a system basis in 2021.

Project #27 – Transmission NERC Low-Risk Priority Lines Mitigation

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

A. Avista's compliance with this mandatory standard requires that we conduct LiDAR surveys on all subject transmission circuits to determine any discrepancies between the design specifications and field measurements for conductor sag 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 in the Washington Administrative Code. 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. Did Avista consider alternatives to this approach?

A. The only alternative to raising structures to ensure clearance requirements are met is to remove earth below lines. Earth removal can trigger permitting, which otherwise would not be necessary, and is not the preferred solution.

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

A. This project benefits Avista's customers by ensuring that transmission lines are in compliance with NESC minimum clearances values, which the minimums have also been adopted into the Washington Administrative Code.

Q. When was this project completed? If not completed, when is the targeted completion date?

A. This project is scheduled to be completed by the end of 2023.

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

A. No, there are no direct offsets as this is a required investment.

Q. What capital additions for this project did Avista make in 2021?

A. The total capital investment was $1,025,277 on a system basis in 2021.

<u>Project #28 – Westside 230/115 kV Station Brownfield Rebuild Project</u>

Q. Please describe the Company's investments in the Westside 230/115 kV Station Brownfield Rebuild (Westside) Project.

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 No. 1 and replacing Autotransformer No. 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 Autotransformer No. 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 Autotransformer No. 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 Project have any target completion date?

A. This project is scheduled for completion in 2022.

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

A. No, there are no direct offsets as this is a required investment.

Q. What capital additions for this project did Avista make in 2021?

A. The total capital investment was $7,019,954 on a system basis in 2021.

Project #29 – 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[18] 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.[19] 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.

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.

[18] 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.
[19] Avista's Wood Pole Inspection Program is funded as an expense.

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-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.[20] 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. 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. 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

[20] 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.

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 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 aging infrastructure in reasonable service condition at a reasonable cost.

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

A. No, there are not. However, the Company has included a 2% efficiency adjustment for this program in 2022, 2023 and 2024. That adjustment for this program is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $14,411,440 on a system basis in 2021.

Project #30 – WSDOT Control Zone Mitigation

Q. Please describe the Company's WSDOT Control Zone Mitigation Program.

A. This program was developed to mitigate the poles identified to be in the control zones within Washington State highway rights of way. Twenty-nine of Avista's thirty-five WSDOT Franchise Agreements have expired, and as part of renewing the agreements, the poles located within the control zone must be moved to meet the WSDOT Control Zone

requirements. There are 950 pole locations that must be mitigated as part of this plan. However, movement of the identified poles will impact neighboring poles. In 2020, the Control Zone Steering Committee worked to create a plan to mitigate this issue which led to this Business Case. The impacted poles have been identified and documented in Avista's Facility Management (AFM) system.

This program is designed to meet the WSDOT Clear Zone requirements and allow Avista to obtain the necessary permitting to maintain its facilities in a timely manner. The risks of not doing this work would mean our facilities will be maintained in a run-to-failure mode as identified rejected poles are not replaced in a timely manner, wildland urban interface (WUI) required retrofitting may not take place, and potential car-hit-poles are left in place until failure. This program helps ensure that Avista's poles are inspected and maintained within its current twenty-year cycle. Finally, The National Electrical Safety Code (NESC) is adopted as Washington Law under WAC 296-45-045. Part 013C describes the application, Part 121 defines the required inspection interval, and Part 214A identifies required documentation and correction of the pole inspection results.

Q. Did Avista consider alternatives to this approach?

A. Yes. An alternative to this work is simply to not do it. Poles and equipment will be managed in a run-to-failure mode and replaced with O&M dollars, many times at an overtime rate. A failed asset could cause a customer, employee, or the general public harm.

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

A. Avista's customers benefit from this program as it allows the Company to maintain its assets ensuring a high level of customer service and a reduction in potential outages caused by pole failures.

Q. When was the WSDOT Control Zone Mitigation Program completed? If not completed, when is the targeted completion date?

A. This program does not have a scheduled completion date.

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

A. No, there are no direct offsets as this is a required investment.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $505,854 on a system basis in 2021.

Project #31 – Apprentice/Craft Training

Q. Please describe the Apprentice/Craft Training Program.

A. Avista manages 11 Federally regulated apprenticeships that require instructional aides and equipment deemed necessary to provide quality instruction. [Regulated by 29 CFR 29 & 30] The Joint Apprenticeship Training Committee (JATC) administers these apprenticeships. These funds are used to purchase tools, materials and equipment for training apprentices and journey workers in all crafts. These tools and materials provide for related instruction that is closely correlated with the practical experience and training received on the job. The trained and competent workforce produced through the various apprenticeships, benefits customers in all Avista service territories. These apprenticeship programs further benefit Avista's customers by providing a safe, proficient, and skilled workforce. Please see the Business Case for more information on this project.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $76,115 on a system basis in 2021.

Project #32 – Capital Tools & Stores

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 program 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. 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. Are there any direct offsetting benefits associated with this program?

A. No, there are not. However, the Company has included a 2% efficiency adjustment for this program in 2022, 2023 and 2024. That adjustment for this program is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $2,436,781 on a system basis in 2021.

Project #33 – Fleet Services Capital Plan

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, even under prudent and proper use, 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[21] 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

[21] 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/

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.'

Once the Company had better access to good data and analytics, and with the asset management culture focusing 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.

Q. Does the Fleet Services Capital Plan 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. Are there cost controls for this project?

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. Are there any direct offsetting benefits associated with this project?

A. No, there are not. However, the Company has included a 2% efficiency adjustment for this project in 2022, 2023 and 2024. That adjustment for this project is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions for this project did Avista make in 2021?

A. The total capital investment was $5,533,378 on a system basis in 2021.

Project #34 – Gas Operator Qualification Program

Q. Please describe the Gas Operator Qualification Program.

A. As an operator of gas infrastructure, Avista Utilities is required by regulation to minimize the impact of safety and integrity of the pipeline facilities due to human error that may result from an individual's lack of knowledge, skills, or abilities during the performance of certain activities, or covered tasks. Avista's Craft Training and Gas Operations departments are responsible for ensuring a qualified and competent workforce. This is partially accomplished by evaluating and qualifying internal and contract employees on Operator Qualification tasks specific to Avista's natural gas infrastructure. This Business Case provides the tooling, vehicles, and equipment necessary to enable internal Avista Evaluators to evaluate Avista "non-peer" employees and contract personnel under the PHMSA regulations for Operator Qualification. Please see the Business Case for more information on this program.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $49,470 on a system basis in 2021.

Project #35 – 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. 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 Mr. Kinney 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. Are there cost controls for this project?

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 project.

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

A. No, there are no direct offsets as this is a required investment.

Q. What capital additions for this project does Avista plan to make in 2021?

A. The Company's share of the investment for 2021 is $2,197,634, on a system basis.

Project #36 – Strategic Initiatives (General Plant)

Q. Please describe the Company's General Plant Strategic Initiatives.

A. The Strategic Initiatives investments that I am sponsoring in this case pertains to the Business Case for the Company's Clean Energy Fund 3 project, for which Avista received a Clean Energy Fund grant from the Washington State Department of Commerce.

