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BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE APPLICATION)	CASE NO. AVU-E-17-01
OF AVISTA CORPORATION FOR THE)	CASE NO. AVU-G-17-01
AUTHORITY TO INCREASE ITS RATES)	
AND CHARGES FOR ELECTRIC AND)	
NATURAL GAS SERVICE TO ELECTRIC)	DIRECT TESTIMONY
AND NATURAL GAS CUSTOMERS IN THE)	OF
STATE OF IDAHO)	JAMES M. KENSOK
)	

FOR AVISTA CORPORATION

(ELECTRIC AND NATURAL GAS)

<u>**I.   INTRODUCTION**</u>

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.   Mr. Kensok, 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. Over the past 20 plus years, I have spent approximately one year in Avista's Internal Audit Department as an Information Systems Auditor with involvement in performing internal information systems compliance and technology audits. I have been in the Information Services Department for approximately 19 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,

1 applications development, outsourcing agreements, contract

2 negotiations, technical support, cost management, and data

3 management. I was appointed Vice-President and CIO in January

4 of 2007 and Chief Security Officer in January of 2013.

5   A table of contents for my testimony is as follows:

6 **Description**   **Page**

18   **Q.   Are you sponsoring any exhibits in this proceeding?**

19   A.   Yes. I am sponsoring Exhibit No. 10, Schedule 1, which

20 includes the Information Technology Capital Project Business

21 Cases.

22   **II.   IS/IT OVERVIEW**

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

24   A.   Our investments in technology are twofold – we invest

25 in capital projects (new technologies or upgrades of existing

26 technologies) and we invest in Operating and Maintenance (O&M)

27 for existing technologies. Overall, information technology for

1 Avista is generally driven by the need for cyber security

2 systems to protect customer data and critical utility

3 operations, legal and regulatory requirements, cost-effective

4 replacement of information technology assets, management of

5 information technology obsolescence, efficient and cost-

6 effective work processes, and training.

7   Avista's approach to making investments in information

8 technology is a multistep process, which consists of

9 identifying, analyzing, assessing and decision-making. Avista

10 identifies foundational technologies that support an evolving

11 digital business model aligned with industry best practices and

12 customer needs (e.g., safe and reliable infrastructure, real-

13 time customer engagement, and cyber security).

14   **Q.   Please provide a brief overview of the foundational**

15 **areas of Avista's technology investment.**

16   A.   The core information technology investments are

17 focused in the following six technology areas:

18   **A. Networks**
19   **B. Data Management and Analytics**
20   **C. Mobility**
21   **D. Security and Business Continuity**
22   **E. Technology Refresh and Expansion**
23   **F. Customer Engagement**
24
25   Making investments in these six areas in the utility

26 industry is not new — and has been the focus of information

27 technology for decades — but these areas are experiencing

1 significant change as a result of new technologies, increases

2 in volume and velocity of data, the sophistication of cyber-

3 attacks, and consumer behavior.

4   Based on these changes, Avista is focused on 1) responsive

5 field staff and crews who are able to communicate and transmit

6 information across a reliable network; 2) near real-time

7 integrated data and analytics to improve customer satisfaction

8 and employee productivity; 3) near real-time information

9 exchanges between customers and Avista through varying mobile

10 devices in the field and on the web; 4) strong and skilled

11 defenses against increasingly sophisticated cyber threats to

12 the utility industry; and 5) the tools to help customers manage

13 their energy consumption and pay for the services they use. A

14 brief summary, with examples, is provided below:

15 **A. <u>Networks</u>**

16   Networks are the foundation of Avista's communication

17 infrastructure, continuously transmitting critical data,

18 information, and voice communication across our entire system

19 to support daily operations and responsiveness to our customers.

20   An example of a critical network technology investment is

21 replacing Avista's aging microwave equipment and systems with

22 current technology to provide for high speed voice and data

23 communications that receive and transmit data for electric and

24 natural gas operations across all jurisdictions. Avista's

1   current network technology is past its useful life and is no

2   longer supported by the manufacturer. Many of the communication

3   sites to be replaced not only serve as primary communication

4   paths for critical data, but also as redundant paths during

5   network outages. Maintaining redundant paths allows for business

6   continuity in the event of an outage. Avista's customer service

7   representatives, field staff workers, and crews all rely on the

8   same networks to communicate with customers regarding service

9   connects, disconnects, outages, etc. Continuous investment in

10 network systems technology has a direct impact on customer

11 satisfaction, as we build our ability to communicate directly

12 with our customers in the field, on the phone, and through the

13 web.

