BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-20_____

DOCKET NO. UG-20_____

EXH. HLR-2

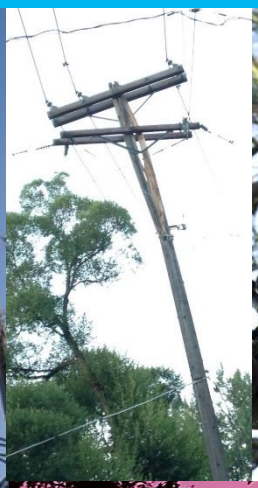
HEATHER L. ROSENTRATER

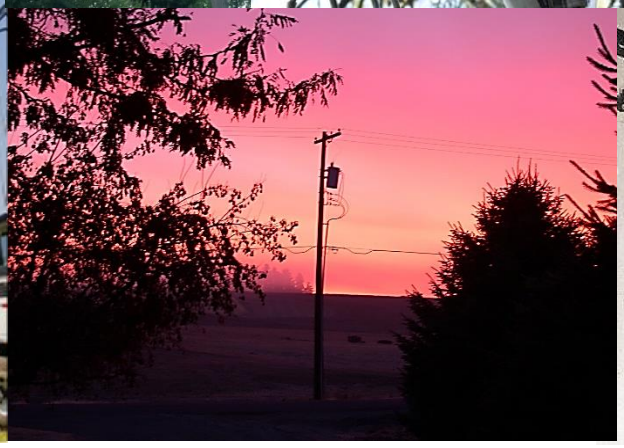
REPRESENTING AVISTA CORPORATION

Avista Utilities

Distribution Infrastructure Plan

2020





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Executive Summary

Avista's Distribution business unit is experiencing the need for increasing investments as they work to replace, upgrade, and repair aging infrastructure across the service territory. This never-ceasing work has been increased significantly by the addition of providing new technologies to benefit customers such as energy efficient LED (light emitting diode) street lighting and advanced metering infrastructure. All of this has the aim of providing a level of service reliability that is satisfactory to customers at a price that is fair and reasonable. Some individual infrastructure programs are responsive to investment demands that are beyond the control of the Company, such as the customer requests for service or mandatory and compliance projects. Other programs respond to needs that are necessary and immediate such as failed equipment or storm damage. Others are put in place to benefit reliability and customer service such as adding devices to reduce the number of customers impacted by an outage.

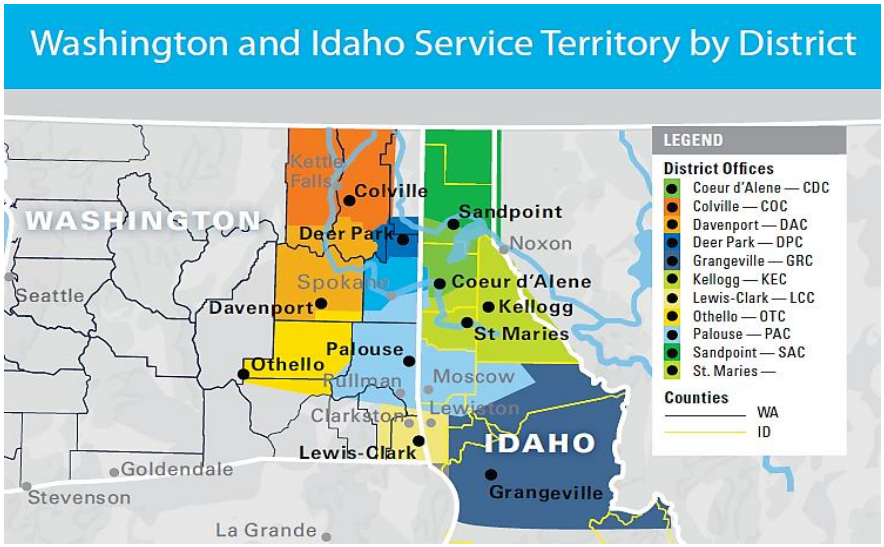
Over time these investments change, programs come to an end, or new programs are introduced based on need. This team stays on top of issues and technology applications that can bring value to customer service as well benefitting system stability, reliability, and resiliency. An example of this foresight is the revamp of the Segment Reconductor and Feeder Tie business case, which is being enhanced to provide additional value as described in the text below. Another example is the implementation of a padmount transformer inspection program which was recommended by the Company's insurance carrier. The Company leveraged this opportunity to create a robust program that emphasizes public safety and quality of service. Another creative and beneficial program being developed by the team this year is the Wildfire Resiliency Program. Recognizing the increasing risk of utility-caused fires, Avista is developing a comprehensive program to safeguard customers and Company assets. This program includes enhanced vegetation management practices, transmission and distribution system digital data collection to monitor both vegetation and line/structure/equipment condition, development of appropriate power line corridors, public outreach, and partnering with associated state and local agencies to address fire issues. Further details on these new programs are included later in this report.

Avista's Distribution team is continually challenged by a variety of circumstances, from budget constraints to aging equipment to changing technologies and customer expectations. Through the programs and tactics described in this report, they successfully navigate these changes and provide a proven level of service in keeping the lights on. In fact, based on the Company's outage data, the average Avista customer had service 99.999741% of the time in 2019.[1]

[1] The total outage duration for 2019, spread across every individual customer, was 2.27 hours per customer (SAIDI = 2.27) / 8760 hours in a year = 0.000259 or 99.999741%

Introduction

Avista owns and operates nearly 19,000 miles of electric distribution lines serving nearly 380,000 retail electric customers in Washington and Northern Idaho, providing energy to over 1.6 million people.[2] This infrastructure, designed, built, operated and maintained by the Company, includes both overhead wire (conductor), underground electric lines (cable), secondary transformers, service lines (feeders), and customers' electric meters. This system is interconnected with 176 related substations.[3] Avista must continually make new investments in this system in order to continue providing customers with safe and reliable electric service, at a reasonable cost, and with service levels that meet customer's expectations for quality and satisfaction.



In order to meet all of these requirements, the Company develops specific capital programs. These programs are developed through planning and engineering studies and analyses, as well as scheduled upgrades or replacements identified in the operations districts and within engineering groups. These projects undergo internal review by multiple stakeholders who help ensure all system needs and alternatives have been identified and addressed. If proposed projects are initially approved, they go through a formal review process referred to as the Engineering Roundtable, a diverse group of engineering leaders[4] who track project requests, prioritize them, and establish committed construction package dates and required in-service dates for projects. Once a project has passed this phase of evaluation, it moves to the Capital Planning Group.

The Capital Planning Group (CPG) is a group of Avista Directors that represent capital intensive areas of the Company. Committee members are directors from a variety of business units to add a depth of perspective, though their role is to consider capital decisions from the perspective of overall Company operations and strategic goals as well as spending guidance set by senior management and approved by the Finance Committee of the Board of Directors. They develop a final budget that represents a reasonable balance among competing needs required to maintain the performance of Avista's systems, as well as prudent management of the overall enterprise in the best interest of customers.

[2] Avista Quick Facts, https://investor.avistacorp.com/static-files/a7342b27-72cc-44d4-b9a7-b62903e999df

[3] This includes 13 generation (step-up) substations, 22 transmission and switching substations, 31 transmission with distribution substations, 110 distribution only substations, and two substations that are owned by other utilities but contain Avista equipment.

[4] Eleven representatives are included in this group from: Transmission and Distribution Planning, Transmission, Distribution, and Substation Design, System Protection, System Operations, Asset Management, Communications and Generation Engineering, and Transmission Services.

This report provides a summary overview of the Company's recent historic, current, and planned infrastructure investments in the electric distribution system for the period 2020-2024. For the purposes of this report, discussions of "infrastructure investments" are confined to the physical energy delivery facilities used to link electric substations with each customer's meter. Operations and maintenance (O&M) programs such as Vegetation Management are also included because they play a key role in helping provide safe and reliable service.

Collectively, the investments described in this report allow Avista to effectively respond to customer requests for new service or service enhancements, meet regulatory and other mandatory obligations, replace equipment that is damaged or fails, support electric operations, address system performance and capacity issues, and replace infrastructure at the end of its useful life based on asset condition. All of this is subject to what is known about the business today, including a range of precision in future cost estimates, applicable laws, regulatory requirements, and the capabilities of current technologies.

Avista has experienced relatively flat customer growth over the past few years, about 1% per year, as shown in Figure 1. Between 2005 and 2019, the Company has responded to an average of over 4,600 requests for a new residential electric service connection each year. For the current five-year planning period, Avista expects customer growth to continue at about 1% per year based on regional economic and population forecasts. On the commercial side, the Company connected an average of over 1,000 new commercial customers per year between 2005 and 2019, peaking in 2007 with nearly 1600 new commercial customers. Today we are expecting growth rates more in the range of 700 new commercial connects per year.