The Clean Energy Fund 3 project is known as the Eco-District Grid Modernization project. This project seeks to leverage Avista's participation in the Eco-District[22] by utilizing the net-zero, carbon free Catalyst Building constructed in the Eco-District to evaluate how these types of net zero, carbon free developments impact the energy production and delivery system. Avista will deploy advanced thermal and electric storage assets integrated with load control and inverter technology with an overall objective to develop a control strategy within the Eco-District which balances the competing certification requirements of net zero, carbon free developments against grid utilization strategies to reduce unnecessary investment in grid infrastructure. This project is branded the Grid To Green Project (G2G Project). The G2G Project assets and analytics will be designed to measure and value how net zero, and carbon free developments impact the regional and local electrical system production and delivery system. The G2G Project objectives are: (1) to deploy electric and thermal storage assets in the Eco-District to modulate the voltage swings resulting from local intermittent generation; (2) to deploy electric, thermal storage assets with load management control strategies to reduce production, transmission and feeder peak demands; (3) to evaluate the transmission and distribution deferral that may be created through the deployment of the Eco-District

[22] Avista's eco-district, located in the Spokane university district, is an innovative shared energy model that uses a centralized heating, cooling, and electrical system to serve the energy needs of multiple buildings.

combined with control and storage assets; and (4) to develop a social and economic outreach program to incentivize local small business adjacent to the Eco-District to deploy demand response programs.

Q. What capital additions for this project did Avista make in 2021?

A. As a result of grant funds received in 2021, the total capital investment for 2021 was ($271,509).[23]

Project #37 – Structures and Improvements/Furniture

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 can 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 go to 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

[23] In 2021, Avista received grant payments totaling $799,232 from the Washington State Department of Commerce.

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 to 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 serve customers effectively and efficiently. 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. 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 layer 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. Are there any direct offsetting benefits associated with this program?

A. Yes. As a result of this program there are direct O&M savings of $11,000 in 2022 and 2023, related to savings from newer energy efficient equipment. Please see Company witness Ms. Andrews Exh. EMA-5 for further detail.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $3,597,435 on a system basis in 2021.

Project #38 – Telematics 2025

Q. Please describe the Company's Telematics 2025 project.

A. Advances in technology, customer requirements and safety are driving the need to invest capital in our connected vehicle systems. Implementing the next generation of

telematics in vehicles operating on behalf of Avista has the opportunity to improve our customer's experience, reduce our liability exposure and improve operational safety.

Telematics works by connecting the vehicle to the cellular data network. Currently, most telematics connectivity uses third generation networks (3G) provided by the major carriers. In February 2022, this network will no longer be supported, and many carriers are already preventing new 3G devices on their networks. To ensure current functionality we will need to equip our vehicles to connect to the fourth and fifth generation networks (LTE and 5G respectively). We also know that connected worker solutions are growing across our workforce. This has driven numerous data connections inside and outside of the vehicle. Telematics technology has advanced to allow the consolidation of connections. Leading telematics providers have embraced a platform perspective. They have acknowledged that original equipment manufacturers are controlling some of the data flow from the vehicle or like Caterpillar, it is built into the equipment computer. This migration to a platform is beneficial for Avista as we advance solutions for the fully digitized worker of the coming decade.

Our customers are being influenced by Amazon and Google and other leading customer experience companies. They expect timely and relevant communications from everyone they do business with. The utility is not exempt from these expectations. Next generation telematics is an enabling technology for a fully integrated and digital field work process. The connected vehicle and worker, integrated with the mobile work management system and customer experience platform, will provide greater visibility about where our field personnel are and when they will arrive. The information will be available to employees and to customers, improving our ability to provide firm estimates of when we will be there to

complete the work. The platform will also improve emergency response times through improved routing and real time location services. Finally, providing more crew location information to our dispatchers will allow us to dispatch the crew closest to the work saving valuable time and resources.

Telematics is part of a comprehensive drive and vehicle safety program, such that telematics integrations will allow us to see items as specific as seat belt usage, the engagement of reverse or how close we backed up to an object and it has the ability to provide driver safety metrics. Also, telematics provides a platform for compliance. We will continue to measure inspections completions and other safety related functions. We will use this platform to capture, track and communicate this information to users and leaders.

Q. Did Avista consider alternatives to this approach?

A. Yes, it did. Avista evaluated upgrading its existing system, however preserving current functionality with technology that does not meet current or future business needs across the enterprise is not an option. The Company also evaluated partially installing new telematics, but in this case many safety and operational benefits would not be met.

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

A. Telematics 2025 will help Avista to better serve customers by providing a platform that enables notifications and awareness of crew arrival times. In addition, this project will help with the overall safety of Avista's employees, which is a benefit to customers.

Q. When was the Telematics 2025 project completed?

A. This project is scheduled to be completed in 2023.

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

A. Yes. As a result of this project there are direct O&M savings of $42,555 in 2023 related to maintenance savings. Please see Company witness Ms. Andrews Exh. EMA-5 for further detail.

Q. What capital additions for this project did Avista make in 2021?

A. The total capital investment was $959,250 on a system basis in 2021.

Project #39 – Washington Advanced Metering Infrastructure Project

Please see Section VI below regarding an update of the Company's Washington Advanced Metering Infrastructure (AMI) project. The total capital investment associated with AMI was nearly $151.8 million, with $2,430,992 million in 2021. The Commission approved the Company's AMI project in the last rate case.[24]

Project #40 – Gas Cathodic Protection Program

Please see the 2022 through 2024 transfers-to-plant section below for a description of this project. The total capital investment was $94,812 on a system basis in 2021.

Project #41 – Gas Cheney HP Reinforcement

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

[24] Final Order 08 / 05 in Dockets UE-200900, UG-200901, and UE-200894 (Consolidated).

day. Design day conditions are determined using a 99% statistical probability method for historical low temperatures of each given service area. 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.[25] With the reinforcement project Avista will be able to adequately serve our customer loads under extreme weather conditions, and will have the capacity to serve known and likely future increases in customer natural gas loads.

Q. Is the Cheney High Pressure Reinforcement project completed?

A. Yes. The Cheney High Pressure Reinforcement project was completed in May 2021.

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

A. No, there are no direct offsets as this is a required investment.

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

A. The total capital investment in 2021 was $2,841,302. This is a Washington-specific capital expenditure.

Project #42 – Gas Facility Replacement Program (GFRP) Aldyl A Pipe Replacement

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

[25] 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.

A. The Aldyl A Pipe Replacement Program[26] 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.[27]

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.[28] 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

[26] 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.

[27] For a detailed description of this program, please see Avista's Priority Aldyl A Protocol Report, provided as Exh. HLR-3.

[28] As described in Exh. HLR-3, 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.

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-4.

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 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. Are there any direct offsetting benefits associated with this program?

A. No, there are no direct offsets as this is a required investment.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $22,555,185 on a system basis in 2021.

Project #43 – Gas HP Pipeline Remediation Program

Q. Please describe the Company's Gas HP Pipeline Remediation Program.

A. Current industry Pipeline Safety code requires pipeline operators to have pressure test documentation and material specifications for pipelines distributing natural gas. Avista's history, very similar to that of other utilities, involves pipeline construction during times when the pipeline safety code was not in effect or taken to be that important. Also, Avista has acquired properties from other companies and therefore had no control over their testing practices and record keeping prior to the acquisition. The Pipeline and Hazardous Materials Safety Administration (PHMSA) requires pipeline operators to have "traceable, verifiable, and complete" Maximum Allowable Operating Pressure (MAOP) records for its transmission facilities. The Gas HP Pipeline Remediation Project is intended to resolve Avista's deficiencies with MAOP records.

