Exh. JMK-1T

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BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-19_____

DOCKET NO. UG-19_____

DIRECT TESTIMONY OF

JAMES M. KENSOK

REPRESENTING AVISTA CORPORATION

I. INTRODUCTION

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

A. My name is James M. Kensok. I am employed by Avista Corporation as the Vice-President and Chief Information and Security Officer. My business address is 1411 E. Mission Avenue, Spokane, Washington.

Q. Would you please provide information pertaining to your educational background and professional experience?

A. I am a graduate of Eastern Washington University with a Bachelor of Arts Degree in Business Administration, majoring in Management Information Systems and from Washington State University with an Executive MBA. I have experience through direct application and management of Information Services over the course of my 34-year information technology career. I joined Avista in June of 1996. I have been in the Information Services Department for approximately 22 years in a variety of management roles directing and leading information systems, infrastructure technology and security strategy, system delivery and operations, complex communication networks, cyber security, applications development, outsourcing agreements, contract negotiations, technical support, cost management, and data management. I was appointed Vice-President and Chief Information Officer in January of 2007 and Chief Security Officer in January of 2013.

Q. What is the scope of your testimony in this proceeding?

A. I will provide an overview of, and discuss costs associated with, the Company's Information Service/Information Technology (IS/IT) programs and projects. These costs are comprised of the capital investments for a range of IS/IT projects that support systems used by the Company, including security and technology refresh/expansion, customer-facing technology such

as myavista.com and our outage mobile application, among several other applications. I will explain why our information technology investments are necessary in the time frames indicated and why investments in technology are necessary in order to perform in a safe, secure, reliable, and efficient manner.

A table of contents for my testimony is as follows:

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Q. Are you sponsoring any exhibits in this proceeding?

A. Yes. I am sponsoring 2 exhibits, Exh. JMK-2 and Exh. JMK-3. Exh. JMK-2 is a listing of all project or program investments in my area of responsibility for 2017 and 2018. Exh. JMK-3 contains the capital business cases related to both the "major" 2017 and 2018 projects I discuss later in my testimony, as well as the business cases related to the 2019 Pro Forma projects I support.

II. IS/IT OVERVIEW

Q. What is Avista's approach to information technology?

A. Avista's technology investment is driven by the need to provide energy and natural gas to our customers in a manner that is safe, secure, and reliable. Avista's overall information technology investment strategy is generally driven by the need for technology systems to protect

our customer data and critical utility operations, meet our legal and regulatory requirements, optimize cost effective replacement of assets, manage technology obsolescence, improve efficiency and cost-effective work processes, and train people on new skillsets.

Making investments in technology in the utility industry is not new — networks, data and analytics, mobile transactions, security and technology refresh/expansion have been around for decades — but these areas are experiencing significant change as a result of new enabling technology (e.g., cloud storage and computing), increases in volume and velocity of data, and the sophistication of cyber-attacks.

Q. You mention above "the sophistication of cyber-attacks". Is Avista continuing to do all that it can to protect its utility systems, and customer information, from such attacks?

A. Yes. Security technologies in the electric and natural gas utility industry are critical to the protection of the energy infrastructure and of Avista's sensitive customer data, employee data, operating data and financial data. Investments are necessary to protect Avista's utility assets and to prepare for the appropriate response and recovery when there is a security incident, a data breach, or when a disaster event takes place. Avista's security program focuses on protecting its physical and cyber assets, including protecting against a data breach.

Avista is a member of the AGA/EEI cyber security task force that analyzes and follows best security practices for protecting the utility industry using the National Institute of Standards and Technology (NIST) framework. Avista is an active participant in additional industry security groups, such as Downstream Natural Gas Information Sharing and Analysis Center (DNG-ISAC) that serves natural gas utility (distribution) companies, Electricity Information Sharing and Analysis Center (E-ISAC) that serves electric utilities, EEI Cyber Mutual Assistance that serves

electric and natural gas utilities, and the use of Transportation Security Administration's (TSA) Pipeline Security Guidelines, as well as others.

In addition to being an active participant in protecting U.S. critical infrastructure and following best practices in security, Avista appropriately invests in its business continuity program, following the industry standard NIST framework which focuses on the following: Identify, Protect, Detect, Respond, and Recover. Avista also follows the Federal Emergency Management Administration (FEMA) Incident Command System (ICS) for planning, response and recovery efforts. Continuous investment in security and business continuity programs and technologies is a technology investment priority to maintain a safe and reliable energy infrastructure and to protect sensitive customer data, employee data, operating data and financial data.

Q. Please describe any material changes that impacted Avista's technology programs since your last rate filing.

A. Generally, Avista's technology investments have fallen under Technology Refresh and Expansion programs. However, to provide more line-of-sight to specific drivers behind each technology investment, Avista began sun-setting the Technology Refresh and Expansion programs in 2017-18, and instead created multiple specific technology business cases that describe the investment driver, governance structure, reason behind each investment, alternatives considered, and the risk of doing nothing. This initiative resulted in more clear visibility to the overall technology portfolio for governance.

Q. What was the timeline for the completion of the technology programs?

A. Avista's technology programs are ongoing, but generally the timeline for moving from technology expansion/refresh programs to multiple technology business cases was from 2017 to 2018. Under this new approach, periodic technology planning sessions, comprised of Vice

Presidents, Directors and Managers from various business units, are held to review and discuss initiatives and guide project prioritization. Decisions based on the discussions in these planning sessions are documented in more formal business cases that guide future technology investments.