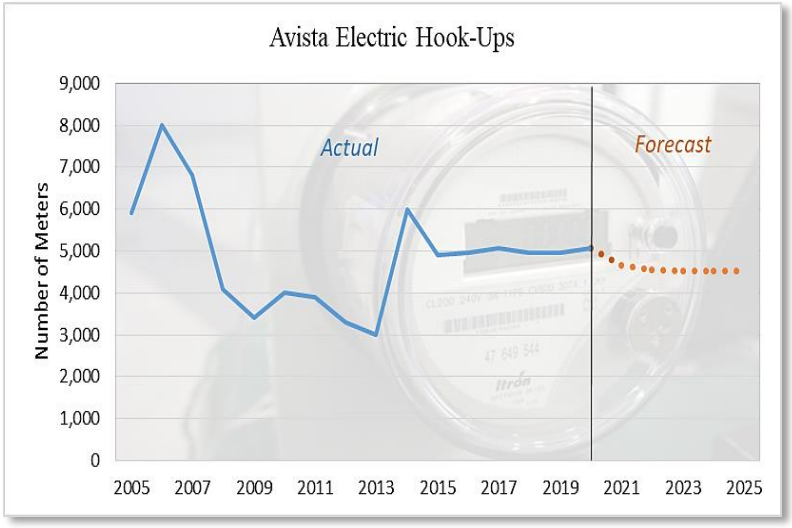


Figure 1. Electric Customer Growth

The programs put forward by the Distribution business unit encompass a broad spectrum of the utility's business needs including such things as infrastructure needed for new subdivisions or businesses, mandatory work required when a county or a city relocate a roadway, dealing with failed equipment or storm damage, replacing aging critical assets such as transformers and underground cable, inspecting and replacing wood poles, installing new and customer-beneficial technologies such as energy efficient lights and automated meters, and more. The current programs and their associated expenditures are described in the following pages.

Avista's Distribution Capital Investments

Classification of Infrastructure Need by Investment Drivers

As a way to create more transparency around the particular needs being addressed with each capital investment as well as simplify the organization and understanding of overall project plans, the Company has developed "investment drivers" to classify its capital projects. These drivers are broad categories that attempt to sort projects by the need they are addressing, as described below:

1. ***Customer Requested*** – This category is set aside primarily for connecting new customers or enhancing their service as requested. Typical projects include installing or extending electric service to new subdivisions or commercial developments.

2. ***Mandatory & Compliance*** – This category of capital spending includes investments driven by compliance with laws, regulations, and contract requirements. Avista operates in a complex regulatory and business framework and must adhere to national and state laws, state and federal agency rules and regulations, and county and municipal ordinances. Compliance with these rules, as well as contracts and settlement agreements, represent obligations that are generally external and largely outside of the Company's control. The types of electric distribution investments that fall into this driver include the obligation to relocate facilities to accommodate state, county and municipal infrastructure projects (frequently transportation related) and compliance with environmental regulations.

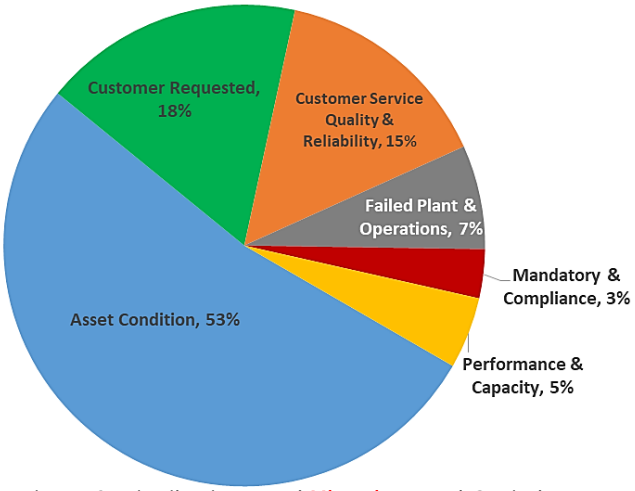


*Figure 2. Distribution Total **Historic** Actual Capital Spending by Investment Driver: 2010-2019*

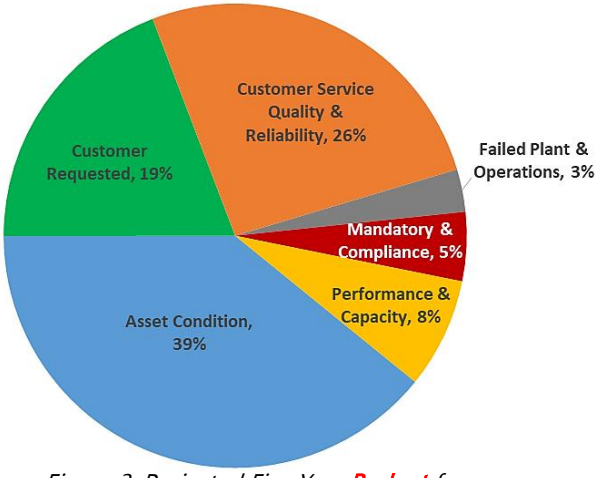


*Figure 3. Projected Five Year **Budget** for Distribution Capital Expenditures by Investment Driver: 2020-2024*

3. ***Failed Plant & Operations*** – This category of spending replaces failed equipment, typically related to storm damage or other unexpected failures of capital assets. While large-scale outages such as windstorms or ice storms are vividly remembered by both Avista employees and its customers, the Company responds to thousands of outage events each year that occur almost daily. Cars hit poles, ice overloads and breaks lines,

trees fall or grow into circuits, animals get into the equipment and create faults, and more. Company crews manage issues like this on a daily basis to keep the power flowing to customers.

4. ***Asset Condition*** – This driver is focused on replacing assets at the end of their useful service life. Avista uses an analytical approach to asset replacement which includes asset criticality, inspections, and optimization of life cycle costs. For example, the Company is actively replacing failure-prone underground cable and transformers containing PCBs, and has a robust inspection program for wood poles to identify issues before failure. Some non-critical assets are allowed to fail to maximize their lifespans and minimize costs. Some are so critical to providing service that they cannot be allowed to fail and must be replaced as they reach end-of-life.

5. ***Customer Service Quality & Reliability*** – This category of spending helps Avista meet customers' expectations for quality of service and electric system reliability. Programs in this category include the Washington and Idaho advanced meter infrastructure (AMI) programs to enhance customer and Company access to information. Another program in this category is the replacement of old style streetlights with energy-efficient LED lights to save money for customers.

6. ***Performance & Capacity*** – This driver helps ensure that the Company's assets satisfy business needs and meet performance and safety standards. Avista develops and maintains multiple standards related to operating their electric facilities safely as well as following the National Electric Safety Code, which impacts nearly all of the Company's programs and projects. This category also includes investments designed to improve the performance of the distribution system, such as reconductoring feeders to remedy overloading problems and balancing the load on feeders across the system to maximize asset performance and lifespan.

Currently Planned Capital Investments in Distribution 2020 – 2024

For the next five-year planning horizon, Avista expects to spend nearly $463 million in capital dollars for the Distribution side of the business, allocated across the six investment drivers described above. These programs are summarized below.