Q. Did Avista consider alternatives to this approach?

A. Yes, it did. First, Avista contemplated deferring this project or taking no action. However, if segments of transmission pipeline without traceable, verifiable, and complete MAOP records were not mitigated, Avista would be non-compliant with Federal Pipeline Safety Codes. In this case penalties and fines could potentially be imposed for not completing the work. Second, Avista considered a reduced funding options where it would replace fewer pipeline segments with insufficient MAOP records. The outcome of this option would have resulted in pipeline segments being out of compliance with Federal regulations and a greater amount of backlog to work though.

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

A. This program benefits Avista's customers by ensuring all pipeline segments are in compliance with Federal safety regulations.

Q. When will the Gas HP Remediation Program be completed? If not completed, when is the targeted completion date?

A. The Gas HP Remediation Program is scheduled to be completed in 2022.

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

A. No, there are no direct offsets as this is a required investment.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $706,188 on a system basis in 2021.

Project #44 – Gas Isolated Steel Replacement Program

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

A. Related to our cathodic protection systems, 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.[29]

[29] Docket PG-100049.

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 it 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, all isolated steel sections have been identified and replaced in Avista's Washington service territory as of November 2021.

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.[30] Avista, of course, seeks to deliver each project in the most cost-effective manner possible in the service of our customers.

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

A. No, there are no direct offsets as this is a required investment.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $1,041,477 on a system basis in 2021.

[30] Order 01 in Docket PG-100049.

Project #45 – Gas Non-Revenue Program

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.[31] 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.

Q. Did the Company consider alternatives to this program?

A. 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,[32] repair of damage from a dig-in of our facilities, investments needed to 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

[31] 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.

[32] 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.

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?

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. Are there any direct offsetting benefits associated with this program?

A. No, there are not. However, the Company has included a 2% efficiency adjustment for this program in 2022, 2023 and 2024. That adjustment for this program is included in Ms. Andrews' adjustments 4.03 and 5.09.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $9,583,316 on a system basis in 2021.

Project #46 – Gas Overbuilt Pipe Replacement Program

Q. Please describe the Gas Overbuilt Pipe Replacement Program.

A. As a natural gas distribution system operator, Avista is required to operate within the minimum safety standards outlined in Part 192 of the Department of Transportation's Code of Federal Regulations (CFR). The CFR defines the laws that all

operators must legally comply with in the operation of natural gas distribution systems. There are sections of existing gas piping within Avista's gas distribution system that have experienced encroachment or have been overbuilt by customer constructed improvements (i.e., living structures, sheds, decks, etc.) and were not designed to be installed under these conditions. In these circumstances, it is difficult to operate and maintain these facilities without increased risk or a reduction in overall safety. The Overbuilt Pipe Replacement Program is a programmatic approach to identify and replace sections of existing pipes that can no longer be operated safely as they have experienced encroachment or have been overbuilt by customer constructed improvements. Please see the Business Case for more information on this program.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $204,526 on a system basis in 2021.

Project #47 – Gas PMC Program

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[33] 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,

[33] 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. 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. Are there any direct offsetting benefits associated with this program?

A. Yes. As a result of this program there are direct O&M savings of $38,000 in 2022 and 2023, related to meters continuing to measure accurately. Please see Company witness Ms. Andrews Exh. EMA-5 for further detail.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $2,507,677 on a system basis in 2021.

Project #48 – Gas Regulator Station Replacement Program

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. 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. Are there any direct offsetting benefits associated with this program?

A. Yes. As a result of this program there are direct O&M savings of $1,700 in 2022 and $3,500 in 2023 and 2024, related to not needing to upgrade infrastructure. Please see Company witness Ms. Andrews Exh. EMA-5 for further detail.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $1,161,440 on a system basis in 2021.

<u>Project #49 – 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.

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.

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. 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. Are there any direct offsetting benefits associated with this program?

A. Yes. As a result of this program there are direct O&M savings of $2,400 in 2022, 2023 and 2024, related to elimination the Company's Cold Weather Action Plan, which requires actively monitoring the natural gas system and establishing a plan should an outage occur. Please see Company witness Ms. Andrews Exh. EMA-5 for further detail.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $883,675 on a system basis in 2021.

Project #50 – Gas Replacement Street and Highway Program

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 project must be completed. Because these 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 program 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. Are there any direct offsetting benefits associated with this program?

A. No, there are no direct offsets as this is a required investment.

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

A. The total capital investment was $3,345,236 on a system basis in 2021.

Project #51 – Gas Telemetry Program

Please see the 2022 through 2024 transfers to plant section below for a description of this project. The total capital investment was $219,574 on a system basis in 2021.

Project #52 – New Revenue – Growth (Gas)

Q. Please describe the Company's New Revenue – Growth business case.

A. The New Revenue – Growth (Gas) business case is the same as the Project #14 described above. Please see the details of that project.

Q. What capital additions for this program did Avista make in 2021?

A. The total capital investment was $34,169,147 on a system basis in 2021.

V. 2022-2024 CAPITAL PROJECTS

Q. Are you supporting 2022 through 2024 capital additions as a part of your testimony in this case?

A. Yes. Table No. 4 below provides a listing of the provisional 2022 through 2024 capital additions by major category in my areas of responsibility. The table also provides where the Business Case supporting the project can be found in Exh. HLR-2.

Table No. 4 – Pro Forma Capital Additions for 2022-2024 (System)

WA GRC Plant Group	Project #	Business Case	2022 TTP (System)	2023 TTP (System)	2024 TTP (System)	Exh. HLR-2 Page #
Large Distinct Projects	53	Central 24 HR Operations Facility	$ -	$ -	$ 4,598,545	370
	54	Jackson Prairie Joint Project	2,378,977	2,369,965	2,420,989	270
	55	N Lewiston Autotransformer - Failed Plant	5,554,506	-	-	381
	56	Oil Storage Improvements	-	1,762,827	-	389
	57	Strategic Initiatives	2,297,174	-	-	275
	58	Telematics 2025	438,347	808,250	-	297
	59	Transmission Major Rebuild - Asset Condition	5,680,751	12,000,000	11,000,000	197
Total Large Distinct Projects			**$ 16,349,755**	**$ 16,941,042**	**$ 18,019,534**	
Mandatory & Compliance	60	Colstrip Transmission	$ 325,001	$ 370,002	$ 639,999	10
	61	Elec Relocation and Replacement Program	5,399,944	5,399,984	5,399,987	88
	62	Gas Above Grade Pipe Remediation Program	682,000	714,000	709,000	400
	63	Gas Cathodic Protection Program	715,000	715,000	715,000	315
	64	Gas Facility Replacement Program (GFRP) Aldyl A Pipe Replacement	25,687,251	27,687,251	24,444,163	323
	65	Gas HP Pipeline Remediation Program	599,998	-	-	337
	66	Gas Isolated Steel Replacement Program	862,754	850,008	850,008	340
	67	Gas PMC Program	3,500,004	3,799,993	1,500,000	352
	68	Gas Replacement Street and Highway Program	3,495,650	3,500,000	3,500,000	363
	69	Gas Transient Voltage Mitigation Program	875,000	965,000	250,000	407
	70	Joint Use	2,749,992	2,950,008	2,950,008	102
	71	Protection System Upgrade for PRC-002	80,000	11,879,164	-	135
	72	Saddle Mountain 230/115kV Station (New) Integration Project Phase 2	19,962,533	-	-	144
	73	Spokane Valley Transmission Reinforcement Project	2,000,000	-	-	161
	74	Transmission Construction - Compliance	2,111,069	1,550,000	-	188
	75	Transmission NERC Low-Risk Priority Lines Mitigation	2,554,255	2,499,984	-	204
	76	Tribal Permits & Settlements	259,776	249,996	249,996	413
	77	Westside 230/115kV Station Brownfield Rebuild Project	-	-	8,924,475	210
	78	WSDOT Control Zone Mitigation	749,998	1,200,005	1,399,999	229
Total Mandatory & Compliance			**$ 72,610,225**	**$ 64,330,395**	**$ 51,532,635**	