14   **B. <u>Data Management and Analytics</u>**

15   Data Management is also foundational to the Company and

16 drives daily decisions to improve operational efficiencies and

17 respond to customer requests. We use data to determine optimal

18 dispatch of generation resources to meet our customer loads, to

19 determine our future demand for electricity and natural gas,

20 and to ensure that customer needs and preferences are addressed.

21 We use call volume data to adjust customer service

22 representative staffing times to align with customer call

23 volume. We use data to schedule our crews. Through research with

24 other utilities (e.g., CenterPoint Energy) Avista is learning

1   about foundational data and analytics technology platforms and

2   business use cases that support customer-focused programs.

3   Avista is also focused on additional uses of data and analytics

4   to help advance workforce efficiency, as well as to assess

5   existing and new customer programs.

6   **C. <u>Mobility</u>**

7   Improved mobile technology is changing what it means to

8   "digitally enable" our utility workforce and our customers.

9   Mobile technology has been one of the fastest-growing technology

10   areas in the past 10 years, mainly as a result of the rapid

11   growth in consumer mobile device technologies, such as tablets,

12   smart phones, and applications ("apps"). These new devices and

13   apps are key components of future mobile workforce enablement

14   at Avista. For example, the mobile system design tool provides

15   field personnel with powerful functionality to meet customer

16   responsiveness expectations, such as providing capability for:

17   electronic receipt and completion of construction work orders;

18   access to Geographic Information System (GIS) data in the field;

19   real time capture of as-built configuration and materials; and

20   electronic documentation of asset and compliance data by taking

21   advantage of a variety of data sources, including digital image

22   data, keyed data, bar code scanned data, and Global Positioning

23   System (GPS) location data.

24   Mobile customer interaction technology enables Avista to

1 deliver information and services to customers using smartphones

2 and tablet computers, and to deliver communications and services

3 via short message service (SMS) or text messaging. New

4 responsive design allows desktop webpages to be viewed in

5 response to the size of the screen or web browser so that Avista

6 can interact with a broader customer base via smaller screen

7 mobile devices.

8   A mobile-friendly website that is connected to relevant

9 systems of record allows customers to access: Avista's

10 information system for bill presentment and payment; the outage

11 management system for outage reporting and status; and the meter

12 data management system for customer consumption analytics.

13   Mobile customer interaction channels help improve

14 customer-facing functions and outbound notifications. Mobile

15 access can reduce call center volumes resulting in reduced hold

16 times and enhanced customer satisfaction, and it can also

17 increase adoption of electronic billing and payment transactions

18 resulting in lower processing costs.

19 **D. <u>Security and Business Continuity</u>**

20   Security technologies in the electric and natural gas

21 utility industry are critical to the protection of the energy

22 infrastructure and of Avista's sensitive customer data, employee

23 data, operating data and financial data. Investments are

24 necessary to protect Avista's utility assets and to prepare for

1   the appropriate response and recovery if and when there is a

2   security incident, a data breach, or when a natural or human-

3   induced disaster event takes place. Avista's security program

4   focuses on protecting its physical and cyber assets, including
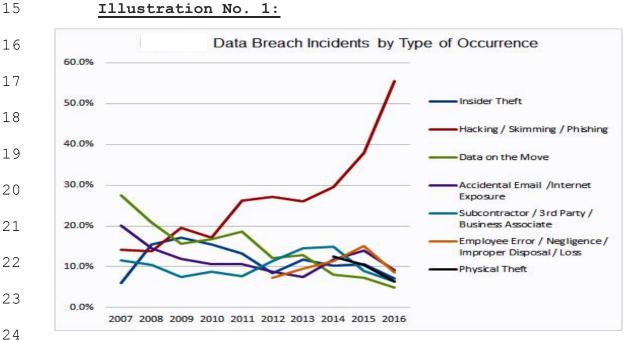
5   protecting against a data breach.

6   The number of U.S. data breaches tracked in 2016 hit an

7   all-time record high of 1,093 according to a report released by

8   the Identity Theft Resource Center (ITRC) and CyberScout

9   (formerly IDT911). This represents a substantial increase of 40

10   percent over the near record high of 780 reported in 2015.

11   Avista's security program is critical to defend against a data

12   breach. Illustration No. 1 is a graph from ITRC showing the

13   steep increase in data breach incidents through 2016 by a

14   variety of sources.