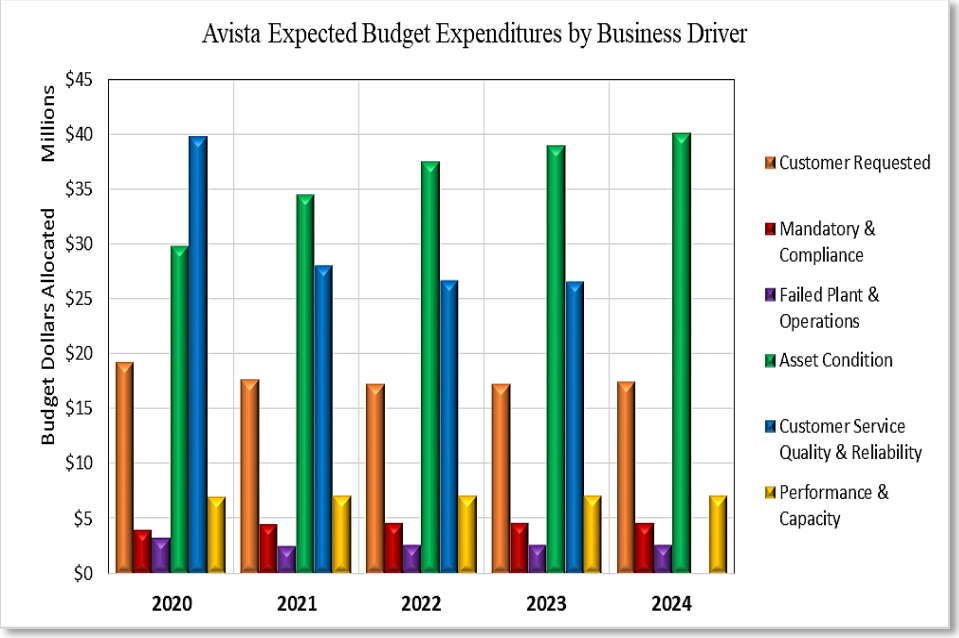


Figure 4. Capital Budget by Investment Driver

Project	Business Driver	2020	2021	2022	2023	2024	5-Year Total	5-Year Average
New Revenue - Growth	Customer Requested	$19,272,425	$17,662,805	$17,264,366	$17,218,924	$17,523,576	$88,942,096	$17,788,419
Elec Relocation and Replacement Program	Mandatory & Compliance	$2,470,000	$3,000,000	$3,100,000	$3,100,000	$3,100,000	$14,770,000	$2,954,000
Joint Use	Mandatory & Compliance	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$7,500,000	$1,500,000
Electric Storm	Failed Plant & Operations	$3,000,000	$2,340,000	$2,432,000	$2,450,000	$2,450,000	$12,672,000	$2,534,400
Meter Minor Blanket	Failed Plant & Operations	$200,000	$200,000	$200,000	$200,000	$200,000	$1,000,000	$200,000
Distribution Grid Modernization	Asset Condition	$8,000,000	$10,000,000	$12,000,000	$12,200,000	$13,000,000	$55,200,000	$11,040,000
Distribution Minor Rebuild	Asset Condition	$8,768,500	$10,000,000	$10,000,000	$10,000,000	$10,000,000	$48,768,500	$9,753,700
Distribution Transformer Change Out Program	Asset Condition	$541,000	$600,000	$0	$0	$0	$1,141,000	$228,200
Downtown Network - Asset Condition	Asset Condition	$1,539,000	$1,600,000	$2,800,000	$2,800,000	$2,800,000	$11,539,000	$2,307,800
LED Change-Out Program	Asset Condition	$500,000	$585,000	$500,000	$500,000	$500,000	$2,585,000	$517,000
Primary URD Cable Replacement	Asset Condition	$0	$750,000	$750,000	$750,000	$750,000	$3,000,000	$600,000
Wood Pole Management	Asset Condition	$10,500,000	$11,000,000	$11,500,000	$12,730,000	$13,111,900	$58,841,900	$11,768,380
Idaho Advanced Metering Infrastructure	Customer Service Quality & Reliability	$2,500,000	$26,700,000	$26,700,000	$26,600,000	$0	$82,500,000	$16,500,000
Washington Advanced Metering Infrastructure	Customer Service Quality & Reliability	$37,292,537	$1,357,245	$0	$0	$0	$38,649,782	$7,729,956
Segment Reconductor and Feeder Tie	Performance & Capacity	$6,000,000	$6,000,000	$6,000,000	$6,000,000	$6,000,000	$30,000,000	$6,000,000
Downtown Network - Performance & Capacity	Performance & Capacity	$1,012,500	$1,125,000	$1,125,000	$1,125,000	$1,125,000	$5,512,500	$1,102,500
	Total	*$103,095,962*	*$94,420,050*	*$95,871,366*	*$97,173,924*	*$72,060,476*	*$462,621,778*	*$92,524,356*

Table 1. Distribution Capital Budget by Program 2020 - 2024

Business Driver	2020	2021	2022	2023	2024
Customer Requested	$19,272,425	$17,662,805	$17,264,366	$17,218,924	$17,523,576
Mandatory & Compliance	$3,970,000	$4,500,000	$4,600,000	$4,600,000	$4,600,000
Failed Plant & Operations	$3,200,000	$2,540,000	$2,632,000	$2,650,000	$2,650,000
Asset Condition	$29,848,500	$34,535,000	$37,550,000	$38,980,000	$40,161,900
Customer Service Quality & Reliability	$39,792,537	$28,057,245	$26,700,000	$26,600,000	$0
Performance & Capacity	$7,012,500	$7,125,000	$7,125,000	$7,125,000	$7,125,000
Grand Total	***$103,095,962***	***$94,420,050***	***$95,871,366***	***$97,173,924***	***$72,060,476***

Table 2. Planned Capital Budget by Driver 2020 - 2024

Customer Requested

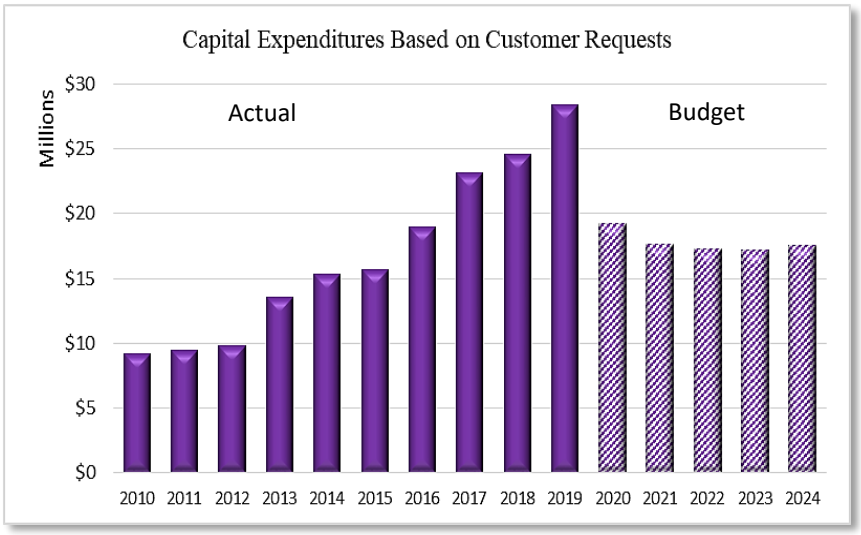


Figure 5. Capital Actual & Budget Expenditures Based on Customer Requests / Growth

Growth often refers to new service connections, as in growth in the number of customers, however, these investments are primarily 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 customer requests for service is a requirement of providing utility service. Direct costs associated with extending feeder and service wires and cables to provide requested service to a customer are subject to cost sharing between that customer and Avista. As the number of customers on a feeder grows over time however, the Company may have to replace or upgrade the capacity of trunk line feeders or laterals. The investments needed for this work, which are included under the operations capital, are paid for by all customers because they are required to provide reliable service to everyone on Avista's system.

Customer Requested	2020	2021	2022	2023	2024	5-Year Total	5-Year Average
New Revenue - Growth	$19,272,425	$17,662,805	$17,264,366	$17,218,924	$17,523,576	$88,942,096	$17,788,419

Table 3. Customer Requested / Growth Capital Budget

Mandatory & Compliance

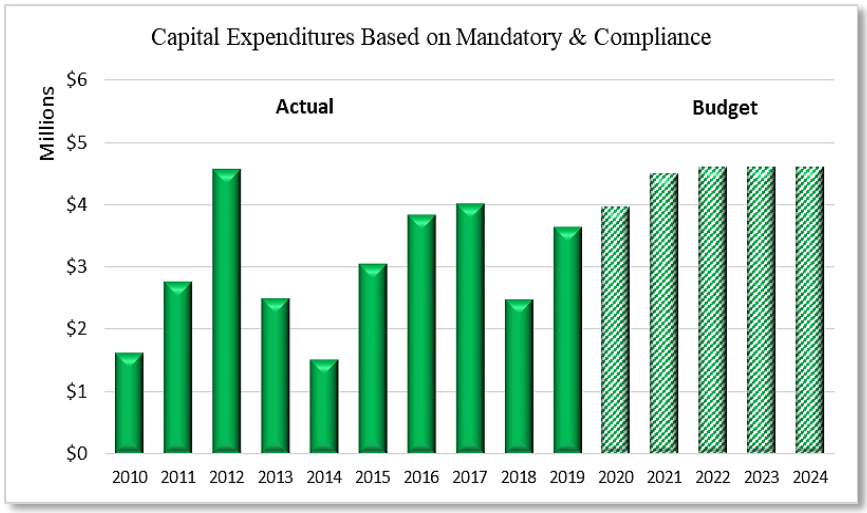


Figure 6. Capital Actual & Budget Expenditures Based on Mandatory & Compliance

Avista operates within a complex regulatory and business framework and is required to comply with laws and regulations from the local to the federal level. The types of investments that fall into this driver include compliance with safety and environmental regulations and contractual work such as joint projects with other utilities and relocating facilities as requested by state, county, or local

jurisdictions. Distribution has two primary programs in this category: the Relocation and Replacement Program and a Joint Use Program. Both will be described below.

Mandatory & Compliance	2020	2021	2022	2023	2024	5-Year Total	5-Year Average
Elec Relocation and Replacement Program	$2,470,000	$3,000,000	$3,100,000	$3,100,000	$3,100,000	$14,770,000	$2,954,000
Joint Use	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$7,500,000	$1,500,000
Total	**$3,970,000**	**$4,500,000**	**$4,600,000**	**$4,600,000**	**$4,600,000**	**$22,270,000**	**$4,454,000**

Table 4. Mandatory & Compliance Capital Budget

Electric Relocation & Replacement Program

Avista is required to move its electric distribution infrastructure in response to municipalities, counties and state-level agency projects, often related to rebuilding or realigning roads, streets and highways.

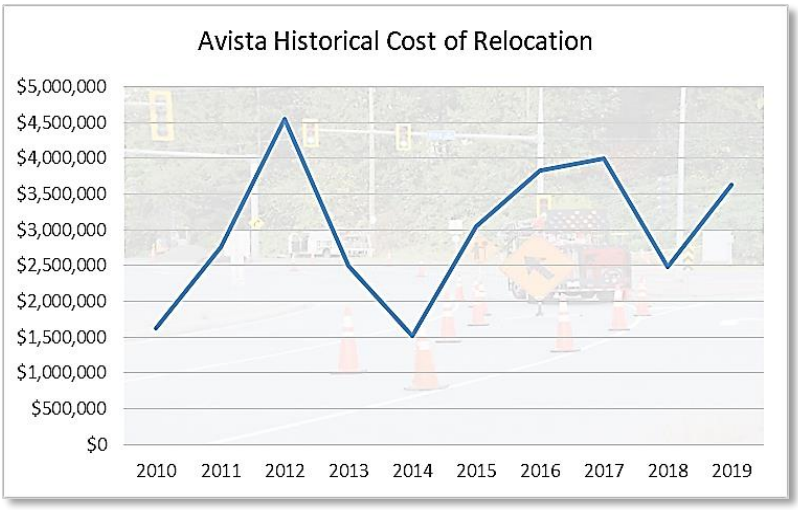


Figure 7. Facilities Relocation Capital Expenditures

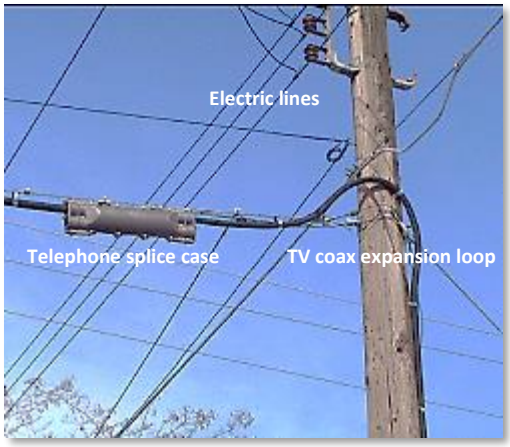
This work must be performed at the Company's expense, and while Avista may have some latitude to negotiate the timing of the construction, it has no choice with regard to removing and relocating its infrastructure as requested and paying all of the associated costs. Avista works with the Departments of Transportation in both Washington and Idaho to renew and maintain crossing and encroachment permits, which often requires the Company to move its distribution infrastructure at its own expense. This work may require the Company to realign or modify existing infrastructure to comply with state clear zone, conductor clearance, and other regulations regarding the location of poles, guy wires, pad mounted equipment, and overhead conductors. These costs are increasing over time as jurisdictions in which Avista must perform the work are becoming more and more demanding in their requirements, including calling for additional work as a condition of construction such as extensive landscaping or hiring additional flaggers, all of which increase costs. As shown in Figure 7, these costs are also highly variable from year to year and difficult to predict.