Programs	79	Capital Tools & Stores	$ 2,500,008	$ 2,500,008	$ 2,500,008	241
	80	Distribution Grid Modernization	2,165,010	2,239,852	794,988	18
	81	Distribution Minor Rebuild	11,499,986	11,499,986	10,999,980	30
	82	Distribution System Enhancements	6,930,025	7,069,995	7,000,013	39
	83	Downtown Network - Asset Condition	1,600,000	1,999,999	2,400,000	61
	84	Downtown Network - Performance & Capacity	1,100,000	1,150,000	1,200,000	77
	85	Electric Storm	6,023,406	6,000,012	6,000,012	95
	86	Fleet Services Capital Plan	7,904,640	5,608,016	5,423,704	252
	87	Gas Airway Heights HP Reinforcement	9,634,502	-	-	420
	88	Gas Non-Revenue Program	9,295,000	8,500,010	8,500,010	343
	89	Gas Pullman HP Reinforcement Project	-	-	2,400,004	425
	90	Gas Regulator Station Replacement Program	985,579	1,000,002	799,999	355
	91	Gas Reinforcement Program	1,299,997	1,299,999	1,300,002	359
	92	Gas Telemetry Program	303,256	210,004	210,004	366
	93	LED Change-Out Program	299,964	299,964	299,964	109
	94	New Revenue - Growth	73,429,598	67,348,997	67,371,967	124
	95	SCADA - SOO and BuCC	1,026,882	736,223	699,972	151
	96	Structures and Improvements/Furniture	3,639,388	3,349,639	3,349,609	281
	97	Substation - New Distribution Station Capacity Program	5,765,300	11,076,449	12,701,549	168
	98	Substation - Station Rebuilds Program	12,998,326	58,412,186	41,493,604	175
	99	Transmission - Minor Rebuild	3,400,375	3,343,418	3,343,419	182
	100	Transmission - Performance & Capacity	-	-	8,500,000	429
	101	Wood Pole Management	12,999,996	12,999,996	12,999,996	217
Total Programs			**$ 174,801,238**	**$ 206,644,755**	**$ 200,288,804**	
Exh. HLR-1T Total 2022-2024 Provisional Capital Additions			**$ 263,761,218**	**$ 287,916,192**	**$ 269,840,973**	

Q. These projects, taken as a whole, are all characterized as "provisional" in nature. What does that mean?

A. As explained by Ms. Andrews, projects for 2022 through 2024 have been characterized as provisional. First, as provisional, the Company has segregated the capital investments into category designations discussed in the Commission's "Used and Useful Policy Statement," dated January 31, 2020 in Docket U-190531, including capital investments grouped as "Large and Distinct", "Programmatic", "Short-Lived" and "Mandatory and Compliance," for ease of review and audit. Second, "provisional" designates these capital additions as subject to final "review and refund" in a future period. Ms. Andrews discusses the Company's proposal for Provisional Reporting for capital additions, by year, for 2022 through 2024.

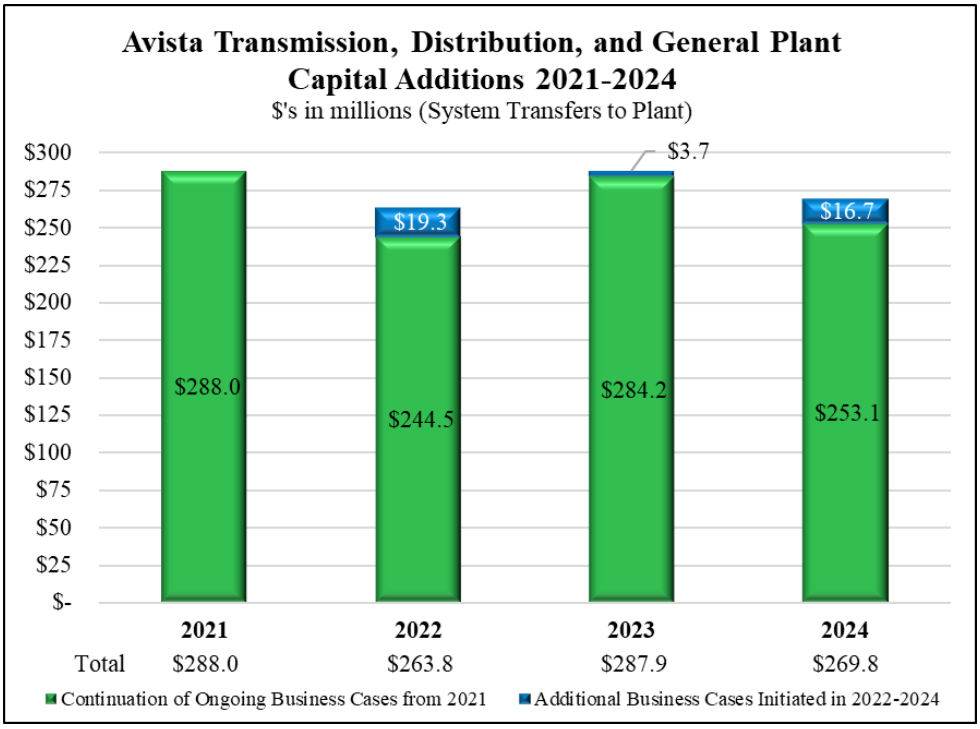
Q. It appears that project or program #s 54, 57-61, 64-68, 70-75, 77-86, 88, 90-91, 94-99, and 101 listed above in Table No. 4 are duplicative of projects and

programs previously listed in Table No. 3 for the 2021 test period, and which are 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 2021, and which will continue to occur in 2022 through 2024.

Illustration No. 1 below portrays the Distribution, Transmission, and General Plant Capital Investments from 2021 through 2024 included in this case, distinguishing between what are ongoing projects from 2021, and new projects introduced in 2022-2024.

Illustration No. 1: Distribution/Transmission/General Plant Investment



As you can see from this illustration, most of the capital investment relates to ongoing, multi-year efforts that continue over time, at various funding levels. The rationale and justification for these ongoing projects, however, does not change over time, only the funding levels. New incremental projects are discussed below.

Q. Is all of the support for these projects and programs in 2022 through 2024 the same as you described previously for 2021?

A. Yes, the support is the same, and therefore I will not repeat that same information for these programs in this section of testimony. For those projects not included in Table No. 3 above, I will provide a brief description of each project below.

Q. When will the projects or programs receive their final review after they are put into service?

A. As discussed by Company witness Ms. Andrews, provisional capital for 2022 through 2024 will be again reviewed annually beginning in 2023, to assure that they are in service and used & useful and the final expenditures reviewed.