15   **Illustration No. 1:**

16

Data Breach Incidents by Type of Occurrence

1   Avista is a member of the American Gas Association/Edison

2 Electric Institute (AGA/EEI) cyber security task force that

3 analyzes and follows best security practices for protecting the

4 utility industry using the National Institute of Standards and

5 Technology (NIST) framework. Avista is an active participant in

6 additional industry security groups, such as Downstream Natural

7 Gas Information Sharing and Analysis Center (DNG-ISAC) that

8 serves natural gas utility (distribution) companies,

9 Electricity Information Sharing and Analysis Center (E-ISAC)

10 that serves electric utilities, EEI Cyber Mutual Assistance that

11 serves electric and natural gas utilities, and the use of

12 Transportation Security Administration's (TSA) Pipeline

13 Security Guidelines, and others.

14   In addition to being an active participant in protecting

15 U.S. critical infrastructure and following best practices in

16 security, Avista appropriately invests in its business

17 continuity program, following the industry standard NIST

18 framework which focuses on the following: Identify, Protect,

19 Detect, Respond, and Recover. Avista also follows the Federal

20 Emergency Management Administration (FEMA) Incident Command

21 System (ICS) for planning, response and recovery efforts.

22 Continuous investment in cyber and physical security and

23 business continuity programs and technologies is a technology

24 investment priority to maintain a safe and reliable energy

1 infrastructure and to protect sensitive customer data, employee

2 data, operating data and financial data.

3 **E. <u>Technology Refresh and Expansion</u>**

4   Through our technology refresh and expansion program,

5 Avista evaluates and plans the direction of its information

6 technology ("IT") portfolio. A team of IT professionals,

7 managers, and directors guide the technology refresh and

8 expansion program, analyzing the benefits and costs of investing

9 in new technology and maintaining existing technology. The team

10 considers whether the current technology environment is stable

11 and secure so that it is in Avista's and its customers' best

12 interests to maintain it, and if so, for how long. If not, other

13 options that may better suit the technology needs of Avista and

14 its customers are discussed. The technology refresh and

15 expansion program also evaluates the risks of not making an

16 immediate technology change or deferring a change to a later

17 date. Periodic technology planning sessions are held, which

18 include Vice Presidents, Directors, and Managers from various

19 business units, to review and discuss initiatives and guide

20 project prioritization. Decisions based on the discussions in

21 these technology refresh and expansion planning sessions are

22 documented in more formal business cases that guide future

23 technology investments.

1   **F. <u>Customer Engagement</u>**

2   Customer engagement is how we identify and respond to

3   customer expectations. Throughout our industry, customers

4   continue to expect more value for their energy costs and are

5   interested in a variety of offerings that can simplify their

6   interactions with Avista and give them more information about,

7   and control over, their energy use.[1]

8   Research shows that by 2018 more than 50 percent of our

9   customers will use a tablet or smartphone technology first for

10 all online activities[2]. To meet our customers' expectations we

11 must stay abreast of the technological changes and be prepared

12 to offer services and choices that align with customers'

13 everyday use. For example, environmentally conscious consumers

14 may be interested in managing their carbon footprint by electing

15 to pursue alternative energy resources, setting up auto or

16 paperless payments, or receive alerts when reaching preset

17 therm or kilowatt hour thresholds. Only through continuous

18 customer engagement can we truly understand and endeavor to

19 meet our customers' changing needs and expectations, which are

20 growing beyond traditional electric and natural gas services.

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[1] KPMG, The race for the customer, Winning in a dynamic marketplace (2016)
[2] Gartner, Newsroom. (2014, December 8). *Gartner Says By 2018, More Than 50 Percent of Users Will Use a Tablet or Smartphone First for All Online Activities* [Press release]. Retrieved May 8, 2017, from http://www.gartner.com/newsroom/id/2939217

III. IS/IT CAPITAL PROJECTS

1

2   **Q.   Company witness Mr. Morris identifies the six**

3 **"Investment Drivers" or classifications of Avista's**

4 **infrastructure projects and programs. What are the Company's**

5 **planned investments in IS/IT, and how do they fit within the**

6 **six investment drivers?**

7   A.   The six Investment Drivers are summarized as follows:

8

9   1.   <u>Customer Requested</u> – Respond to customer requests for
10   new service or service enhancements;
11   2.   <u>Customer Service Quality and Reliability</u> – Meet our
12   customers' expectations for quality and reliability
13   of service;
14   3.   <u>Mandatory and Compliance</u> – Meet regulatory and other
15   mandatory obligations;
16   4.   <u>Performance and Capacity</u> – Address system performance
17   and capacity issues;
18   5.   <u>Asset Condition</u> – Replace infrastructure at the end
19   of its useful life based on asset condition, and
20   6.   <u>Failed Plant and Operations</u> – Replace equipment that
21   is damaged or fails, and support field operations.
22

23   The IS/IT capital projects planned to be transferred to

24 plant in service during the period 2017 through 2019 are shown

25 in Table No. 1 below. The projects are grouped together under

26 the relevant investment driver. An explanation of each of the

27 projects follows the table.