Joint Use Program

Joint use occurs when one or more utilities share space on the same pole. Avista currently has over 74 joint use and licensee partners in Idaho and Washington, including those related to telephone, telecommunications, cable television, etc. On average, Avista has at least two joint use cables on about

half of its utility poles across the service territory (about 150,000 structures). Sharing poles is completely routine and makes sense for all parties, as there is a logical maximum to the number of utility poles that can exist in an area, and having multiple wires from several independent sources can create safety and maintenance hazards. The joint use concept creates a more organized system for managing the diverse needs for poles. Avista provides fair and non-discriminatory access to Company distribution poles and coordinates the work involved in attaching to Avista's structures to ensure that the attachments have the proper clearance, the poles have the required strength, and that there is adequate climbing space for line work.

Capital expenditures in this category may include putting in a taller pole or more robust pole anchors to handle the additional weight, rearranging poles, or installing additional grounding. If a joint use pole is failing, Avista may replace it by agreement with the associated party to ensure continued service for Avista customers. The Company is typically reimbursed for customer-requested work or requests for work made by other utilities but provides a capital budget for work on the Company's own shared structures.



Typical joint use situation

Failed Plant & Operations

This business driver is designed to fund replacement of assets that have failed and which must be replaced, including customer meters. A portion of Company assets fail each year as a result of damage from storms, fires, vehicle accidents, third-party dig-ins, etc. When this happens, the Company must quickly respond to replace the failed infrastructure in order to ensure the continuity of service to customers.

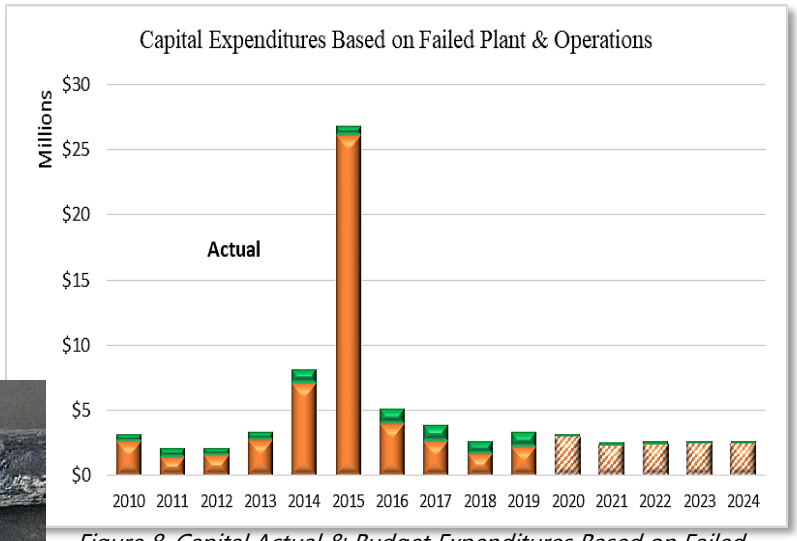


Figure 8. Capital Actual & Budget Expenditures Based on Failed Plant & Operations

Failed Plant & Operations	2020	2021	2022	2023	2024	5-Year Total	5-Year Average
Electric Storm	$3,000,000	$2,340,000	$2,432,000	$2,450,000	$2,450,000	$12,672,000	$2,534,400
Meter Minor Blanket	$200,000	$200,000	$200,000	$200,000	$200,000	$1,000,000	$200,000
Total	***$3,200,000***	***$2,540,000***	***$2,632,000***	***$2,650,000***	***$2,650,000***	***$13,672,000***	***$2,734,400***

Table 5. Failed Plant & Operations Capital Budget

Electric Storm Budget

During this budget cycle the Company expects to spend about $2.7 million on distribution storm repairs but, as can be imagined, this amount could vary substantially. As shown in Figure 9, one major event can have drastic impacts on Avista's capital budget. For example, in 2015 a historic 100 year wind storm event rolled through the area. Hurricane force winds caused the greatest level of

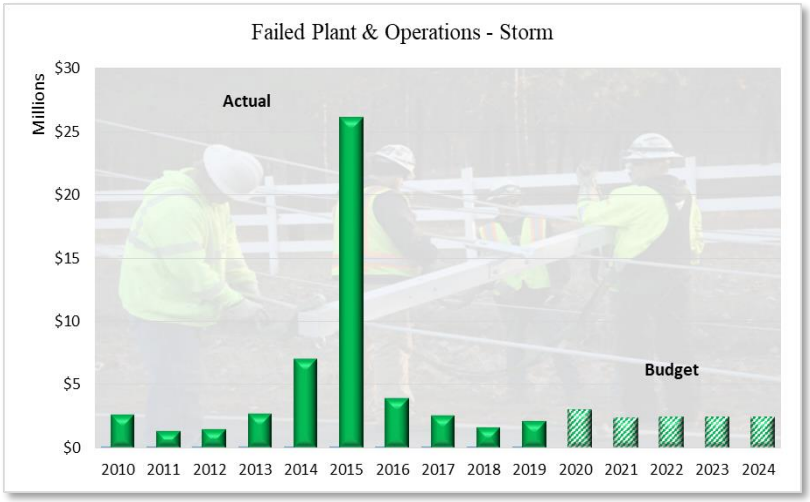


Figure 9. Capital Actual & Budget Expenditures: Storms

damage to Avista's system ever experienced. At the peak of this storm, more than 180,000 Avista customers were without power, some for up to two weeks. It took nearly a year for the Company to complete permanent repairs on its infrastructure. This event cost nearly $23 million in damage to equipment and facilities. Though this situation is not typical, such unexpected expenditures are always possible.

Meter Minor Blanket

Part of the routine work the Company experiences are meters and/or metering equipment failures. Meters are a critical component to supplying customers with electricity and to accurately measuring their energy consumption. When meters fail, immediate action must be taken to repair or replace the meter. A failed meter will not provide accurate consumption data, requiring the customer's usage to be estimated, which has been shown to cause customer dissatisfaction. In determining the best course of action in dealing with failed meters, the Company looked at three options (shown in the box above) and determined that the most cost effective course was to replace a failed meter with a new meter. The expenses associated with replacing meters are allocated to the Failed Plant & Operations budget category.

Failed Meter Options	Cost	Installation Labor	Total Cost
Refurbish Meter	$37.26	$35.76	$73.02
Return to Manufacturer		$35.76	
Removal Cost	$9.31		
Shipping Cost	$7.17		
Repair Cost	$30.00		$82.24
Install New Meter	$20.43	$35.76	$56.19

Asset Condition

Assets of every type will degrade with age, usage, and other factors, and must be replaced or substantially rebuilt at some point in order to ensure the reliable and acceptable continuation of service as well as the safety of the public and Avista employees. The replacement of assets based on condition is essentially the practice of removing them from service and replacing them at the end of their useful life. Across the utility industry and likewise for Avista, the replacement of assets based on condition constitutes a substantial portion of the infrastructure investments made by the Company each year.

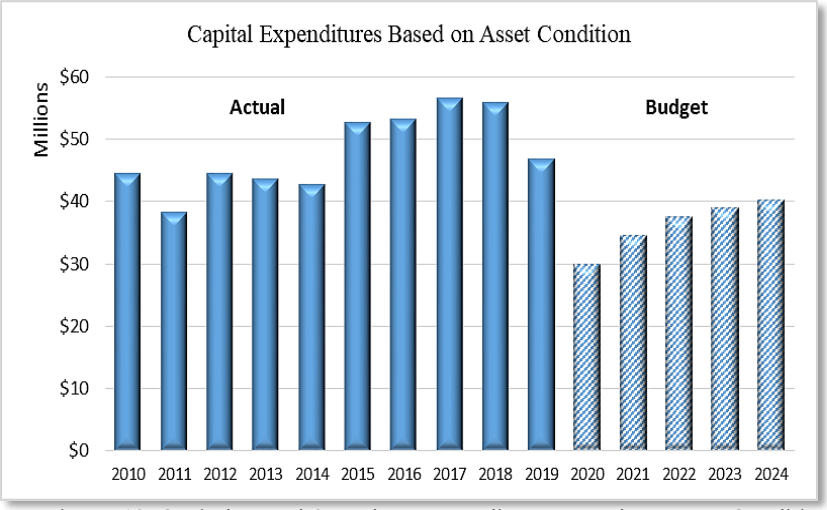


Figure 10. Capital Actual & Budget Expenditures Based on Asset Condition

At Avista, the goal is to manage assets in a manner that optimizes their overall value over the lifecycle of each particular asset class. Asset replacement strategies are "optimized" in the sense that a given approach may not achieve the overall lowest possible lifecycle cost, but rather the lowest cost that allows the Company to meet a variety of important performance objectives, such as public safety or the efficient use of employee crews. Because failure of critical assets is unacceptable, they must be replaced before the end of their useful life even if they are still providing reliable service. In other instances it may be reasonable to wait until an asset fails before it is replaced, a strategy known as "run to failure."