Q. Did Avista consider alternatives to technology investments?

A. Alternatives are considered to determine if opportunities are available using existing technology, changes to business processes and/or new technology options. For example, a growing alternative to the traditional "buy or build" approach has been Software as a Service (SaaS), whereby the software asset that once was in Avista's data center on premise, is now in the technology vendor's data center (cloud environment). SaaS assessments are performed by the Company case-by-case to determine how the benefits might outweigh the costs and/or other risks.

Q. Describe the alternatives evaluated and how the solutions were chosen.

A. Technology evolves in short cycles, as new and sometime more improved technologies can perform more efficiently than older ones. Therefore, Avista's technology leadership teams continuously re-evaluate alternatives in technology investments, recommending to the Technology Planning Group (TPG) the best sets of technology investments to set priority across the technology investment portfolio, balancing business value and customer benefits.

Through our technology programs, Avista evaluates and plans the direction of its information technology portfolio. A team of IT professionals, managers, and directors guide technology programs by analyzing the benefits and costs of investing in new technology and maintaining existing technology. The team considers whether the current technology environment is stable and secure, so that it is in Avista's and its customers' best interests to maintain it, and if so, for how long. If not, other options that may better suit the technology needs of Avista and its

customers are discussed. The technology programs also evaluate the risks of not making an immediate technology change or pushing a change to a later date.

Technology business cases are governed under the Technology Planning Group (TPG) and Executive Technology Steering Committee (ETSC). The TPG sets priority across the technology investment portfolio, balancing business value and customer benefits, and based on the ETSC's guidance. An additional filter is applied following this vetting by the TPG and respective business case owners considering resource capacity, risk assessment criteria, and alternatives. Alternative criteria can include cost to implement, operate, and maintain; complexity of system or technology; economies of scale and scope to leverage previous technology investments; available skillsets, and long-term technology roadmaps that enable safe and reliable energy to our customers.

Q. Describe Avista's project management process that was used to manage technology projects.

A. Avista's Project Delivery Process (APDP) Framework, in alignment with industry best practice (Project Management Institute® framework), was developed to establish a standardized practice in project management at Avista across all areas of capital investment. Avista's technology department has a Project Management Office, congruent with the APDP Framework, which acts as a center of excellence to maintain project management standards for project delivery. Each technology investment is overseen by a project manager to monitor scope, schedule and budget, governed by a steering committee for proper oversight. Additionally, Avista's technology department uses a Project and Portfolio Management tool (CA Technologies) to manage portfolios, programs and hundreds of parallel inflight projects. Our technology teams also perform their work assignments using 'waterfall' and 'agile' methodologies.

III. MAJOR INVESTMENTS IN THE COMPANY'S TECHNOLOGY PROGRAMS IN 2017 AND 2018

Q. Please provide an overview of the significant technology programs made by Avista in 2017 and 2018.

A. As discussed by Company witness Ms. Schuh, for projects included since our last general rate case and through the 2018 test year, Avista's capital witnesses including me will describe the "major projects" completed. For these major projects, I describe the need for the investments and explain how these projects benefit our customers. The determination of major project was based on any project, on a Washington-allocated basis, that was greater than $5 million for electric distribution and transmission, and greater than $2 million for natural gas, facilities, and fleet investments. For technology projects, the determination of major projects was that it met both electric and natural gas thresholds, given that these projects are common to electric and natural gas service. Please note that Ms. Schuh provides the Washington-allocated values, but for my testimony I discuss projects, and their costs, at a system level.

The major technology capital projects transferred to plant in service during 2017 and 2018 are shown in Table No. 1 below:

Table No. 1: Major Capital Additions for 2017-2018

Poject #	Project Name	2017	2018
1	Information Technology Refresh Program	15,001,195	8,687,848
2	Information Technology Expansion Program	15,603,232	5,782,285
3	AvistaUtilities.com Redesign	11,858,541	-
	Total	**$ 42,462,967**	**$ 14,470,133**

Project #1 - Information Technology Refresh Program

Q. Would you please describe the first Major Project for 2017-2018, Information Technology Refresh Program (Technology Refresh Program)?

A. Yes. The Technology Refresh Program provides for the replacement of existing technology in alignment with the manufacturer product roadmaps for application and technology lifecycles. Not only is the asset condition of technology subject to the traditional mortality rate or lifecycle, but it is compounded by planned obsolescence, also known as technology obsolescence. Reliance on obsolete technology for automated business process presents significant risk that may only be solved with the reinstatement of manual process. Sustaining business process by replacing automation with workforce would increase labor expense.

Additionally, with the rapid pace of technological change, technology vendors require continuous upgrades to maintain system maintenance and support, which can include security patching, bug fixes, version upgrades, interoperability, and compatibility with other technologies. These upgrades can in turn drive subsequent system replacements, creating a cascading event of change. Therefore, vendor roadmaps and technology asset lifecycles are data points that inform Avista on how best to plan replacements, while meeting business value and strategic alignment. This occurs within the constraints of resource capacity and funding, which may result in deferred replacement introducing the risk of technology failure.

The Annual Investment Plan, reviewed by the TPG and ETSC, monitors the risks of deferred replacements or upgrades to maintain a stable and reliable application and computing platform that allows for the safe and reliable operation of our electric and natural gas infrastructures, as well as deliver on customer demands.

Q. What other factors should be considered, with regard to the Technology Refresh Program?

A. Avista's Technology Refresh Business Case supports technology replacement across six technology domains: 1) Distributed Systems, 2) Central Systems, 3) Communication Systems, 4) Network Systems, 5) Environmental Systems, and 6) Business Applications.