Table No. 1:

Enterprise Technology Capital Projects (System) In $(000's)	2017	2018	2019
Asset Condition			
Microwave Refresh	5,322	2,100	2,100
Project Atlas	6,563	9,734	807
Technology Refresh to Sustain Business Process	$ 21,191	16,957	14,140
Customer Service Quality and Reliability			
AvistaUtilities.com Redesign	9,093		
Customer Facing Technology	1,830	2,237	1,900
Mandatory and Compliance			
High Voltage Protection for Substations	937	30	
Next Generation Radio Refresh	102		
Performance and Capacity			
Enterprise Business Continuity Plan	665	486	450
Enterprise Security	3,816	3,639	1,710
Technology Expansion to Enable Business Process	13,941	14,350	12,315
Total Planned Enterprise Technology Capital Projects	$ 63,461	$ 49,534	$ 33,422

Asset Condition:

Microwave Refresh — 2017: $5,322,000; 2018: $2,100,000; 2019: $2,100,000

Avista manages an ongoing program to systematically-replace aging and obsolete technology under "refresh cycles" that are timed to optimize hardware/software system changes. This project will replace aging microwave communications technology with current technology to provide for high speed and more reliable data communications. These communication systems support relay and protection schemes of the electrical transmission system. The decision to make this technology investment at this time will reduce Avista's risk that failure of these critical communication systems will have a significant impact on Avista's transmission capacity and ability to serve our customers electrical needs. If we delay or cancel this microwave refresh technology investment, Avista risks out of date communications technology that could result in a shut-down of critical communications and transmissions systems.

Project Atlas – 2017: $6,563,000; 2018: $9,734,000; 2019: $807,000

Avista Facility Management (AFM) is the legacy custom-coded system that the utility uses to manage the location and current operating state of its critical electric and gas assets (e.g. pipes, poles and wires). Environmental Systems Research Institute (ESRI) GIS serves as the foundational data structure on which AFM applications are built or rely on. AFM is the system of record for spatial electric and gas facility data and provides the connectivity model to support the AFM applications. This program replaces legacy custom-coded systems with COTS technology common in the utility industry. Project examples include the replacement of the Electric and Gas Design tools, which are applications for the design of electric and natural gas facilities, as well as Electric and Gas Edit tools inherent in the system used for data edits prior to committing final data changes and additions. These tools also include a mobile version for in-the-field updates by field staff, enabling real time changes in the system, as well as meeting customer responsiveness expectations. For the reliability of system records and the efficiency reasons stated above, this technology investment is made at this time. If we delay or cancel this AFM technology investment, Avista risks not having up to date information on our natural gas and electric assets that could result in harm to our customers, crews and business operations.

Technology Refresh to Sustain Business Process – 2017: $21,191,000; 2018: $16,957,000; 2019: $14,140,000

Avista manages an ongoing program to systematically-replace aging and obsolete technology under "refresh cycles" that are timed to optimize hardware/software system changes and industry trends. The business case program generally has over one hundred active projects each year. The scope spans technology solutions for back office, customer facing, energy operating and control systems. An example of the 2017 project scope is as follows: Oracle E-Business Suite, Enterprise Budget Tool Replacement, BizTalk Upgrade, Cognos Upgrade, Metropolitan Area Network Transport Backhaul Refresh, MS Exchange 2013 Upgrade, SCCM Software Package Implementation, Virtual Server Upgrade, and Linux Operation System Upgrade. This technology investment is made at this time based on technology lifecycle planning and risk management. The decision to make this technology investment will lessen the use and maintenance of obsolete or custom technology and optimize integrations with other commercial off-the-shelf (COTS) investments. If we delay or cancel this technology investment, Avista risks various

technologies that currently support automated business processes and operational efficiencies, to degrade and fall risk to technology obsolescence and security vulnerabilities due to loss of maintenance, support and patching.