In Distribution, the Asset Condition business driver includes the Grid Modernization Program, replacing aging or PCB transformers, wood pole work, underground cable and street or area light replacement, upgrading the Downtown Network system, and performing system-wide repairs. Each of these programs is described in more detail below.

Asset Condition	*2020*	*2021*	*2022*	*2023*	*2024*	*5-Year Total*	*5-Year Average*
Distribution Grid Modernization	$8,000,000	$10,000,000	$12,000,000	$12,200,000	$13,000,000	$55,200,000	$11,040,000
Distribution Minor Rebuild	$8,768,500	$10,000,000	$10,000,000	$10,000,000	$10,000,000	$48,768,500	$9,753,700
Distribution Transformer Change Out Program	$541,000	$600,000	$0	$0	$0	$1,141,000	$228,200
Downtown Network - Asset Condition	$1,539,000	$1,600,000	$2,800,000	$2,800,000	$2,800,000	$11,539,000	$2,307,800
LED Change-Out Program	$500,000	$585,000	$500,000	$500,000	$500,000	$2,585,000	$517,000
Primary URD Cable Replacement	$0	$750,000	$750,000	$750,000	$750,000	$3,000,000	$600,000
Wood Pole Management	$10,500,000	$11,000,000	$11,500,000	$12,730,000	$13,111,900	$58,841,900	$11,768,380
Total	*$29,848,500*	*$34,535,000*	*$37,550,000*	*$38,980,000*	*$40,161,900*	*$181,075,400*	*$36,215,080*

Table 6. Asset Condition Capital Budget

Distribution Grid Modernization Program

Avista is systematically rebuilding and upgrading its electric distribution feeders and, where cost effective, is installing feeder automation with the objectives of improving service reliability, capturing energy efficiency savings, and improving operational ability, code compliance, and safety. These objectives are accomplished through the systematic replacement of aging equipment that has reached the end of its useful life, such as old poles, conductor, and transformers, with new and more energy efficient equipment that ensures the long-term operability of the system. The program also replaces pre-1981 distribution transformers with energy efficient units that meet current standards. This program also replaces underground cables that have uninsulated neutrals, which pose a system reliability risk.

This Program not only focuses on rebuilding feeders that are at or nearing the end of their useful life, but also evaluates the potential benefits of a range of physical reconfigurations of the feeders, taking into account opportunities to improve voltage settings, fuse coordination, line losses, transformer losses, power factors, and the potential benefits of feeder automation. By integrating all of this information, along with the full range of asset age and condition data, engineers recommend a comprehensive set of actions that will be applied to the feeders, identifying the investment requirements and the cumulative estimated benefits.

GRID MOD FOCUS AREAS

- Undersized or deteriorating conductor
- Failed poles, crossarms, fuses, insulators, guy wires, arrestors, cutouts, street lights
- Avian protection
- Accessibility issues
- Right-of-way concerns
- Potential for undergrounding
- Coordinating joint use facilities
- Clear Zone compliance
- Safety Issues

The Grid Modernization Program is the only program at the Company that provides a holistic approach to each feeder by addressing asset condition, transformer change outs, efficiency improvements, improved reliability, real estate encroachments, highway clear-zone issues, avian and animal protection, environmental permits, and other unique considerations that are specific to each feeder all at the same time. This increases crew efficiency and minimizes the number of outages and instances that crews will be deployed to affected communities. Rather than multiple outages that address each of these issues as they arise, one planned outage is taken to address all relevant issues.

Minor Rebuild Program

In addition to outage response, Avista's routine operations include reconfiguration and replacement of electric facilities under a variety of circumstances. This spending category allows the Company to address small unplanned asset failures or customer requested modifications to their electrical service that don't rise to the level of requiring their own capital program. Even though relatively small in cost, these are projects that impact the reliability of the distribution system, customer service, or the safety of the public or employees and must be addressed. Typically these projects are related to meeting

safety codes, inoperable equipment such as failed poles or broken crossarms, or unpredictable circumstances such as when vehicles hit poles.

At times equipment must be modified or upgraded to handle changing customer load conditions such as installing a system of fuses that protect the system from line faults, adding voltage regulators or reclosing equipment, or replacing a pole, cross arm, or transformer in poor condition. Avista monitors circuit loading and may shift load from one circuit to another during winter or summer peak usage, which often involves extending overhead or underground primary wires and cables. These types of capital infrastructure work do not qualify as a project or program on their own but must have funding, so are handled through the Minor Rebuild general budget account. Occasionally larger projects are constructed under this category if there is an urgent need and a short timeframe for implementation, but that is not typical.

Typical Minor Rebuild Work

- Repair broken or damaged equipment and fixtures whether or not they are related to a customer outage.
- Add an additional phase (overhead conductor or underground cable) to support customer loads requiring three-phase service.
- Replace undersized conductor or cables as needed to provide adequate service.
- Reconfigure overhead feeder conductors to meet the clearance requirements for joint use facilities, such as telecom fiber attached to Avista's poles.
- Load balancing among the phases on a feeder to reduce the return current on the neutral wire.
- Modifications or line additions to protect birds and animals.
- Repair or replacement of equipment damaged by vandalism or theft (e.g. copper wire theft.)
- Replacement of failed customer demand meters.

Transformer Change-Out Program

The Transformer Change-Out Program has three primary drivers. The program initially focused on replacing pre-1981 transformers to increase the reliability and availability of the electric system and ensure that transformers potentially containing polychlorinated biphenyls are removed from Avista's distribution system.

Polychlorinated Biphenyls (PCBs) were commonly used in the oil of electrical transformers in past decades due to their high dielectric strength[5] and resistance to fire. Studies conducted in the 1960s and 1970s revealed, however, that these compounds are also toxic, carcinogenic and highly resistant to biodegradation in the environment. Their production was banned in the United States in 1979[6] and Avista has been programmatically replacing these transformers. There were about 12,000 such transformers on Avista's system when this program started. In 2020 there were less than 300 remaining PCB transformers.

[5] Dielectric strength refers to the ability of a material to resist carrying an electrical current, which is a measure of its potential to insulate against electric short circuit or fault.
[6] "PCBs Questions & Answers," United States Environmental Protection Agency, https://www3.epa.gov/region9/pcbs/faq.html.

Downtown Network – Asset Condition Program

Above & Below: Downtown Network Vaults

The Downtown Network has funding set aside under both the Performance and Capacity and the Asset Condition investment drivers. Most of the Network's equipment is located in underground vaults, manholes and hand-holes in Downtown Spokane. With ongoing growth in Spokane, the downtown area is in a continual state of construction, requiring the Company to upgrade old equipment, relocate assets due to road work or construction, or respond to city, county, or customer requests that are fairly random every year, yet make up a large portion of the Downtown Network operations.

The majority of the Network's structural assets (such as manholes, vaults, and ducts) have exceeded their expected life and must be programmatically replaced in order to continue service. When this equipment fails, it can have a significant impact on downtown businesses as well as pose safety hazards for the public. The Company is in a state of constantly replacing old structural and electrical equipment while at the same time addressing requests from the city, county, and customers for service changes in addition to mitigating construction impacts on Company facilities and operations. These projects fall under the Asset Condition investment driver for the Downtown Network.

LED Change-Out Program

Avista operates approximately 35,000 street lights across the service territory as well as area lights requested and paid for by individual customers. Avista manages street lights for many local and state government entities by installing and replacing street lights per their request. In 2013, in response to the superior safety and efficiency performance of Light-Emitting Diode (LED) lighting, the energy savings potential, and the opportunity to reduce long-term energy costs, Avista evaluated the benefit of converting from High Pressure Sodium (HPS) to LED fixtures and, based on significant savings opportunities, developed a replacement program. LED bulbs are six to seven times more efficient than traditional bulbs, cutting energy use by up to 80%. In addition, they can operate more than 25 times longer than conventional bulbs.[7] This program

[7] "How Energy-Efficient Light Bulbs Compare with Traditional Incandescent," U.S. Department of Energy, https://www.energy.gov/energysaver/save-electricity-and-fuel/lighting-choices-save-you-money/how-energy-efficient-light

also helps the Company be in compliance with Washington State Initiative 937 (or the "Clean Energy Initiative"),[8] part of which required that Washington utilities undertake all cost-effective energy conservation measures. LED streetlight technology is part of this energy conservation work.

Primary URD Cable Replacement Program

Underground Residential District Cable (URD) has been used by the utility industry since the 1930s, though Avista did not begin installing the cable until the late 1960s. During the 1990s it became apparent that the cable manufactured prior to the 1982 had numerous problems, primarily a lack of insulation that allowed water penetration and corrosion. It also had a lack of protection from dig-ins, animals, vegetation and lightning all leading to numerous faults and failures. Prior to the underground cable problems becoming apparent to the industry, Avista had installed over 6,000,000 feet of this type of cable.

By the mid-1990s, customers served by this cable began to experience outages that were increasing in number as the cable aged and continued to deteriorate. Repairing these failures is particularly expensive (about $3000 per event) due to the complexity involved in locating the fault, digging up the cable, and splicing in new sections. The Company initiated a program to systematically replace pre-1990 cable about 15 years ago. Unfortunately, unmapped sections of this old cable are being continually found, typically when the cable has failed, thus this program will be ongoing into the near future.