Project #53 – Central 24-Hr Operations Facility ($4,598,545 in 2024)

Avista's 24-hour operations consist of System Operations, SCADA, Distribution Operations, Gas Control, 24-hour Customer Service, Network Operations, Security Operations, and Generation Control Center. Within the departments there are roles that are standard business hours, and roles that require 24-hour shift staffing.

There are several current problems that are meant to be addressed by this Business Case. The primary business problem is space limitations within each group. Currently, all 24-hour operations spaces are too small for their existing business needs. Compounding the issue is that several of the departments have plans for growth within the next five years. The 24-hour shift jobs all have unique and specific tasks that require "operator style" workstations that are larger and more complex than the Avista standard 6x9 office cubicles (usually the operator style workstations require 80-100 sq. ft. of space). The support staff, even though

6x9 cubicles are sufficient, are expected to increase in count as well over the next five years. Due to this, their current allocated square footages, for all departments, cannot be reconfigured or remodeled to accommodate these future needs.

The second business problem being addressed is technology limitations and upgrades. For example, the existing System Operations' distribution wall map is in the same location as it was in the original construction of the GOB in the mid-1950's. Several upgrades over time have occurred, but it is still lacking visual displays, readouts, or standard technology features. Another example is that a single operator desk commonly requires a minimum of twelve (possibly more) dedicated network drops to run all the systems required. It is becoming increasingly difficult and expensive to retrofit technology in all of these spaces to add desks or enhance systems. Many of the current operator desks also require anywhere from eight to twelve computer monitors as well, which limit operator views to their shared department displays, and require additional network drop increases. At this time, there are no known direct offsetting benefits associated with this project.

Project #55 – N Lewiston Autotransformer – Failed Plant ($5,554,506 in 2022)

The North Lewiston 230/115 kV Transformer No. 1 (McGraw-Edison Serial Number C-06237-5-2) located in Lewiston, ID failed in February 2021. A replacement transformer has been ordered and will be installed in 2022. The North Lewiston 230/115kV Transformer 1 provides the transformation capacity needed for the system to meet performance requirements as defined by System Planning and System Operations.

The North Lewiston 230/115 kV Transformer No. 1 was 40 years old when it failed. Following the failure, an investigation was performed with testing and an internal inspection.

The investigation concluded the transformer had a failed winding. The decision to replace the 230/115 kV Transformer No. 1 was made based on an evaluation of alternatives which also included rebuilding the existing transformer and utilizing a spare transformer within Avista's system. This project has direct O&M savings of $266,000 in 2022 resulting from the cost of renting equipment, diesel fuel, and labor. Please see Company witness Ms. Andrews Exh. EMA-5 for further detail.

Project #56 – Oil Storage Improvements ($1,762,827 in 2023)

In the 1990s, an underground vault was built at Avista's Mission Campus to house several tanks intended to hold new oil, used but viable oil, and scrap oil, all related to substation maintenance and electrical distribution operations. This system connected the Electric Shop and the scrap oil recovery areas through a series of manifolds and pumps to segregate the new and used oils. Several incidents, including one holiday weekend overfill incident in 2010, brought to light the disadvantage of using an underground system, as problems could go undetected. This risk was further highlighted during a 2019 pipeline spill and subsequent investigation/excavation and cleanup.

In 2014, two new above-ground scrap oil storage tanks were built as part of the Waste & Asset Recovery Building. This allowed for the two scrap tanks in the underground vault to be decommissioned, but the remaining four underground tanks, and associated underground piping, remain in use. This system still poses risks of undetected leaks. In addition, access to the underground system becomes more problematic as we redevelop the campus. The vault space itself limits use of the area. Finally, the vault has been subject to intrusion by water, and maintenance costs to ensure the vault provides proper containment are increasing. The

recommended solution will build two additional new oil tanks by the Waste & Asset Recovery Building, with several smaller "day" containers for the Electric Shop, allowing the underground vault to be permanently removed, eliminating environmental risk. There are no direct offsetting benefits associated with this project.

Project #62 – Gas Above Grade Pipe Remediation Program ($682,000 in 2022, $714,000 in 2023, and $709,000 in 2024)

Within Avista's natural gas distribution system there are sections of gas pipelines that are located above grade. Some of these sites are no longer compliant with current safety codes and design practices, or the support structures are failing. Like other areas of the gas and electric system, over the years construction practices have changed due to stricter standards and improved construction methods. As a result, these above grade crossings have a variety of construction techniques and supporting structures with varying degrees of risk associated with each of them. This Business Case is intended to remediate the above grade natural gas crossings.

There are direct O&M savings of $400 in 2024. Please see Company witness Ms. Andrews Exh. EMA-5 for further detail.

Project #63 –Gas Cathodic Protection Program ($715,000 in 2022, 2023, and 2024)

The purpose of the cathodic protection program is to provide an additional level of protection[34] 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

[34] 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.

pipe that creates a corrosion free zone at the surface of the pipe. Besides a prudent business practice, Avista is mandated by the U.S. Department of Transportation 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. There are no direct offsetting benefits associated with this project.

Project #69 – Gas Transient Voltage Mitigation Program ($875,000 in 2022, $965,000 in 2023, and $250,000 in 2024)

Avista has experienced safety issues including fires at Regulator Stations due to transient voltage spikes from faults on the adjacent electric transmission system. The purpose of this program will be to identify high pressure gas piping systems that are at risk of these conditions, identify systems that have high steady state voltage, and to then install mitigation measures to reduce both these scenarios on the pipelines. These efforts will protect the pipeline and equipment from being damaged and reduce the voltages exposure to below compliance limits keeping our employees safe. Common approaches to this include the installation of gradient mats, solid state decouplers (SSD), and copper counterpoise conductor.

In 2022 the area of focus will be the Rathdrum Prairie area of Idaho. This program will then address at other high-pressure pipeline systems and install measures as required. There are no direct offsetting benefits associated with this project.

Project #76 – Tribal Permits & Settlements ($259,776 in 2022 and $249,996 in 2023 and 2024)

Avista has a federal regulatory requirement to obtain and maintain permits and/or leases for its facilities located on Tribal reservations, specifically for the land held in trust by

the Federal government on behalf of either Tribes or individual Tribal members (Trust Lands). Permits for Avista's transmission and distribution facilities were originally obtained from the Bureau of Indian Affairs (BIA) pursuant to 25 CFR 169. Business leases required for substations are obtained from the BIA pursuant to 25 CFR 162. The Federal regulations do not allow for perpetual easements. Rather, permits and/or leases were issued for up to 50 years. The majority of Avista's permits on Tribal reservations have reached the 50-year expiration and must be renewed. In addition, new facilities placed on Trust Lands need new permits. In order to acquire a renewed or new permit, a time-consuming federal regulatory process needs to be followed and permission needs to be obtained from the Tribe and/or the majority of individual Tribal landowners who have an interest in the relevant parcel of land. The permit is issued by the BIA after they determine all steps of the process have been achieved. Most of the land on Reservations is divided into parcels of 80 acres or less. Therefore, a transmission or distribution line usually crosses numerous parcels of land – each of which requires its own permit.