Customer Service Quality and Reliability:

AvistaUtilities.com Redesign – 2017: $9,093,000
Like many businesses today, Avista is experiencing continued growth in the use of its customer website, Avistautilities.com. The website was originally built in 2006-2007, but because the technology landscape has advanced so quickly, the site does not meet current web best practices for customer usability and security. This project updated and improved the technology, overall web usability, security and customer satisfaction. Not replacing the aging website would limit its potential for customer engagement opportunities and open it 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 access, energy efficiency education, and to drive self-service as a means to lower transaction costs. After the revenue requirement was finalized in this case, it was determined that the transfer to plant amount has increased to approximately $12 million on a system basis. The Company will update this business case throughout the process of this case. If we were to delay or cancel this technology investment, it would pose risks to customer data security on the existing website platform.

Customer Facing Technology – 2017: $1,830,000; 2018: $2,237,000; 2019: $1,900,000
In an effort to keep pace with customer demands and quickly changing 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 cost. A primary example of a project funded under the Customer Facing Technology Program business case is the expansion of our outage mobile app to include payments, SMS messaging around payments and billing, and "pay by text" functionality. Expanding our mobile options can reduce call center volumes, resulting in reduced hold times and enhanced customer satisfaction. It can also increase adoption of electronic billing and payment transactions, which can lead to lower processing costs. Efforts like this are focused on providing tools for our customers that support general consumer preferences for mobile devices. The decision to make this

1   technology investment now is based on industry practice and
2   trends.[3] If we delay or cancel this technology investment,
3   Avista risks longer call center wait times, lower customer
4   satisfaction and generally, less efficient and higher cost
5   operations.
6
7   **Mandatory and Compliance:**
8
9   **High Voltage Protection for Substations – 2017: $937,000; 2018:**
10 **$30,000**
11 Telecommunication facilities, including Phone, Communication
12 Switches, SCADA, and Metering & Monitoring systems, are
13 commonly co-located inside Avista's high voltage substations.
14 This requires communications technicians to work in close
15 association with our high-voltage electrical equipment. Avista
16 has implemented new high-voltage protection & isolation
17 standards that are designed to lower potential risks to our
18 personnel and equipment. The decision to make this technology
19 investment at this time will ensure implementation of the
20 clearance changes required to meet the new standards and will
21 result in a safer working environment for our crews who work in
22 close proximity to high voltage electrical equipment. If we
23 delay or cancel this high voltage protection upgrade
24 investment, Avista crews will be at a higher risk of injury or
25 death.
26
27 **Next Generation Radio Refresh – 2017: $102,000**
28 This project is refreshing Avista's 20-year-old Land Mobile
29 Radio system. Avista maintains this private system because no
30 public provider is capable of supporting communications
31 throughout our rural service territory. And, since our systems
32 comprise a portion of our nation's critical infrastructure,
33 Avista is required to have a communication system that will
34 operate in the event of a disaster. This technology investment
35 is made at this time to fulfill a mandate from the Federal
36 Communications Commission that all licensees in the
37 Industrial/Business Radio Pool migrate to spectrum efficient
38 narrowband technology. If we delay or cancel this technology
39 investment, Avista risks a less efficient and reliable critical
40 infrastructure communication system and potentially significant
41 fines and penalties, and potential loss of our two-way radio
42 license.

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[3] KPMG, The race for the customer, Winning in a dynamic marketplace
(2016).