Each technology domain is governed by a Program Steering Committee that guides annual project priority in response to Avista's overall approach to technology and technology roadmaps, while balancing the risk of reliability and functionality. The Technology Refresh Business Case refreshes existing technology in alignment with roadmaps for application and technology lifecycles.

At a fundamental level, Avista's Technology Refresh Program is necessary to allow Avista to effectively manage its technology portfolio, given that IT assets are foundational in the provision of utility service in the 21st century, and that IT components naturally become outdated or reach technological obsolescence over a period that is much shorter than the life of other utility assets (such as natural gas pipe in the ground or power poles). As technology products reach manufacturer-planned or real obsolescence, vendor support for these assets is reduced, or ceases altogether. As vendor support ends, the risk associated with Avista's business systems that rely upon these technology products increases and the value provided by these business systems is jeopardized. These factors present a risk to Avista in the form of increased failure rates, inefficient work practice, employee/public safety incidents due to system failures, and reduced customer satisfaction, among other areas of risk, such as security vulnerabilities and loss of maintenance, support and patching.

Q. Mr. Kensok, you mentioned that the Technology Refresh Program refreshes existing technology in alignment with roadmaps for applications and technology lifecycles. Would you please explain this concept further?

A. Yes. Information technology components have varying useful lives. For example, servers tend to have a shorter lifespans, while the lifespan of network switches tends to be longer. Additionally, software vendors regularly update their products to provide improved functionality, maintain and improve security, and implement bug fixes. Understanding the costs associated with refreshing technology, it is generally Avista's practice to replace technology within an acceptable failure tolerance outside of the vendor recommended lifecycles. For example, Avista completed its upgrade to Microsoft Office 2013 in 2015 and 2016. Prior to this upgrade, Avista had been using Microsoft Office 2007.[1] By prudently managing its upgrade cycles and using Microsoft Office 2007 for an extended period, Avista was able to avoid the intermediate upgrade to Microsoft Office 2010. With that said, approximately 25 percent of Avista's asset base of more than 10,000 units recorded in the technology asset management system have exceeded the manufacturer suggested lifecycle. As a result, the demand for technology refresh investment has continued to grow over time (a natural outcome of the growth in the installed base of information technology assets as the modern utility continues to rely more and more on enabling technologies).

Q. Where can more information be found related to the program?

A. The supporting business case for the program can be found in my exhibit, Exh. JMK-2.

[1] Microsoft has indicated Extended Support for Microsoft Office 2007 will ended April 11, 2017.

Q. What capital transfers to plant for this program did Avista make in 2017 and 2018?

A. The total capital investment was $15,001,195 and $8,687,848 in 2017 and 2018, respectively, on a system basis.

Project #2 – Information Technology Expansion Program

Q. Would you please describe the Information Technology Expansion Program (Technology Expansion Program)?

A. Yes. The Technology Expansion Program is in place to automate business processes, add functionality and enhancements to existing tools or systems, and fund additional software licenses of existing commercial off the shelf ("COTS") systems. The Technology Expansion Program addresses many types of technology investment projects across offices, substations, plants, meters, and datacenters. Infrastructure investment examples include hardware, software, fiber optic products, physical security, services for inside and outside construction. Application enhancements further operational efficiencies by leveraging COTS solutions, increase security controls, and improve Avista's responsiveness to customer needs.

Investment in technology expansion is made at this time to promote efficiencies through automated business technologies that allow Avista to gather, transmit, and analyze more data and guide sound business decisions that bring value to our customers. If we delay or cancel this technology investment, Avista risks a longer lag in business automation, which can result in longer wait times, manual business processes, and system-wide inefficiencies.

Q. Is Avista implementing or installing leading-edge or first-of-its-kind technology and applications?

A. No. The system and application investments under this program represent fundamental technology necessary to run our utility. As stated previously, investment in this program includes, for example, increasing the license count of existing applications, functionality enhancement for existing applications, and expansion of data center operational infrastructure.

Q. Where can more information be found related to the program?

A. The supporting business case for the program can be found in my exhibit, Exh. JMK-2.

Q. What capital transfers to plant for this program did Avista make in 2017 and 2018?

A. The total capital investment was $15,603,232 and $5,782,285 in 2017 and 2018, respectively, on a system basis.

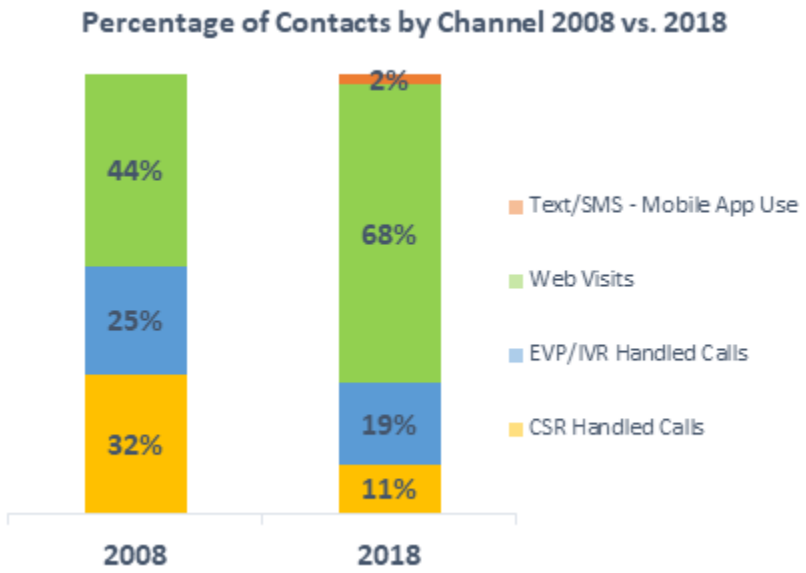
Project #3 – AvistaUtilities.com Redesign Project