Avista has facilities on the following Tribal reservations: Spokane, Colville, Nez Perce, Coeur d'Alene, Flathead, and Kalispel Trust Lands in Airway Heights. Avista maintains approximately 82 miles of transmission lines on Trust Lands. Over the last decade Avista has renewed permits on the Coeur d'Alene, Flathead, and Nez Perce reservations. The current focus is renewals on the Spokane and Colville Reservations. At the time this Business Case was approved in 2020, approximately 300 new permits were needed on the Spokane Reservation and 130 on the Colville Reservation. There are no direct offsetting benefits associated with this project.

Project #87 – Gas Airway Heights HP Reinforcement ($9,634,502 in 2023)

Based on load studies performed by Avista's Gas Planning department, as well as pressure monitoring during cold weather events, there is insufficient pressure at the West end of the Fairchild-Spokane high-pressure main. Sufficient capacity is defined as pressures at or above 15 psig in the distribution system and 90 psig on the high-pressure system on a system design day.

This gas main supplies gas to Airway Heights, the Spokane Airport, and the Southwest area of Spokane. Without a reinforcement project, Avista will not have sufficient capacity to serve the firm customers in these areas on a system design day scenario. In addition, Airway Heights is the fastest growing area of Spokane County. Should a gas outage occur during a cold weather event due to insufficient capacity on the distribution system, there would be a risk associated with the health and safety of Avista's customers and the communities in these areas, as well as potential damage to buildings due to lack of a heating source.

This project has direct O&M savings of $2,312 in 2022. Please see Company witness Ms. Andrews Exh. EMA-5 for further detail.

Project #89 – Gas Pullman HP Reinforcement Project ($2,400,004 in 2024)

Based on load studies performed by Avista's Gas Planning department, the load growth in the Pullman area has exceeded the capacity of the existing Pullman Gate Station (supply point into Avista's system). This impacts Avista's obligation to serve Firm customers on a design day. The contracted capacity at the Pullman Gate Station is 786 thousand cubic feet per hour (Mcfh) and the projected Firm load on a design day is 916 Mcfh. This difference puts approximately 1,300 customers at risk of losing gas service.

The high-pressure main from the Moscow Gate Station is approximately three miles from the high-pressure main that is fed from the Pullman Gate Station. By installing gas main between the two systems, the loads would be balanced, and station capacities better utilized. This solution will add reliability by creating a looped system (bringing a second source to an area) and will provide additional growth opportunities along the way for individuals currently without gas service. There are no direct offsetting benefits associated with this project.

Project #92 – Gas Telemetry Program ($303,256 in 2022 and $210,004 in 2023 and 2024)

Avista's commitment to safety and reliability dictates that we monitor our gas system to ensure safe operation and accurate metering and accounting for gas purchased and sold. This includes compliance with Federal and State Gas Control Room Management Rules. Gas Telemetry provides data that is used pro-actively for early detection of abnormal operating conditions before they become major problems which may affect safety or gas delivery. Additionally, telemetry is used to remotely monitor system pressures, volumes, and flows from areas of special interest such as gate stations which supply gas to Avista's system, gas transportation customers, regulator stations which reduce and regulate pressure, selected large industrial customers, end of line pressures, and per CFR 192.741 requirements, pipeline systems with more than one source of gas. There are no direct offsetting benefits associated with this project.

Project #93 – LED Change-Out Program ($299,964 in 2022, 2023, and 2024)

Any local or state government which has jurisdiction over streets and highways has an obligation to the general public they serve to provide acceptable illumination levels on their

streets, sidewalks, and/or highways intended for driver and pedestrian safety. Because they have an overhead distribution system in most urban areas, Avista provides a convenient streetlight service in almost every local and state government entity it serves, and manages the streetlights to provide street, sidewalk, and/or highway illumination. Initially, the LED Change-Out Program was on an accelerated five-year schedule (2015 – 2019) to change-out all existing Avista owned streetlights to LED. In the spring of 2018, Avista decided to adapt the replacement strategy to replace lights as they burned out. There are no direct offsetting benefits associated with this project.

Project #100 – Transmission – Performance & Capacity ($8,500,000 in 2024)

The Transmission Performance & Capacity Business Case covers the transmission new construction work necessary to either support the addition of new substations due to load growth in a particular area or to reinforce existing substations with new transmission for increased performance. This program is managed through the joint efforts of Avista's Transmission Design & Engineering, Substations, Operations, and Transmission Planning groups, from which the requests for upgrades or additions are initiated. The projects within this program are typically requested by System Planning or System Operations. Work under this Business Case is expected to begin in 2024 with the Carlin Bay 115 kV transmission integration. There are no direct offsetting benefits associated with this project.

Q. Does this conclude the provisional 2022 through 2024 capital additions included in the Company's case for your areas of responsibility?

A. Yes, it does.

VI. ADVANCED METERING INFRASTRUCTURE UPDATE

Q. Can you please provide a summary of what the Commission concluded in the Company's last rate case regarding AMI?

A. Yes. In the Commission's final order in the Company's last rate case, it found that the "record evidence demonstrates that Avista prudently incurred costs related to AMI capital additions and regulatory amortization and should thus be allowed to recover the costs of its investment and a return on its investment in AMI."[35] Further on the topic of AMI, the Commission ordered the following:

> To demonstrate the benefits of AMI, Avista should be required (1) to develop and report further analyses of the use cases: TOU rates, real-time energy use feedback for customers, behavior-based programs, data disaggregation, grid-interactive efficient buildings, CVR or volt/VAR optimization; (2) to craft and report plans for achieving benefits through each of these use cases, and (3) to develop and propose AMI performance-based regulation metrics and measurements that the Commission might apply, and specifically such metrics and measurements relevant for each of these use cases.[36]

Q. What is Avista doing to ensure it gets the most value and benefits of the AMI system for its customers?

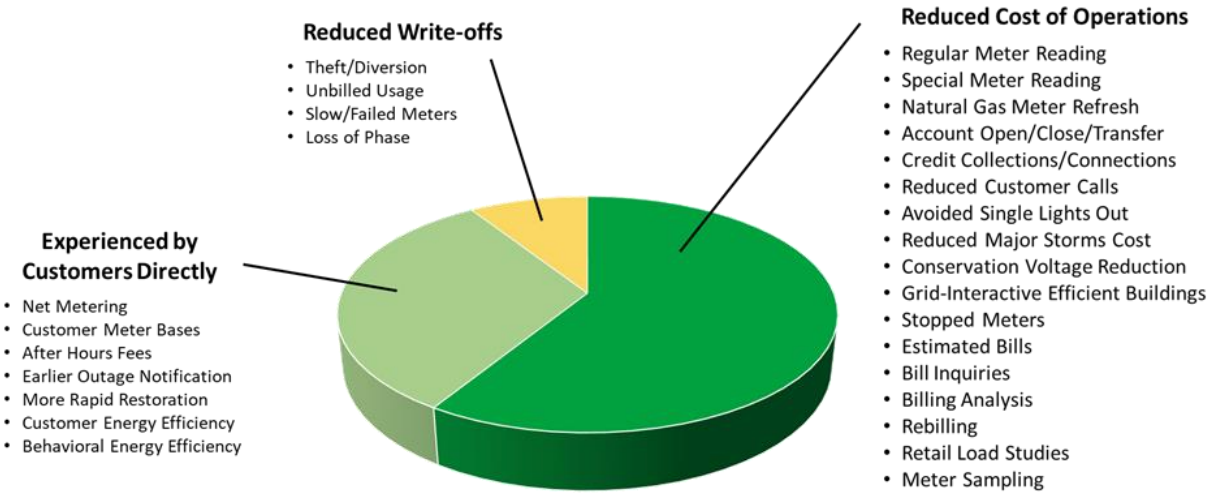
A. Beyond the Company's commitment to continue its demonstrated achievement of ever-expanding customer benefits, Avista believes the new electricity frontier at the "Grid Edge" will drive an increasing need for customer services enabled by AMI. We understand the long-term success of our business depends on identifying and meeting our customers' evolving energy services needs at the Grid Edge. We're continuing to embrace this change, incorporating these new realities into a more customer-centric and technology-enabled

[35] Final Order 08 / 05 in Dockets UE-200900, UG-200901, and UE-200894 *(Consolidated)*, ¶376.
[36] Id. ¶383.

business model. Advanced metering is fundamental to addressing these challenges and opportunities.