1 **<u>Performance and Capacity:</u>**
2
3 **Enterprise Business Continuity Plan - 2017: $665,000; 2018:**
4 **$486,000; 2019: $450,000**
5 Avista has developed and maintains an Enterprise Business
6 Continuity Program to support Avista's emergency response, and
7 to ensure the continuity of its critical business systems under
8 crisis conditions. The framework includes the key areas of
9 technology recovery, alternate facilities, and overall business
10 processes. The effort of developing and continuously improving
11 the program ensures the readiness of systems, procedures,
12 processes, and people required to support our customers and our
13 communities any time we are required to operate under critical
14 emergency conditions. A Business Impact Assessment (BIA)
15 typically drives the need for improvement projects, however
16 some projects are funded based on quality issues with existing
17 infrastructure following an annual exercise or actual event.
18 Projects within this business case may also support regulatory
19 requirements. The decision to make this technology investment
20 now is based on the continued need for reliable emergency and
21 business continuity systems to protect Avista's critical
22 technology and ensure continued operations. If we delay or
23 cancel this technology investment, Avista risks a potential
24 complete shut-down of operations and communications in the
25 event of an emergency.
26
27 **Enterprise Security – 2017: $3,816,000; 2018: $3,639,000; 2019:**
28 **$1,710,000**
29 There are three primary drivers of the increasing costs for
30 Enterprise Security: cyber security, physical security and
31 regulatory standards. Each plays a critical role in supporting
32 our delivery of safe and reliable energy to our customers.
33
34 <u>Cyber Security</u>
35 The security of our electric and natural gas
36 infrastructure is a significant priority at a national and
37 state level, and is of critical importance to Avista.
38 Threats from cyber space, including viruses, phishing, and
39 spyware, continue to test our industry's capabilities.
40 And while these malicious intentions are often unknown, it
41 is clear the methods are becoming more advanced and the
42 attacks more persistent. In addition to these threats,
43 the vulnerabilities of hardware and software systems
44 continue to increase, especially with industrial control
45 systems such as those supporting the delivery of energy.
46 The decision to make this technology investment now is
47 based on Avista's need to advance its cyber security

1   program and invest in security controls to prevent,
2   detect, and respond to increasingly frequent and
3   sophisticated cyberattacks.
4
5   <u>Physical Security</u>
6   While considerable attention is focused on cyber security,
7   physical security also remains a concern for our industry.
8   Physical security encompasses the aspects of employee
9   safety and the protective security of our facilities and
10   critical infrastructure. Acts of theft, vandalism, and
11   sabotage of critical infrastructure not only result in
12   property losses, but can also directly impact our ability
13   to serve customers. Securing remote unmanned or
14   unmonitored critical infrastructure is difficult,
15   especially when traditional tools such as perimeter
16   fencing by itself are not adequate. In response to these
17   challenges, Avista is investing in additional physical
18   security equipment, expertise and technology. The decision
19   to make this technology investment now is based on the
20   need to protect our utility assets from theft and vandalism
21   and employees from acts of terror or violence through
22   additional physical security protection measures (i.e.,
23   lighting and crash barriers), remote detection and
24   response technology.
25
26   <u>Regulatory Obligations</u>
27   Advancing cyber threats continue to drive change in the
28   regulatory landscape faced by Avista and the utility
29   industry. Early in 2013, President Obama issued the
30   Executive Order "Improving Critical Infrastructure Cyber
31   Security." The Order directed the National Institute of
32   Standards and Technology (NIST) to work with stakeholders
33   in developing a voluntary framework for reducing cyber
34   risks to critical infrastructure. The framework consists
35   of standards, guidelines, and best practices to promote
36   the protection of critical infrastructure. On May 11,
37   2017, a new Executive Order "Strengthening the
38   Cybersecurity of Federal Networks and Critical
39   Infrastructure" was issued that builds upon the 2013
40   Executive Order and addresses cybersecurity requirements
41   in federal networks, in critical infrastructure and for
42   the nation in general. The Federal Energy Regulatory
43   Commission also issued Order 791 on November 22, 2013,
44   approving the North American Electric Reliability
45   Corporation (NERC) Critical Infrastructure Protection
46   (CIP) Standards, Version 5. Both of these activities will
47   increase our security-related operating costs because they

1   require Avista's security controls and processes to
2   conform to new standards, guidelines, and best practices,
3   and is the basis for the decision to make this technology
4   investment now. For example, Avista is required by NERC to
5   adhere to the new CIP v.5 Standards by 2018. In addition
6   Avista also has requirements under the Payment Card
7   Industry (PCI) standards. These standards continue to
8   change as updates are made to the standards on a 1-2 year
9   cycle. If we delay or cancel Enterprise Security
10 technology investments, Avista risks non-compliance with
11 federal mandates and recommendations, a weaker and less
12 reliable infrastructure (both cyber and physical), and we
13 risk placing electric and gas operations, sensitive
14 customer and employee information and the safety and
15 security of people and critical operations and systems in
16 jeopardy.
17
18 **Technology Expansion to Enable Business Process – 2017:**
19 **$13,941,000; 2018: $14,350,000; 2019: $12,315,000**
20 This program facilitates technology growth throughout Avista,
21 including technology expansion for the entire workforce,
22 business process automation and increased technology to support
23 efficient business processes. For example; when trucks are
24 added to the fleet, communication equipment needs to be added
25 to the truck; as Avista hosts more customer data, disk storage
26 needs to be expanded, as customers expand their use of the
27 website, additional computing capacity is needed. This
28 investment is made at this time to promote efficiencies through
29 automated business technologies that allow Avista to gather,
30 transmit, and analyze more information and guide sound business
31 decisions. If we delay or cancel this technology investment,
32 Avista risks a longer lag in business automation, which can
33 result in longer wait times, manual business processes, and
34 system-wide inefficiencies.
35
36 **Q.   A major portion of Avista's planned technology**
37 **investment falls within the Technology Refresh and Technology**
38 **Expansion Programs. Please further explain Avista's Technology**
39 **Refresh Program.**
40 A.   Avista's Technology Refresh Business Case supports
41 technology replacement across six technology domains: 1)