Q. Please describe the AvistaUtilities.com Redesign Project.

A. Like many businesses today, Avista is experiencing continued growth in the use of its customer website, myavista.com (formerly AvistaUtilities.com). The website was originally built in 2006-2007, but because the technology landscape has advanced so quickly, the site did not meet current web best practices for security and customer usability. This project updated and improved the technology, overall web usability, security, and customer satisfaction. Not replacing the aging website would have limited its potential for customer engagement opportunities and left it open to security risks. The website is part of Avista's plan to provide customers a more effective channel to meet their expectations for self-service options, including mobile, outage notification, energy efficiency education, and to drive self-service as a means to lower transaction costs.

Interest in interacting with Avista via the web continues to increase. In fact, since 2002, our web usage has increased 867% and today represents almost 68% of our overall customer contacts. An average of 87% of all customer contacts are made through electronic channels (with 68% belonging to the web and 19% belonging to the Enterprise Voice Portal). Illustration No. 1 below shows the change in how customers interact with Avista:

Illustration No. 1



In 2018, we conservatively processed more than $450,000 per day in payment transactions through the web. The Company has experienced a 33% increase in web transactions since 2016 alone. All this tells us what we all know—the web is a critical and increasingly important channel for our customers who are interested in self-service, and delivers value to our customers from our continuous investment.

Q. What type of technology projects fell under the AvistaUtilities.com Redesign Project?

A. The multi-stakeholder website management team determined four primary areas of focus for updating the site: 1) improving navigation, 2) updating the look and feel of the overall site, 3) creating a new homepage layout, and 4) improving self-service and search functionality. These project initiatives delivered a much needed platform and functionality to provide our customers more information on outages, notifications and alerts, as well as self-service features.

For example, one of our first initiatives under this business case, delivered a web outage map (Storm Center) that provided visibility to our customers on electric outages throughout our services territory.[2] It also allowed customers to manage outage alert preferences via email and/or text. Additionally, an administrative console allows Avista the ability to update and manage information that is displayed on the outage map and our Customer Service Representatives (CSRs) to further assist customers with their preferred notifications of choice. The administrative console streamlines a business process that used to require highly technical resources to make simple changes, and facilitates proactive communication with our customers when outages occur. Specifically, we now have the ability to manually override map data during large storm events to provide more real-time updates with Estimated Restoration Times (ERTs) specific to county, zip codes during storm events. The broadcasting alerts feature can send out during emergencies to our customers on their channels of choice.

[2] The outage map, alerts, and administrative console could not have come at a better time, as in the fall of 2015 the Inland Northwest was hit with a catastrophic windstorm. The outage map was released three weeks before the windstorm and proved to be a very useful tool for our customers to stay informed on the vast outages and Avista's recovery efforts. We had over 830,000 visits to the outage map during the storm and recovery effort. It served as a two-way channel of communication for our customers to get real-time information on recovery efforts directly to their mobile device of choice, as well as give them the ability to report an outage that may have been missed. Considering that many of our customers affected by the windstorm did not have internet access at home or work due to the vast outage throughout our service territory, many used their mobile devices to inform and stay informed on the recovery efforts. This was made possible by the responsive design that was a critical requirement of the project, allowing for the website to be presented to each of our customers on their device of choice (e.g. tablet, laptop, desktop, mobile, etc.). Additionally, because of the easy usability and visual design, the media continually used screenshots of the map to communicate to customers, a practice that continues today, even in storm events of less magnitude.

Moreover, the first iteration of the new website redesign was released in February 2017, which allowed customers the ability to make payments seamlessly and securely through the new payment processor service integrated in the new website. The new payment processor was integrated with Avista's Enterprise Voice Portal (EVP) to allow those customers who would rather pay by phone to also immediately reflect the change on their account, thereby increasing customer's experience knowing that the change occurred on their account. In prior iterations, payments via the EVP could take days before being reflected on a customer's account. The upgrade provided CSRs a portal to view payments submitted by customers. Additionally, the new payment processor service allowed for scalability, while eliminating a transaction convenience fee that was charged to each of our residential customers for processing their payment. All this functionality was available in a responsive mobile format, making it easy for customers to transact at their fingertips.

The subsequent web pages and functionality were released in June 2017, and established an updated architecture platform to deliver streamlined navigation, more accessible content, and handle web transactions more efficiently. These changes allow Avista to publish content for our customers more efficiently and be better informed through enhanced analytics that allow a timelier response to customer needs. Thereby, improving the experience our customers are having while interacting with us. To ensure that this initial investment continues to provide value to our customers and deliver on customer satisfaction, Avista continues to invest in the customer experience through ongoing usability studies directly with customers, as well as analysis of satisfaction surveys and real-time customer ratings on site, which helps inform and guide our future investments to best meet our customers' expectations.

Q. How does the AvistaUtilities.com Redesign Project support Washington customers?

A. Avista's Washington customers benefit from the AvistaUtilities.com Redesign Project by having an omnipresent channel to inform and manage their energy choices as they relate to notifications, alerts, payments, change of service, energy savings, etc. On average, approximately 45% of the website traffic is from Washington, excluding Avista-based traffic. The project not only provided immediate benefits with the outage map, notification preferences, and seamless payment processing service, but it's also established a platform to continue to build on. This cannot be understated, as technology continues to evolve, so do our customers' expectations. The enhanced website analytics allows us to see the increase in customer use of our website and mobile application for self-service activities, such as: View or Pay My Bill, View or Report an Outage, View or Update Profile, etc. Additionally, customers are increasingly taking advantage of the various program Avista offers (e.g. comfort billing, paperless billing, auto-pay, and alerts). Overall, we are seeing a continuous steady climb in active registered web users, currently at over 120,000.