Wood Pole Management Program

Avista Wood Pole Inspection

Avista has 347 overhead electric feeders that are supported by approximately 230,000 poles. These poles are predominantly wood (about 99%). The attached equipment includes crossarms, transformers, cutouts, insulators and pins, wildlife guards, lightning arresters, guy lines, and pole grounding. Avista's wood pole population is inspected on a 20-year cycle interval, which means about 11,500 poles, crossarms, and associated equipment are inspected on average each year.

Stubbed Pole

Avista's distribution wood poles have an average lifespan of approximately 70 years as they are managed in the system today.[9] A key part of maintaining the wood pole population is Avista's robust inspection program. The condition of each pole is assessed during this inspection to determine whether any issues

[8] https://www.commerce.wa.gov/growing-the-economy/energy/energy-independence-act/
[9] This lifespan can be increased by stubbing and chemically treating the wood poles.

need to be addressed, rather than relying only upon only age information to categorize the health of the pole. The inspection process identifies damage from insects, animals, lightning, fire, decay, mechanical damage, equipment failure (such as a leaking transformer), unauthorized attachments, and other issues such as a broken guy wire, grounding, or soil concerns. Decay is the most common reason for pole failure and is detectable with proper inspection. Inspectors also assess components including transformers, ground, and guy wires. The capital investments made under this program cover the needed repair and replacement of poles and attached equipment that is identified during the inspections.

Types of Pole Inspection Issues Identified in Inspections

Customer Service Quality & Reliability

This category of spending helps Avista meet customers' expectations for quality of service and electric system reliability. The programs in this category are the Washington and Idaho advanced meter infrastructure (AMI) programs. Traditionally, utility customers have had few tools to effectively understand and manage their energy use because conventional meters are not equipped to provide near real-time information on energy consumption. AMI offers a variety of benefits for customers including providing them with the framework for new technology options, increased information availability, and a measure of control over their energy usage and expenditures. It allows customers the ability to integrate new "smart" devices into their homes, and provides the ability to offer customers technology products and services into the future. From the Company's perspective, Avista will see general savings (which ultimately benefit customers) via voltage reductions, reduced theft and unbilled usage, consistency and simplicity in metering applications, remote service connectivity, and outage management.

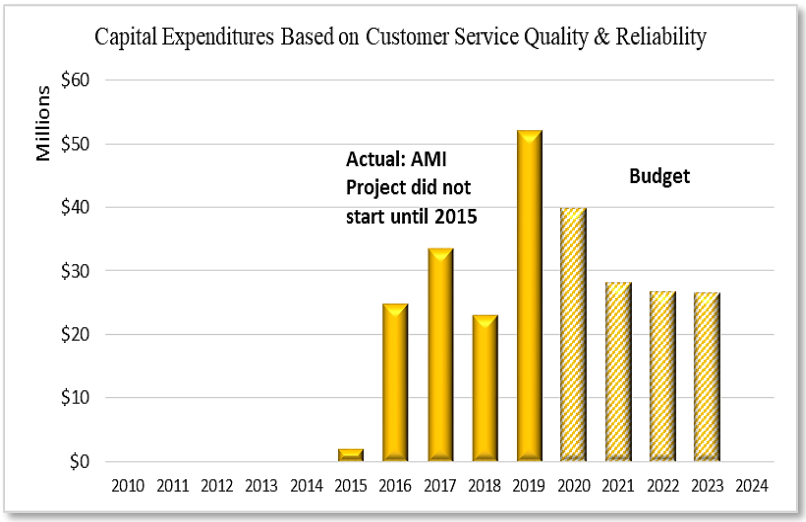


Figure 11. Capital Actual & Budget Expenditures Based on Customer Service Quality & Reliability

Customer Service Quality & Reliability	2020	2021	2022	2023	2024	5-Year Total	5-Year Average
Idaho Advanced Metering Infrastructure	$2,500,000	$26,700,000	$26,700,000	$26,600,000	$0	$82,500,000	$16,500,000
Washington Advanced Metering Infrastructure	$37,292,537	$1,357,245	$0	$0	$0	$38,649,782	$7,729,956
Total	**$39,792,537**	**$28,057,245**	**$26,700,000**	**$26,600,000**	**$0**	**$121,149,782**	**$24,229,956**

Table 7. Customer Service Quality & Reliability Capital Budget

Washington Advanced Metering Infrastructure

The Washington Advanced Metering Infrastructure (AMI) program encompasses Avista's Washington service territories. Also popularly known as "smart meters," this effort keeps pace with the evolving metering standard of the industry and will deliver a range of cost-effective benefits to customers as shown in the blue text box on the right. This project will take approximately six years and will deploy advanced meters to approximately 253,000 electric customers and 155,000 gas customers. Avista is planning to replace all of its existing Washington electric meters, the majority of which are conventional electro-mechanical meters, with a new advanced meter. The existing natural gas meter will not be replaced but will be upgraded with a new digital communications module. Since most gas meters are mechanical devices, installation of AMI technologies use a radio device attached to the existing gas meter to communicate the amount of gas used.

Idaho Advanced Metering Infrastructure

The Idaho AMI Project will install an advanced metering system to include meters, the communication network and data repository. Advanced meters will be deployed to approximately 136,000 electric customers and 87,000 gas customers starting in 2020. All existing Idaho digital electric meters will be replaced with a new advanced meter. As was the case in Washington, existing natural gas meters will be upgraded with a new digital communicating module; the natural gas meter itself will not be replaced. Idaho AMI customers will be integrated into Avista's current hardware/software system for Washington AMI customers, reducing duplication of resources.

ADVANCED METERING INFRASTRUCTURE BENEFITS

- Customer access to interval energy usage data
- Customer tools to help them manage their energy use
- Enables smart home options
- Energy alerts for customers when their bill reaches a predetermined level
- Customer property privacy
- Migration away from manual meter reading
- Remote and rapid disconnect / connect / reconnect
- Outage management
- Energy efficiency - more efficient feeder operation
- Energy theft and unbilled energy usage detection
- Billing accuracy
- Data for utility system studies
- Improved utility employee safety
- Variable rate options
- Enhanced data analytics
- Support for micro grids and smart cities
- Foundation for distributed generation

Performance & Capacity

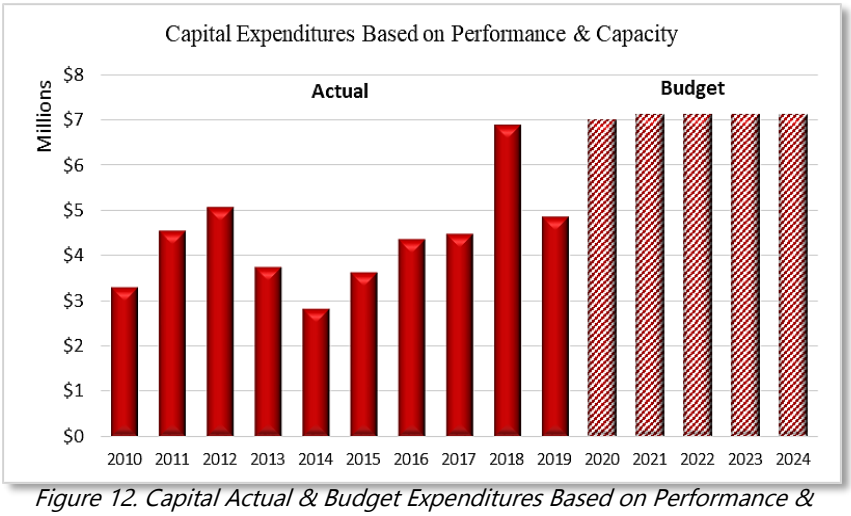


Figure 12. Capital Actual & Budget Expenditures Based on Performance & Capacity

Avista's projects and programs grouped in this category of need include a range of investments that address the capability of assets to meet defined performance standards, typically developed by the Company or based on a demonstrated need. Avista is also attentive to investment opportunities to improve the performance of the distribution system when supported by a study or analysis that demonstrates the cost-effectiveness of the benefits achieved for customers.

The performance of distribution systems is guided by industry accepted practices, but prescribed by internal company policies, procedures, and standards. These standards have been developed to ensure the safe, efficient, reliable and prudent management of utility infrastructure and operations. When the Company determines its operations no longer meet a given standard, infrastructure needs must be assessed in order to make the timely capital investments necessary to remain within the limits of the standard. A common example is the objective to operate within established thermal limits for electrical equipment. During this budget cycle, two primary programs fall into this category. These programs are described below.

Performance & Capacity	*2020*	*2021*	*2022*	*2023*	*2024*	*5-Year Total*	*5-Year Average*
Segment Reconductor and Feeder Tie	$6,000,000	$6,000,000	$6,000,000	$6,000,000	$6,000,000	$30,000,000	$6,000,000
Downtown Network - Performance & Capacity	$1,012,500	$1,125,000	$1,125,000	$1,125,000	$1,125,000	$5,512,500	$1,102,500
Total	*$7,012,500*	*$7,125,000*	*$7,125,000*	*$7,125,000*	*$7,125,000*	*$35,512,500*	*$7,102,500*

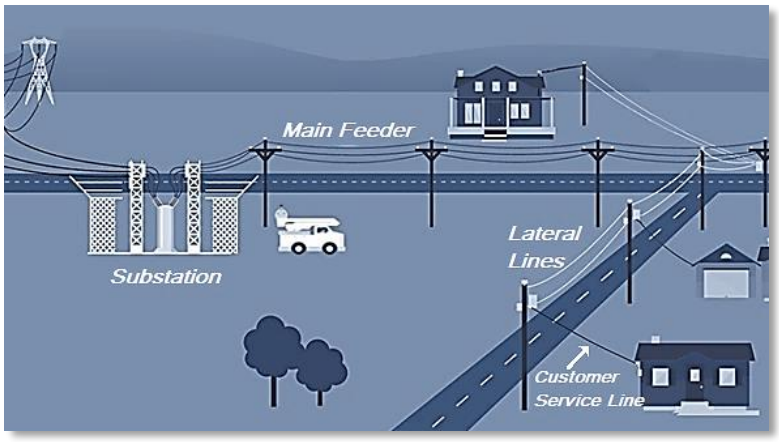
Table 8. Performance & Capacity Capital Expenditures

Segment Reconductor and Feeder Tie

This program is designed to remedy the overloading of electric equipment and cable, as well as the conductor sag that results from overheating of the overhead wire. These instances of system overloading result from load growth and shifts in load demand that occur over time on the distribution system.