1   Distributed Systems, 2) Central Systems, 3) Communication

2   Systems, 4) Network Systems, 5) Environmental Systems, and 6)

3   Business Applications. Each technology domain is governed by a

4   Program Steering Committee that guides annual project priority

5   in response to Avista's overall approach to technology and

6   technology roadmaps, while balancing the risk of reliability

7   and functionality. The Technology Refresh Business Case

8   refreshes existing technology in alignment with roadmaps for

9   application and technology lifecycles.

10   At a fundamental level, Avista's Technology Refresh

11 Business Case is necessary to allow Avista to effectively manage

12 its technology portfolio, given that IT assets are foundational

13 in the provision of utility service, and that IT components

14 naturally become outdated or reach technological obsolescence

15 over a period that is much shorter than the life of other

16 utility assets such as a natural gas pipe in the ground. As

17 technology assets reach manufacturer-planned or real

18 obsolescence, vendor support for these assets is reduced, or

19 ceases altogether. As vendor support ends, the risk associated

20 with Avista's business systems that rely upon these technology

21 products increases and the value provided by these business

22 systems is jeopardized. These factors present a risk to Avista

23 in the form of increased failure rates, inefficient work

24 practice, employee/public safety incidents due to system

1 failures, and reduced customer satisfaction, among other areas

2 of risk.

3 **Q.   Please explain how the Technology Refresh Program**

4 **refreshes existing technology in alignment with roadmaps for**

5 **applications and technology lifecycles?**

6   A.   Information technology components have varying useful

7 lives. For example, servers tend to have a shorter lifespans,

8 while the lifespan of network switches tends to be longer.

9 Additionally, software vendors regularly update their products

10 to provide improved functionality, maintain and improve

11 security, and implement bug fixes. It is generally Avista's

12 practice to replace technology within an acceptable failure

13 tolerance outside of the vendor recommended lifecycles. For

14 example, Avista completed its upgrade to Microsoft Office 2013

15 in 2015 and 2016. Prior to this upgrade, Avista had been using

16 Microsoft Office 2007. By prudently managing its upgrade cycles

17 and using Microsoft Office 2007 for an extended period, Avista

18 was able to avoid the intermediate upgrade to Microsoft Office

19 2010.

20   With that said, approximately 25 percent of Avista's asset

21 base of more than 10,000 assets recorded in the technology asset

22 management system have exceeded the manufacturer suggested

23 lifecycle. As a result, the demand for technology refresh

24 investment has continued to grow over time (a natural outcome

1   of the growth in the installed base of information technology

2   assets as the modern utility continues to rely more and more on

3   enabling technologies).

4   Illustration No. 2 shows the level of demand for capital

5   investment within the Technology Refresh Business Case, along

6   with the level of capital investment approved by the Capital

7   Planning Group ("CPG") (approximately $18 million from 2016

8   through 2020, and $23 million in 2021, as indicated by the red

9   line). This illustrates the work Avista is doing to limit the

10 amount of capital investment, while remaining attentive to the

11 risk associated with not making timely investments to refresh

12 its technology assets.

13 **Illustration No. 2:**

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Technology Refresh Demand vs Spend by Year

■ Networks ■ Communications ■ Distributed ■ Central ■ Environmental ■ Applications ▬ CPG Funded
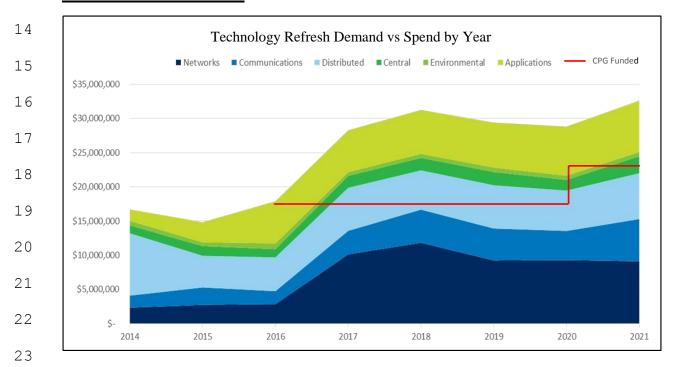
1   **Q.   Please explain the growth in investment associated**