Q. Where can more information be found related to the program?

A. The supporting business case for the program can be found in my exhibit, Exh. JMK-2.

Q. What capital transfers to plant for this program did Avista make in 2017 and 2018?

A. The total capital investment was $11,858,541 in 2017, on a system basis, and no transfers occurred in 2018.

IV. 2019 PRO FORMA TECHNOLOGY PROJECTS

Q. Are you supporting pro forma 2019 capital additions as a part of your testimony in this case?

A. Yes. Table No. 2 below provides a listing of the 2019 pro forma capital additions that fall under my areas of responsibility.

Table No. 2: Pro Forma Technology Capital Additions for 2019

Project #	Project Name	2019
4	Endpoint Compute and Productivity Systems	$ 10,322,804
5	Enterprise & Control Network Infrastructure	7,608,225
6	Customer Facing Technology	11,344,133
	Total	**$ 29,275,162**

Q. How did you determine the capital investment threshold used for pro forma 2019 inclusion?

A. As Ms. Schuh discusses in more detail in her testimony, the Company used a $5 million capital investment threshold, on a system basis, for purposes of inclusion of 2019 pro forma capital projects.

Project #4 – Endpoint Compute and Productivity Systems

Q. Please describe the Endpoint Compute and Productivity Systems program.

A. As mentioned earlier, to provide more line of sight to specific drivers behind each technology investment, Avista began sun-setting the Technology Refresh and Expansion programs in 2017-18, and created multiple specific information technology business cases that describe the investment driver, governance structure, reason behind each investment, alternatives considered, and the risk of doing nothing.

The Endpoint Compute and Productivity Systems program was one of the new information technology business cases that was put in place to provide replacement of existing technology in alignment with the manufacturer product roadmaps for technology lifecycles. Not only is the asset condition of technology subject to the traditional mortality rate or lifecycle, but it is compounded by planned obsolescence, also known as technology obsolescence. As I discussed earlier, reliance on obsolete technology for automated business process presents significant risk that may only be solved with the reinstatement of manual process. Sustaining business process by replacing automation with workforce would increase labor expense and reduce efficiency. Therefore, the investments under this business case positively affect reliability and performance.

Q. What type of technology projects fall under Endpoint Compute and Productivity Systems program?

A. Devices under the Endpoint Compute and Productivity Systems are the interface for employees and contractors to access the systems and information required to perform their jobs in a safe, secure, reliable, and efficient manner. The following hardware is included under this program: personal computers (laptops, desktops, virtual desktop clients, etc.), virtual app deployment, tablets, printing, scanning, monitors, global positioning systems, cellular modems, scales, uninterruptable power supplies, and peripherals that are used in all areas of the Company. Additionally, software and centralized management tools are necessary for these systems. These include Microsoft Windows personal computer operating system, Microsoft Office Suite, remote management, Citrix Virtualization Infrastructure (Xen Desktop/XenApp), Configuration Management tool for software delivery and packaging, Virtual Private Networking, Battery and Thin/Zero Client Management, and Printer Maintenance and Management software.

Q. How does the Endpoint Compute and Productivity Systems business case support Washington customers?

A. Washington customers benefit from technology investment in end-user hardware and software assets that ensure access to and interface with systems of record to support a safe and reliable infrastructure and meet compliance requirements. For example, Washington customers benefit from Avista meeting safety requirements through our natural gas compliance programs that include Leak Survey and Atmospheric Corrosion. In this year's Leak Survey, field staff will be provided with lighter weight iPad tablets equipped with a new collection software that has an ease of use and support for efficient collection of data directly into our system of record to meet compliance requirements. The Leak Survey application assists leak survey inspectors in the field by providing electronic maps that includes the locations of the statistical sample of locations to be surveyed, as well as the ability to electronically report the results of their survey work. The ability to electronically record work as it is completed in the field is another example of deployed technology reducing risk by providing more accurate and timely tracking of work.

Additionally, and as part of keeping up with vendor-driven technology obsolescence, Avista's technology team manages technology lifecycle plans to maintain system reliability. These technology lifecycle plans provide recommendation on technology replacement schedules. For example, Avista is undergoing a Microsoft Windows 7 replacement project, which upgrades PC operating systems to Windows 10 and packages all compatible software applications for re-deployment to new devices. To optimize deployment cost and schedule, the project team is planning to include the deployment of the Microsoft Office Suite that is also due for replacement. Microsoft will no longer provide extended support to Windows 7 in 2020, and therefore devices still operating in Windows 7 will be at risk to no security patching or bug fixes. These operating

system upgrades span across all safety, control, customer and back office systems, and hundreds of applications required to safely and securely deliver energy to our customers.