Avista's distribution system follows the industry standard of using relatively short sections of main feeder trunk supporting longer connected lateral lines that carry electricity to the customer's service. Though the overall load on a feeder as it leaves the substation is often known and monitored in real time, the actual loading on the downstream trunk and lateral branch circuits must be estimated and

field tested to verify whether a problem exists. Resolving these overloading issues involves a combination of two strategies known as “load shifting” and “segment reconductoring.”

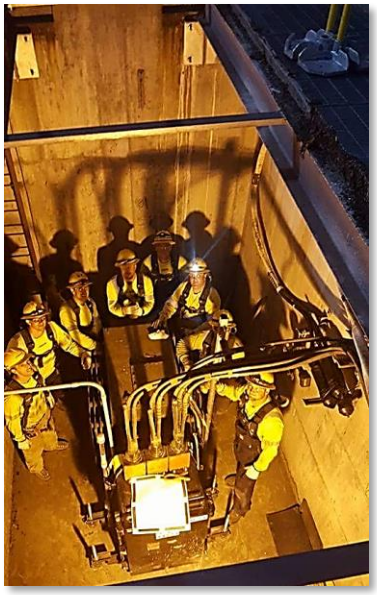


The strategy of *load shifting* involves extending existing lines on one feeder to an adjacent feeder that has the available capacity to carry the additional transferred load. Shifting the load from one feeder to another not only solves the overloading issue but also helps capture additional value from the existing infrastructure. *Segment reconductoring* involves the removal of the wire or conductor that is too small in diameter for the current loading and replacing it with larger conductor that can easily and more efficiently carry the load. It is the most direct approach for mitigating overloaded circuits; however, Avista considers a range of options that not only meet the current need to relieve the loading but also optimize the overall distribution system.

Currently the Company is facing an increasing number of new large spot loads, typically ranging anywhere from one to five megawatts. The size of these new loads increases the need for unplanned reconductoring of distribution feeder segments. In turn, this unplanned work is hindering the ability to complete planned and preventative work and creates unanticipated budget pressures, creating a situation in which work is becoming more and more reactive in nature and necessary maintenance and repair work begins to fall behind. In an effort to address these circumstances in a proactive way, the Distribution team is updating the Segment Reconductor and Feeder Tie business case. This business case will be renamed “Distribution System Enhancements,” and in the future will encompass more of the work that is being done to maintain and improve the distribution system.

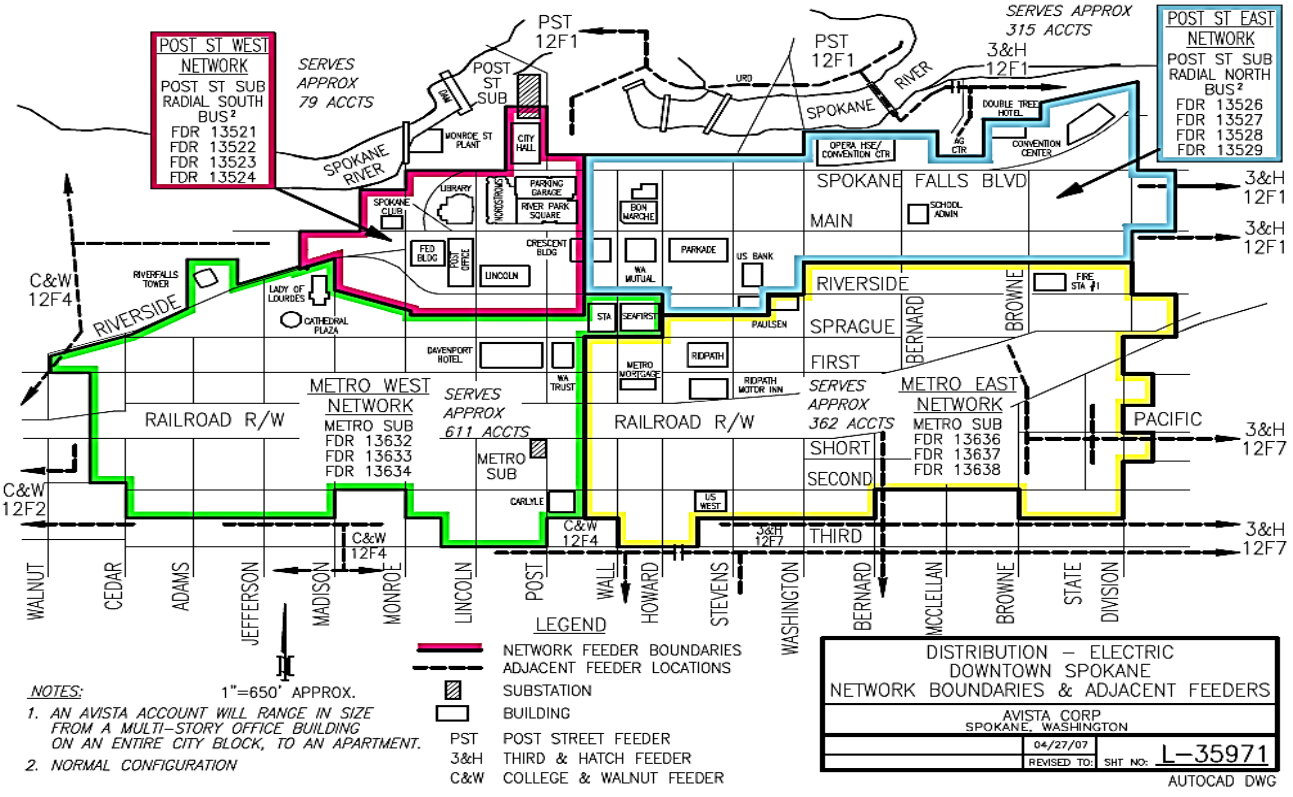
This business case will become the main budget source for the Avista Area Engineers. These specialized employees are responsible for continually monitoring, analyzing and evaluating the overall health of the distribution system. They act upon issues such as conductor or equipment overloading due to customer growth, power quality issues caused by voltage or current harmonics, power quality issues caused by over or under voltage, and reliability issues that can be improved with the installation of new equipment or new sections of power lines. These issues will all be addressed under the new Distribution Systems Enhancement business case.

Downtown Network Performance & Capacity



Downtown Network vault

Avista owns and maintains an underground electric network that serves the core business, financial, and city government district of downtown Spokane. This network encompasses over a thousand underground manholes, hand-holes, and vaults. There are two investment drivers associated with the Downtown Network: Asset Condition, and Performance & Capacity. Under the Performance and Capacity investment driver, the Downtown Network provides funding to address load growth at the system level, network grid expansion, as well as crew and public safety issues. A key focus area is to add the ability to remotely observe the actual flow on the secondary networks and equipment to provide the status of the network protectors. Increasing loads due to the growth in Downtown Spokane are beginning to overload the network, requiring additional line and/or transformer capacity. It is critical for the Company to track the load status to ensure that equipment is not overloaded and to identify where additional capacity is needed. In addition, safety equipment such as operable customer disconnects are required. Currently roughly 10-15% of the Network is at a high safety risk level for faults, fire, or electrical shock. Measures must be taken to mitigate this risk to the public, Avista employees, and contract crews. Those types of expenditures fall under this investment driver.



Avista's Distribution O&M Investments

Avista monitors the distribution system very closely to guarantee that critical equipment remains functional and the system is fully intact. O&M expenditures allow the Company to maintain and operate the electric system in the most safe, reliable, and efficient way possible. These expenditures permit the Company to respond when damage occurs from weather or accidents and a host of other issues that arise in this complex system, all in service of keeping the power flowing safely and efficiently to customers.

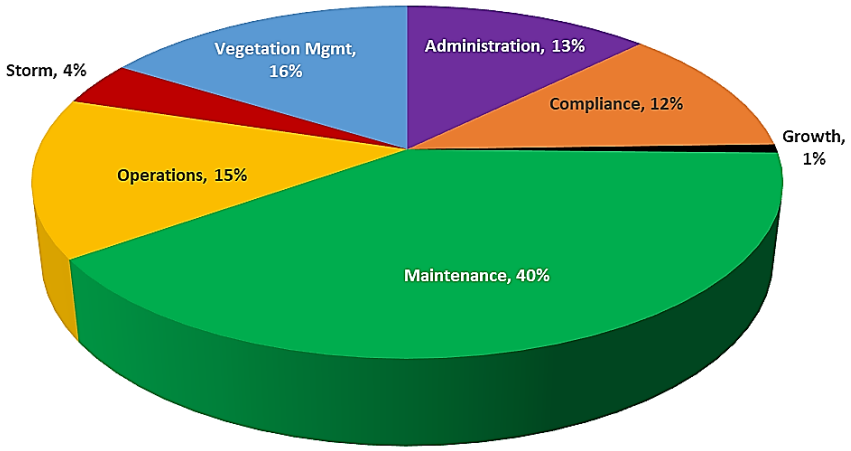


Figure 13. Distribution O&M Expenditures 2009-2019

O&M expenditures are a part of every maintenance project, as these projects all require manpower, administration, and supplies and equipment that don't rise to the level of capital items. As shown in Figure 13, both planned and failed asset maintenance comprise a large percent of the Company's required expenditures. Compliance is another important area, and includes obligations such as joint use project work, environmental requirements, contractual work, required training, relocation request work, and the like. Other factors include customer growth requirements, repairing storm and weather damage, and operating this complex system.