In 2021, Avista reported out on the 28 areas of financial benefit the Company had already operationalized for the benefit of our customers, as shown in the Figure No. 2 below. This portfolio represented an increase of five new areas of financial benefits not included in our 2016 AMI business case, and a doubling of financial net benefits.

Figure No. 2 – 28 Areas of Financial Benefit



Among these new areas of financial benefit were several energy conservation use cases reported by The American Council for an Energy-Efficient Economy, in their noted article "Leveraging Advanced Metering Infrastructure to Save Energy."[37] Avista expanded plans from its initial business case for AMI and has either implemented or is actively developing conservation initiatives for every use case described in the report, which we have listed below:

1. **Targeting Strategies** – Avista is using data from AMI and load disaggregation to provide targeted energy use feedback in support of Behavioral Energy Efficiency and other programs.

[37] Leveraging Advanced Metering Infrastructure to Save Energy. Rachel Gold, et al. The American Council for an Energy-Efficient Economy (ACEEE). January 2020.

2. **Behavioral Feedback Programs** – Avista has launched its new "Behavioral Energy Efficiency" program using AMI data and load disaggregation to provide customers personalized and actionable insights on their energy use.

3. **Measurement and Verification** – Avista is using AMI data to improve these programs by reducing the lag time between implementation of measures and verification.

4. **Pay for Performance** – The capability of these energy efficiency strategies is being improved through the availability and use of AMI data.

5. **Grid Interactive Efficient Buildings** – AMI data is being integrated with other information and control systems to improve building energy efficiency and reduce customer costs for infrastructure investments.

We also noted the energy efficiency programs included in our original business case in 2016, listed below, which are a continuing part of our AMI portfolio:

6. **Energy Use Feedback** – providing customers access to their energy-use data in combination with tips, incentives, and analytical tools to help them reduce energy costs.

7. **Conservation Voltage Reduction** – using AMI voltage data from customers' service points to improve the energy savings captured by lowering voltage on the feeder.

Finally, we identified one energy efficiency use case, listed below, which was not yet ripe for implementation, but for which we provided initial estimates of the financial value and rough implementation milestones:

8. **Retail Energy Pricing Strategies** – such as the 'time-varying' rate structures, which Avista is in flight to evaluate, pilot and to operationalize in the near future. Indeed, parties in our last general rate case were adamant that we implement such a program in the very near future (and this is only made possible by a functioning AMI system).

Since the Company's 2016 AMI business case we have continued to focus on features that are not easy to quantify financially, but that allow Avista to improve the quality of service we provide our customers. From six areas of customer benefit identified in 2016 Avista has added another 19 AMI benefits for a total of 25 non-quantified benefits that are currently operational in the following categories:

- Improving Customer Convenience, Experience and Satisfaction
- Improving Customer and Utility Employee Safety
- Operational Awareness of System Health
- Design Services and Engineering

The Company expects to continue expanding these types of customer benefits going forward and has identified several additional areas, including:

- Support of Asset Management Planning
- Support of Electric System Planning
- Electric Vehicle Planning and Integration
- Broader Energy Pricing Strategies

Avista has demonstrated its commitment to expanding the many ways the AMI system and data are being used to drive greater value for our customers, both in ways that are easier to value financially and in the many ways that have clearly demonstrated value but which are not presently part of any cost-benefit analysis. The Company expects to add additional benefits for our customers going forward as we see opportunities to take greater advantage of what will become a maturing technology.

Q. Please provide the Company's plans for addressing each of the use cases identified in the Commission's order from the last case as noted above.

A. The following is how we plan to address each of the identified use cases:

Time-of-Use Rates

In the Company's last rate case, as part of the Partial Multiparty Settlement approved by the Commission, [38] the Company agreed to design and implement pricing pilots consisting of Time-of-Use (TOU) rates for electric residential and general service schedules. In particular, Avista agreed to the following:

i. Design "opt-in" time-of-use pilots and peak-time rebate pilots for electric residential and general service customers.
ii. Develop monitoring and reporting (M+R) plans for each pricing pilot.
iii. Include language in the M+R plans to measure and evaluate the impact to low-income and vulnerable populations.
iv. Include equity measures in the M+R plans for the residential and general service pilots. (PacifiCorp M+R plans provide one example.)
v. Provide draft pilots and M+R plans to interested parties by May 31, 2022.
vi. Convene stakeholder meetings to gather feedback from parties on the draft pilots, or a detailed status update as to the expected timing of draft pilots, and M+R plans. Feedback will include the following:
    a) General pilot design and design of M+R plans;
    b) Whether the pilots could provide benefits given Avista's unique system and customer mix; and,
    c) Incorporation of equity into the design and implementation of the pilots as it concerns low-income, vulnerable, and marginalized populations.
vii. File final proposals and M+R plans within six months of convening a stakeholder meeting to gather input and solicit feedback on the Company's draft proposals, but no later than April 1, 2023, with an effective date of June 1, 2023.

As the Company designs and implements the TOU pilots it will also be developing monitoring and reporting plans for the pilots. The Company anticipates that it will provide regular reports as part of those plans to the Commission. The pilots will enable the Company to understand the benefits that TOU rates provide to its customers and will inform future long-term TOU rate designs.

[38] Final Order 08 / 05 in Dockets UE-200900, UG-200901, and UE-200894 *(Consolidated).*

Real-Time Energy Use Feedback for Customers

Building off the AMI deployment and the customer benefits that it provides, Avista has focused on delivering customer facing energy management tools that empower the customer to better understand their energy usage and reduce their monthly bills. The use-cases associated with AMI enable near-real time energy use feedback and are aimed squarely at helping our customers avoid bill-related surprises. A summary of what has been delivered as well as what's planned for delivery in the future are briefly described below.

Delivered:

- Bill-to-Date: The 'bill-to-date' feature on myavista.com enables customers to understand energy use and charges accrued to-date at any point in their current billing cycle. This is updated every day for the customer and provides the customer with near real-time feedback on their current bill cycle.

- Bill Projection: The 'Bill Projection' feature on myavista.com informs customers of their projected/estimated billing amount at the end of the current billing cycle. The customer is empowered to make changes and reduce their usage prior to their bill period end.

- Bill Trending: The 'Bill Trending' feature on myavista.com compares the current billing period, both 'bill to date' and 'bill projection,' with that of the same period in the prior year. This enables the customer to better understand if their current charges are in line with historical norms.

- Budget Alerts: The 'Budget Alerts' feature is a proactive notification that allows customers to set a budget threshold and receive a push alert if their projected/estimated bill is expected to exceed the customer defined threshold. The push alerts are sent via text or email per the customer preference.