Q. What capital transfers to plant for this project does Avista expect to make in 2019?

A. The expected investment in 2019 is $10,322,804, on a system basis.

Q. Where can more information be found related to the program?

A. The supporting business case for the program can be found in my exhibit, Exh. JMK-2.

Project #5 – Enterprise and Control Network Infrastructure

Q. Please describe the Enterprise and Control Network Infrastructure program.

A. The Enterprise and Control Network Infrastructure program supports the backbone of Avista's communication infrastructure, continuously transmitting critical data, information, and communication across our entire system to support daily operations, delivery of energy, and responsiveness to our customers in our entire service territory. It is the means by which all other services, processes, and applications connect to one another. Network connections can be both wired and wireless, and transmit data or information to and from field offices, call centers, substations, generation plants, among field staff, and between systems. This interconnectivity enables Avista to maintain insight on the safe and secure delivery of natural gas and electric services to our customers, as well as the office communication necessary to conduct daily operations and business processes.

Network technology is constantly changing and requiring continuous assessment to meet various use cases that support safety, control, customer facing and back office systems. Depending

on the criticality of the system, data, or information it transports, Avista is required to build redundant paths to assure continuous connection to critical systems should a network outage occur. Maintaining redundant paths allows for business continuity in the event of an outage. Alternative network technology is necessary to provide right-size infrastructure to serve both urban and rural areas of our territory. This portfolio of network technology includes fiber optic cable, dedicated carrier circuits, and point-to-point or –multipoint microwave solutions. Avista reviews for the most optimal network transport alternative depending on the topography, cost, and reliability. In some cases, traditional telecommunication carriers will not make connectivity available, as it is not cost effective to buildout infrastructure to very remote or rural areas. However, Avista must serve all its customers regardless of where they live and is therefore required to provide network transport service that support safety, control, customer facing and back office systems. Avista's customer service representatives, field staff workers, and crews all rely on the same networks to communicate with customers regarding service connects, disconnects, outages, etc. Continuous investment in network systems technology has a direct impact on customer satisfaction, as we build our ability to communicate directly with our customers in the field, on the phone, and through the web.

Q. What type of technology projects fall under Enterprise and Control Network Infrastructure program?

A. The investments under this business case are driven by maintaining performance and capacity of Avista's telecommunication super-highways. In 2019, Avista will continue investment in Optical Ground Wire (OPGW) propagation, which combines two functions of grounding overhead power lines, as wells as allow for high-speed transmission of data for either protection and control systems as they relate to the transmission line and also for voice and data

communication necessary to support our field offices throughout our service territory. Much of OPGW investments are coordinated with transmission line replacement schedules to leverage planned outages that are required to replace an aged line, while improving network system reliability. Other opportunities for OPGW investment include connectivity to new substations that support customer growth, such as our current investment from the Othello Switch Station to the Othello Substation. Lastly, Avista continues to invest in private OPGW infrastructure to transition from leased fiber services to reduce potential increases in operating cost when existing long term agreements expire.

To optimize connectivity and redundancy to field offices that support our customers in rural or hard to reach areas, Avista also invests in wireless microwave links from mountain top to mountain top that allow high-speed transmission of data, communication and information across two points or multi-points. This is more efficient and cost effective than running cable in rugged or rural terrain. In some cases, it is the only network transportation technology able to reach some of the most remote sites. Microwave links are able to penetrate weather conditions, such as rain, fog, and snow allowing effective transmission year round. In 2019, Avista continues to replace aging microwave links across our services territory that are beyond their useful life. For example, Avista is refreshing the links from Mount Spokane to Creston Butte, as well as the link to the Pullman Service Center.

Additionally, network infrastructure consists of more than just cables, microwave links, and routing equipment; it includes operational software that manages the traffic of data, communication and information across the various network layers. The software allows Avista to set rules around optimizing performance, establishing alternative paths for redundancy, and maintaining security protocols to ensure further system reliability. For example, in 2019, Avista

will upgrade the Wireless Local Area Network (LAN) Controller, which traffics wireless communication in all our facilities. This system is currently housed in our data center at our Mission campus, but serves as the brain or decision-making system to manage how our employees and their devices connect to various safety, control, customer service, and back office systems. The Wireless LAN Controller also enables the security of wireless devices connecting to the Avista network.

Q. How does the Enterprise and Control Network Infrastructure business case support Washington customers?

A. Washington customers benefit from investment under this business case as it enables business process to field offices and facilities that provide a safe, secure, and reliable infrastructure. Without continuous investment in the Enterprise and Control Network Infrastructure business case, Avista's telecommunication backbone would become unreliable. This in turn would have significant consequences on every other business process that uses various network transportation paths to move data, information or communication. These interconnections or links are not only necessary, but cannot be looked at independently. Instead, they are a system, a sum of many parts and components that allows transmission of communication, information and data throughout our service territory to deliver energy to our customers.

Q. What capital transfers to plant for this project does Avista expect to make in 2019?

A. The expected investment in 2019 is $7,608,225, on a system basis.

Q. Where can more information be found related to the program?

A. The supporting business case for the program can be found in my exhibit, Exh. JMK-2.

Project #6 - Customer Facing Technology

Q. Please describe the Customer Facing Technology program.

A. In an effort to keep pace with customer demands and quickly evolving technologies, Avista intends to expand on the foundational technologies established during previous business cases, and offer more channels of choice, including self-service options that meet customer needs and help reduce overall business costs. As customer expectations have changed, companies are expected to deliver fast, easy, personalized, an intuitive self-service. According to Forrester Research, 73% of U.S. consumers say "valuing my time" is the most important component of their online customer experience. They are looking for more than correct answers or quick response times. They want a 'consistent' experience from their first interaction to the resolution of their issue.