Vegetation Management

Vegetation is a significant source of outages for utilities. At Avista, typically about 8% of outages result from trees, tree limbs, or other vegetation falling or growing into power lines, and the resulting impact is significant. Since 2001, vegetation issues have led to over 1.3 million hours of customer outages. In 2019 alone vegetation caused the loss of 109,000 customer service hours. Recent years have shown that vegetation issues also create potentially explosive wildfire situations. Avista takes this issue very seriously and has developed a robust vegetation management program in response.

The Company manages vegetation across the rights-of way of 19,000 miles of overhead electric distribution lines and 2,770 miles of 115 kV and 230 kV transmission corridors.[10] In recent years the Transmission Vegetation

[10] From Avista Quick Facts, https://investor.avistacorp.com/static-files/a7342b27-72cc-44d4-b9a7-b62903e999df

Management Program was rolled into the Distribution Vegetation Management Program, so there is now a single program under one business unit. This program utilizes a three-pronged proactive approach to try to identify and address potential vegetation-related issues before they result in outages for our customers:

- **Routine Cycle Maintenance** is planned on a five year cycle and is focused on trimming practices that are tailored to the type of landscape and species of trees along our rights of way, identifying "problem trees" that require the most attention. This approach allows Avista to maximize the efficiency of the work crews; they focus on areas most likely to cause a problem, then customize work cycles for trimming based upon tree and vegetation type and physical location. For example, some species of tree can be allowed a fifteen foot clearance (fast growing species), others (slow growers) can be allowed within five feet of power lines. Another part of this routine work involves the targeted removal of individual trees that Avista refers to as "cycle busters," meaning they will grow quickly enough to require an additional trim during the middle of the cycle interval, which is very inefficient and expensive. Often the Company will replace a "cycle buster" tree with a tree species that will not ever reach a height to pose reliability problems for the overhead feeder line.
- **Risk Tree Mitigation** targets individual trees that pose a hazard based on their potential to either fall across or to grow into lines during the cycle interval. These trees are typically identified by certified utility foresters or by others on the ground who spot dead, diseased and dying trees as they perform work in the field. Once identified, the health of these individual trees is tracked to determine whether they need to be removed and, if so, when this should occur. The cycle of removal for these risk trees is "as needed," based on the risks the individual trees pose as they age.
- **Right of Way Clearing** involves the physical removal of brush and undergrowth on the feeder right-of-way using heavy mowing equipment and the selective application of herbicides. This work is tailored to the characteristics and needs of each area as needed. Avista completes this work on approximately 1,200 – 1,500 circuit miles each year, generally during the months of May through October. Performing this work on a regular periodic basis prevents the undergrowth from reaching the point where a more expensive complete trimming and removal is needed to safely clear the feeder right of way.

Above: Before Vegetation Management Work Begins
Left: After Work is Complete

Distribution Upcoming Programs

Padmount Inspection Program

The Padmount Distribution Facilities Inspection Program provides a ten-year physical inspection of padmount transformers and junction enclosures associated with Avista's underground distribution system. Avista has approximately 36,000 padmount transformers and 12,500 junction enclosures system wide. This program was initiated in response to a request from Avista's insurance provider, AEGIS, to programmatically inspect underground distribution enclosures/cabinets to ensure correct labeling. Building upon this basic request, the Company developed a robust inspection program that will examine all of the padmount transformers and junction enclosures across the system in order to gain an initial assessment and determination of work to be done, followed by formal inspections on a ten year cycle. The initial inspection will begin in the first quarter of 2020. This program will address three primary concerns with these units: proper labeling, physical integrity/security and age. It is important to note that these transformers are readily accessible to the public, with many located in yards, playgrounds, commercial parking lots, on sidewalks, and other public places. Thus public safety is a significant concern.

	Illegible / Missing Decals	Clearance Violations	Failed Pads	Failed Tamper Resistance Bolt	Paint Failure
Failure Percentage	96%	35%	3%	8%	8%

Figure 14. Padmount Transformer Issues Identified

Correct labeling and markings of padmount transformers is required by law and by internal Company standards.[11] In 2013 the Company sampled 474 transformers and 120 junction enclosures and found significant failures in several areas especially in decals, as shown in Figure 14.

This program addresses required labeling such as the transformer decal above and access issues such as the boulders blocking access to the transformer on the left.

The second focus of this program is the physical security and integrity of the cabinets and associated mountings. Clearance violations such as the boulders shown in the photo on the left limit accessibility, especially in an emergency situation, but also for routine maintenance activities. These units sit on concrete pads to keep them off

[11] WAC 296-24-95605 (http://lawfilesext.leg.wa.gov/law/wsr/2012/16/12-16-064.htm) provides direction for marking the exterior of padmount transformers used in underground distribution applications. These warning markings are prescribed for the safety of the general public as well as utility crews who will be working with the equipment. This code also provides direction for ensuring that the area around the padmount equipment is kept free from obstruction so that the equipment can be accessed for maintenance or replacement. Additional markings are defined by Avista Utilities construction standards to aid in location and identification of equipment by service crews.

Padmount Transformers

the ground and out of the elements as well as to keep them level to prevent oil leakage. The survey found many of the pads had settled over time and cracked or even broken open. Tamper-resistant bolts are used to secure the box cover in place and to prevent unauthorized access. The survey found that many of these bolts were either stripped, broken off, or missing. Paint condition is also a concern, as degradation to the paint can create rust and corrosion, giving public or animals access to the electrical equipment inside the enclosure and creating a potential safety risk for both the equipment and the public.

The third element addressed by this program is the transformer age. About 4% of the padmount transformers are 40 years of age or older, thus past their expected service life. But nearly 20% are 30 or more years of age, thus rapidly approaching end of life.

Wildfire Resiliency Program

Wildfire represents a significant risk for western utilities. Avista is developing a comprehensive wildfire resiliency plan to address this risk and to support three strategic goals: enhancing emergency operations, promoting public safety, and safeguarding Company assets. To achieve these significant goals, the Company is focusing on three primary areas:

1) Protect lives and property
2) Ensure emergency preparedness & align operating practices with fire threat conditions
3) Protect Avista's energy delivery infrastructure

The primary elements of this plan include:

- Enhanced Vegetation Management to reduce the likelihood of wildfire events through fuel reduction treatments as well as including extensive associated data collection, identifying high risk areas in Avista's system. Also includes partnering with associated state and local entities,

widening transmission rights-of-way, and public outreach to encourage removal of high risk trees.

- Situational Awareness to provide more information about the status of the system including adding specialized communications capability (SCADA) to every substation to monitor and control powerlines, developing a web-based fire weather dashboard, and adding distribution protection technology.
- Grid Hardening and Dry Land Mode which adds a non-reclosing protection mechanism during dry weather high-fire-danger conditions that prevents lines that trip out of service from reclosing without specific intervention. It also includes putting eyes on a potentially dangerous situation to make sure it is safe to place a line back in service, either with servicemen dispatched to the situation or with SCADA information.[12] First responders count on Avista's ability to de-energize electric lines during fire events, making this technology even more crucial to public safety. This element also includes adding a specialized fire retardant mesh to transmission wood poles in high risk areas, more in-depth aerial inspections, conversion of wood transmission poles to steel in high risk areas, and replacing equipment in the distribution system associated with spark-ignition potential.
- Operations and Emergency Response to combine the current programs related to wildfire into a comprehensive and overarching effort with associated metrics and analytics. This piece will include a more comprehensive Company focus on wildfire events and risk, provide specialized training for first responders both inside and outside the Company, and agreements with external fire personnel to investigate transmission line faults during fire season.

This comprehensive wildfire program is scheduled to take place over the next ten years and will require new equipment such as the SCADA equipment mentioned earlier, software monitoring and tracking systems, and extensive inspections of the entire system to identify vegetation related trouble spots. It is estimated that this program will cost $242 million in capital, $43 million in O&M over the next ten years. This investment will also include funds Avista provides to local efforts. The Company will be partnering with fire districts, the U.S. Forest Service, the Bureau of Land Management, and other related agencies as they work to protect infrastructure in their jurisdictions. This investment should provide immense benefits in risk reduction and protection for Avista, its customers and equipment.

[12] Currently 33 of Avista's 176 substations operate without SCADA and thus have no remote sensing, monitoring, or equipment control systems.

Wrap Up

Avista takes the service and safety of customers and employees very seriously. The Company's Distribution Team designs Capital and O&M programs that are robust, proactive, and designed to ensure that the distribution system is as safe as it can possibly be while providing a level of service and cost effectiveness that customers and regulators expect. As depicted in this report, each of these programs has a specific goal and purpose in serving customers safely and successfully, including inspecting and protecting existing infrastructure, thoughtful, measured replacement of end-of-life assets, adding equipment to allow additional monitoring and control, providing additional service to customers as requested, maintaining full compliance with all legal and regulatory standards, and reacting to damage or repair as needed. These programs balance all of these needs while providing a critical service to customers in a reliable, cost effective manner.