- Detailed Energy Usage Charts: Available on myavista.com and updated once per day, the energy usage charts provide near real time feedback to the customer on energy use, in intervals from 1 month, down to 5-minutes. Additionally, the usage charts provide a comparison of current and prior periods chosen by the customer.

- Download Energy Data: Customers can download their usage data, 5-minute interval for electric and 1-hour interval for natural gas, for their own use in comma-separated value (CSV) format, which is viewable in all common spreadsheet software applications.

Planned:

- Usage Spike Notifications: Avista is in the preliminary stages of evaluating functionality that will provide pre-emptive (prior to bill generation) alerts to customers if there's a significant increase in usage that doesn't align with historical norms. The goal of this feature is to make a customer aware of abnormal usage that might be of concern prior to their bill being generated and allow the customer time to change behavior or address faulty appliances before they see a significant negative impact on their bill.

Behavioral-Based Programs

Based on our learnings from the Home Energy Reports[39] and Sense Energy Monitor pilot,[40] Avista is working to provide additional customer facing value from our Washington AMI deployment through behavioral-based energy efficiency programs. Avista will be using AMI-based load disaggregation data to identify the appliance loads that are present within a home and share that information with our customers. Our approach for our behavioral-based programs will be to target a specific load within a residence and educate customers on what their energy use and cost is related to that load.

Avista is set to launch our first targeted load behavioral program in early 2022, looking at Always On[41] consumption. Load Disaggregation has nearly 100% accuracy in calculating Always On loads which for an Avista customer averages 23% of their electric bill. Avista will apply a randomized controlled trial that will test different approaches to reducing Always On

[39] Avista offered a Home Energy Report through the third-party implementer, Opower, that provided customers with a monthly report on their home's energy use along with the comparison to similar homes in the area. Avista ran this program from 2014 through 2017. This program achieved over 34,500 MWh of energy savings.

[40] During 2018, Avista piloted a load disaggregation approach that provided real-time energy use information to individual customers through their smartphone. This pilot utilized the Sense product (sense.com) which is a small electronic device that attaches to a customer's electrical panel. The device interprets the energy use variations on each circuit to make an assumption of what products within the customer's home are using energy. The app then sends messaging to the customer on what devices are being used throughout the home, benchmarks those and provides feedback on energy consumption.

[41] Always On load is the baseline amount of energy consumption at a home when all known energy-using devices are not in use.

consumption and test for different behavioral responses to personalized consumption information and monetary incentives, as well as general information and tips sharing how significant improvements can be achieved with low or no-cost solutions.

The Always On program, like other energy efficiency offerings will be evaluated by an independent third-party evaluator as part of the Company's typical Evaluation, Measurement, and Verification (EM&V) cycle. The EM&V process is based on a two-year period that coincides with the Company's energy efficiency program's biennium. For the upcoming 2022-2023 period, the Always On program will be evaluated at the end of 2022 and again at the end of the 2023 program year. Avista will include the evaluation plan for the Always On program as part of its 2022-2023 Evaluation Work Plan when its developed in the first quarter of 2022.

Data or Load Disaggregation

One of the key problems that many of our customers face is that are not aware of how they use energy and what usage categories are impacting their bill the most. Our goal in delivering AMI enabled Load Disaggregation analysis is to empower our customers to better understand how they use energy and subsequently, what steps they can take to reduce their usage.

- Phase 1 of our load disaggregation deployment delivered the following:
    - CARE Platform – A tool that supports call center staff by providing high bill analysis features that include personalized energy use analysis, including load disaggregation. This enables a more meaningful conversation with the customer about what is using energy within their home and what steps they can take to reduce usage.

- Analytics Workbench – A tool that support Avista's Energy Efficiency and System Planning teams by allowing them to better understand appliance usage according to key demographics. Including by not limited to substation and feeder, zip code, rate schedule, estimated home size and appliance ownership.

- Phase 2 of our load disaggregation deployment will deliver

  - Personalized customer facing tools displaying estimated energy usage breakdowns by appliance on myavista.com

The following illustration is an example screen shot of AMI enabled Load disaggregation for a residential customer.

Illustration No. 2 – AMI-Enabled Load Disaggregation Visual

Grid-Interactive Efficient Buildings

AMI data provides a critical foundation for Avista as it explores the opportunities for load shaping to reduce peak demand (demand response solutions) and time of use solutions. The AMI consumption data provides a level of fidelity to support cluster analysis which is leverage customer load profiles and groups them into specific clusters, by rate class. The cluster profiles reveal customers which are energy or demand intensive at any point in time for a specific circuit. By comparing the clusters load shape to the supplying circuit informs targeted solutions including energy efficiency, load control/peak reduction and distributed energy supply to address specific system needs. The solutions focus on energy efficiency, load shaping for peak reduction, and distributed energy supply. The solutions can be precisely targeted to address customer load shapes that do, or can, contribute negatively or positively to the grid challenge. AMI data helps provide these solutions that provide results, maximizing the value for customer and utility. Grid interaction can reduce the need for traditional demand response "events" or fixed "time-of-use" rates by operating only when requested to do so by the grid. Additionally, the risk of high bill scenarios for customers may be reduced

Grid-interactive efficient building solutions are being explored, modeled, designed, simulated and tested within the Avista Innovation Lab in the form of two projects funded by the Washington State Department of Commerce Clean Energy Fund and one funded by the Building Technology Office of the U.S. Department of Energy (DOE). These projects are intended to inform the specific customer programs and tariffs that form the basis for our demand response, time of use and active energy management programs. The DOE project, titled "Connected Communities", is deploying targeted grid interactive, customer/grid

solutions across residential and small and large commercial customers in a large-scale demonstration in Spokane, WA.

In conclusion, AMI data allows for precise targeting of load shapes and efficiency, design of flexible solution packages, and the incorporation of grid interaction that will be required to meet Corporate and CETA carbon free objectives.

Conservation Voltage Reduction (CVR) or volt/VAR Optimization

The installation of AMI enabled Avista to learn more about the voltages at feeders throughout the Company's Washington service territory. With better insight on voltages available Avista separated its system into groups. The first group are those that have voltages that are close to the allowable limits, where we will monitor to see if there is any opportunity to adjust. The other group are those that provided immediate opportunities to make system changes. For the immediate opportunity group, we achieved CVR or volt var optimization by:

1. Adjusted regulators and transformers as a onetime adjustment to lower voltages in the system.
2. Applied regulator settings that allow for dynamic changes based on loading and other data points.
3. Reconfigured the system by installing more transformers and shortening service wire length to allow parts of the system to have the first two solutions applied.

At this time, Avista is still working on the immediate mitigation opportunities. We have completed CVR or volt var optimization on seven feeders. Of the remaining feeders, CVR is not possible at 21 feeders, 83 have yet to be analyzed, 36 are awaiting operational engineer review, and 65 are under engineering review. Once the immediate opportunity group is completed, we will shift focus to the first group that we are monitoring to see if there is any

opportunity for adjustments. A minimum of one year's worth of data is required to understand what adjustments may be possible.

Q. Has the Company developed and/or proposed any AMI performance-based regulation metrics and measurements in this case or for the use cases described above?

A. Yes. Company witness Mr. Ehrbar (Exh. PDE-1T) describes the performance-based metrics the Company has proposed in this case, including a metric related to AMI.

Q. Does this conclude your direct testimony?

A. Yes.