Q. What type of technology projects fall under Customer Facing Technology program?

A. A primary example of a project funded under the Customer Facing Technology program is the expansion of our Outage Mobile Application to include payments, text messaging around payments and billing, and "pay by text" functionality. Expanding our mobile options will decrease call center volumes, resulting in reduced hold times and enhanced customer satisfaction. It will also increase adoption of electronic billing and payment transactions, which lead to lower processing costs. Additionally, customers are interested in new products and services such as online services/job request tracking, appointment notifications, and mobile energy management in the home (such as smart home offerings, expansion of mobile applications and customer notification options).

Customers are beginning to face a time where there are increased energy related choices, such as solar, storage, electric vehicles (and the associated charging options), and energy efficient equipment. In this array of increasing choices, customers are looking to Avista to offer guidance and advice as they make these energy decisions. Avista has responded to this need with tools, such as our HVAC dealer network, Furnace Filter program, Solar Estimator, and our soon to be launched Home Energy Marketplace. These programs are a start, but many other future opportunities will arise that will help us to best advise our customers.

Q. How does the Customer Facing Technology business case support Washington customers?

A. Washington customers benefit from technology investment in end-user hardware and software assets that ensure access to and interface with systems of record to support a safe and reliable infrastructure and meet compliance requirements. Further, customers continue to expect more value for their energy dollar and are interested in a variety of offerings that can simplify their interactions with Avista and give them more information about and control over their energy use. Avista cannot pick and choose which customers to serve and which not to. We must serve them all. However, that in itself presents a challenge as our customer demographics vary from young to older adults, from urban to rural residents, and most importantly, from customers who are digitally connected to those still wanting to walk in their payments. This period of transformation requires us to provide multiple channels to serve our customers throughout our service territory.

Specifically, our customers can now use 'pay by text' functionality and self-service functions through www.myavista.com. Additional web enhancements will include notifications and alerts, text messaging around payments and billing functionality. In 2019, Avista's customers

will be able to use the mobile app to manage and pay their bills and authenticate users for easy access to their accounts.

Q. What capital transfers to plant for this project does Avista expect to make in 2019?

A. The expected investment in 2019 is $11,344,133, on a system basis.

Q. Where can more information be found related to the program?

A. The supporting business case for the program can be found in my exhibit, Exh. JMK-2.

V. IS/IT OPERATING AND MAINTENANCE EXPENSES

Q. Please summarize the incremental IS/IT O&M expenses beyond the Company's 2018 historical test period, included in this case.

A. In Company witness Ms. Andrews' Electric and Natural Gas Pro Forma Study, she has pro formed certain information services and technology expenses, including non-labor costs associated with products and services, licensing and maintenance fees, and other costs for a range of information services programs that will be in place during the rate period beginning on April 1, 2020. These incremental expenditures are necessary to support Company cyber and general security, emergency operations readiness, electric and natural gas facilities and operations support, and customer services. In this case, IS/IT has narrowed the scope of incremental expenses to known and measureable non-labor items. These incremental expenses are based on having a contractual agreement in place, are pre-paid costs, or are the continuation of costs for products and services that have increased beyond the 2018 historical test period. Further detail supporting these

IS/IT incremental expenses have been included with Ms. Andrews' workpapers and provided with the Company's filed case.

Q. What are the primary <u>incremental</u> IS/IT non-labor O&M expenses?

A. The primary incremental non-labor O&M expenses include Hardware and Software License support and maintenance, and Software Services and Subscriptions. Hardware and Software License support and maintenance are costs associated with a traditional licensing model where a capital asset license is purchased along with the required license support and maintenance costs. Support and maintenance is the ongoing expense portion associated with vendor provided security patches, bug fixes, incremental upgrades, and expert technical support with pre-determined service level agreements. Software Services and Subscriptions are costs associated with a less traditional but increasingly more common licensing model where all or most of the license cost is considered ongoing expense, rather than a capital asset license. Examples can include items like SAAS, data feeds, or site license subscriptions. Costs in this category range from solutions that enable or supplement on premise systems, to complete end-to-end solutions (infrastructure, networks, computing, storage, hosting, etc.) with little to no on premise footprint. The incremental expenses included in this case, on a system basis, are categorized by general cost types below in Table No. 3.

<u>Table No. 3 Non-Labor O&M (System)</u>

General Cost Types	2018	2019 incremental	2020 incremental
Dedicated Voice and Data Circuits	81,263	8,842	7,929
Hardware License Support	1,073,208	288,883	170,282
Professional Services	336,491	40,965	0
Radio Tower Site Leases	209,044	32,077	9,344
Software License Support	7,121,454	526,925	349,639
Software Services and Subscription	2,618,641	728,834	1,761,124
Grand Total	**11,440,101**	**1,626,526**	**2,298,319**

Q. What is driving the increase in these non-labor O&M expense categories?

A. There are several factors driving the increase in IS/IT non-labor operational expenses. Drivers of non-labor costs include: growth in capital investments in technology that results in an increase to product maintenance and support expenses for each of the systems; vendor changes to their licensing and delivery models – from a perpetual license to a subscription license, or from an on-premises solution to a cloud-based solution; and, vendor changes to their basic pricing of products and services such as annual consumer price index increases.

Table No. 4 below categorizes the non-labor incremental system expense increases included in this case into general functional areas that can drive incremental increases.

Illustration No. 4 (System):

Functional Areas	2018	2019 incremental	2020 incremental
Central Systems	440,932	88,617	25,661
Communications Systems	801,897	84,588	5,821
Distributed Systems	526,850	170,662	-34,469
General Business Systems	7,628,184	812,346	1,952,593
Network Systems	1,027,813	222,489	231,972
Security Systems	1,014,425	247,823	116,741
Grand Total	**11,440,101**	**1,626,526**	**2,298,319**

A description of these general functional areas, combined for 2019 and 2020, are as follows:

- Central Systems ($114,278) include expense associated with the Company's data centers, such as servers, storage, computer processing, and disaster recovery planning.

- Communications Systems ($90,409) include expense associated with the Company's enterprise voice communications, such as inbound and outbound calling, call centers, two way radio crew communications, and cellular communications.

- Distributed Systems ($136,193) include expense associated with employee productivity tools, such as tablets, desktops, laptops, printers, and Microsoft Office products.

- General Business Systems ($2.765 million) include expense associated with the support, maintenance and licensing of other products and services leveraged by areas across the Company, from items like Oracle E-Business Suite for back office financial systems, to IBM Maximo for the Company's Enterprise Asset Management system.

- Network Systems ($454,461) include expense associated with products, services, and leases that provide network and telecommunication solutions for the delivery of energy, safety systems, customer contact channels, and back office productivity.

- Security Systems ($364,564) include expense associated with the Company's cyber systems, such as anti-virus, firewalls, and business continuity software.

Table No. 5 below provides five examples of incremental expenses that have contractual agreements in place, are pre-paid costs, or are the continuation of costs for products and services that have increased beyond the 2018 historical test period:

Table No. 5: Examples of IS/IT Incremental Expenses

Source of Increase	Functional Area	General Cost Type	Primary Driver of Increase	Incremental Expense
Budget System Replacement	General Business Systems	Software Service and Subscription	Obsolescence: current system is no longer supported	$ 274,502
The Budget System is used company wide for budgeting, forecasting, and variance analysis. The current system is obsolete and must be replaced. No support cost is in place at this time. No support costs existed in 2018.				
Firewall Upgrade	Security Systems	Software Service and Subscription	Security: evolving threats drive security upgrades	$ 228,293
Firewalls protect against unauthorized cyber access to the Company's systems. Software subscriptions are required for advanced features to be fully functional.				
Network Support and Maintenance	Network Systems	Hardware License Support	Required Refresh and Growth in Network Support	$ 361,159
Networks are the backbone of the Company's communications infrastructure. Replacement of aged or obsolete equipment and growth in network support drives incremental uplift in support and maintenance.				
Schneider Electric Product Support	General Business Systems	Software License Support	Capital Investments in Geospatial Mapping of Assets	$ 181,756
This product is foundational to the Company's investments to model, design, maintain and manage electric and natural gas infrastructure maps and information, enhancing safety, reliability and efficiency.				
Customer Experience Platform	General Business Systems	Software Service and Subscription	Investment in Customer Experience	$ 1,400,578
To support our customer engagement strategy, we will provide our employees with visibility and access to valuable information across channels and systems; thus enabling personalized and cross-channel customer experiences.				

Q. Please discuss an example of a product or service with maintenance and support expense, and how it affects technology used by the Company.

A. Systems are becoming more and more highly integrated as business transactions become more integrated. In some cases, issues can arise while business transactions are traveling through these integrated paths resulting in system errors. These errors can cause data transmission delay or overall system unresponsiveness, restricting customers and employees from being able to complete a transaction (e.g. how the customer facing web integrates with customer billing, which integrates into financial and accounting systems, etc.). Quick identification and root cause analyses of these issues are paramount to system recovery and mitigation of future similar causes.

In 2017, Avista invested in an application performance management and IT operations tool. This tool quickly pinpoints issues when they arise to assist in the quick identification of the root cause in application or system performance degradation. Based on the complexity and number of disparate systems our business and customer transactions traverse, it would not be feasible to maintain industry standard service levels by relying on our previous manual approach to system support without incurring significant cost increases.

Q. How has Avista focused on managing its overall IS/IT expenses for the benefit of its customers?

A. Avista focuses on increasing reliability and optimizing systems for our customers' needs through the deployment, maintenance and support of technology. To optimize operating expense increases, Avista works to automate our systems through technology where reasonable and prudent to do so. For example, in 2017 we introduced a performance monitoring tool that automates a portion of the labor performed by our Information Systems teams. The automation successfully reduced internal labor costs, which more than offset the cost of the product maintenance and support expense. This has allowed us to redeploy our Information Systems

operations team labor resources, and provides an immediate benefit by reducing the time to determine root cause and rectify system issues when they arise.

Another way we look to mitigate increasing expenses is to work with our vendors, and where appropriate to do so, negotiate multi-year contracts that result in discounted maintenance and support rates. An example of this involves a 2017 telecommunications contract that had two years remaining on its term. The contract was renegotiated, resulting in an avoided cost increase of $215,000 over the life of the new agreement.

A third example comes from an expense optimization opportunity that surfaced when the Microsoft Lync system underwent a technology refresh to the Microsoft Skype system. The Skype system included a software integrated telephone function that duplicated the traditional telephone hardware. An analysis was performed to identify the benefits of eliminating a majority of the traditional desk telephones. Areas of opportunity included: a reduction of product support expense and repurposing labor associated with adding, moving, and supporting telephone hardware; and, a conversion from the traditional desk telephone system to a computer based software telephone system, resulted in avoiding expected operating expense increases tied to this work.

Lastly, another example of the Company seeking ways to manage its cost, is our "Work Digitization Effort". Started in mid-2018, the effort sought to identify and prioritize opportunities that may have cost savings potential through digitizing work or other processes. We continue to review and refine the ideas collected for new ways to further avoid or reduce expense.

These examples of cost reductions and cost management initiatives, illustrate some of the continuous improvement practices the Company employs to manage costs over time.

Q. Does this conclude your pre-filed direct testimony?

A. Yes.