2   **with the Technology Expansion Program.**

3   A.   The growth in investment in the Technology Expansion

4   Program in recent years has primarily been driven by

5   applications and networks. This program addresses many types of

6   application investment projects, including projects that

7   increase end user counts of existing COTS applications,

8   functionality enhancements of existing COTS applications,

9   functionality enhancements of custom applications, and

10   investments in new COTS applications. Examples of application

11   investment include: Customer Care and Billing (CC&B) and Work

12   and Asset Management (Maximo) systems, Energy Settlements &

13   Risk Management (Nucleus) system, Geographical Information

14   System (GIS), Oracle Financials & Power Plant System, and other

15   enhancements and license expansion.

16   Additionally, this program addresses many types of network

17   investment projects, including projects that expand Avista's

18   network infrastructure (e.g., in offices, substations, plants,

19   meters, and data centers, etc.) Examples of network investment

20   under this program include hardware, software, fiber optic

21   products, and services for inside and outside construction. The

22   network sub-program is experiencing growth within the data

23   center, among other areas. Primary drivers within the data

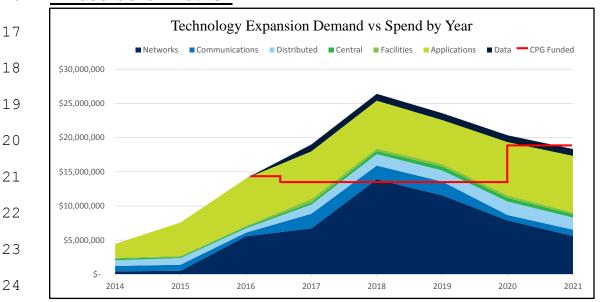24   center have been increasing numbers of applications, increasing

1 security controls, and an increasing need for enhanced network

2 management systems. Data center operations support Avista's

3 business applications and are beneficial to all jurisdictions,

4 and to all customers.

5   Illustration No. 3 below shows the level of demand for

6 capital investment within the Technology Expansion Business

7 Case, along with the level of capital investment approved by

8 the CPG ($14.6 million in 2016, $14 million from 2017 through

9 2020, and $19 million in 2021, as indicated by the red line).

10 This illustrates the work Avista is doing to limit the amount

11 of capital investment, while remaining attentive to making

12 timely investments to enable, maintain or enhance our critical

13 technology systems. The CPG approved an increase in 2021 to

14 address the deferred capital investments from 2016 through

15 2020.

16 **Illustration No. 3:**

Technology Expansion Demand vs Spend by Year

Legend: Networks, Communications, Distributed, Central, Facilities, Applications, Data, CPG Funded

1   **Q.   Please provide some examples of the types of**

2   **Technology Refresh and Technology Expansion projects that were**

3   **not approved as shown in the illustration Nos. 2 and 3 above**

4   **(projects above the red line), and the risk associated with not**

5   **completing or deferring these projects.**

6   A.   Examples of projects that were not approved during

7   the 2016-17 budget cycle include:

8   - Oracle Database Upgrade Project Delay. This
9   technology investment was delayed due to competition
10   for funding. This delay will result in more manual
11   driven processes, higher inefficiencies, and less
12   digital integration with other programs. Due to the
13   decision to delay this project, we may experience
14   inefficiencies in delivering customer bills,
15   answering customer questions, processing customer
16   payments, and in dispatching crews that may
17   ultimately result in higher costs to customers and
18   lower customer satisfaction with our services.
19
20   - Fiber Network Expansion Projects. This technology
21   investment was deferred due to competition for
22   funding. The delay in these projects will result in
23   not being in lock-step with the Transmission Rebuild
24   Schedule, thereby needing to access private property
25   multiple times, taking additional outages on the
26   transmission line where Optical Ground Wire (OPGW) is
27   planned to be installed, and delaying other business
28   initiatives, such as SCADA at every substation,
29   mobility, and security monitoring.
30
31   - Asset Management System Mobile Enhancement Project.
32   This technology was deferred due to competition for
33   funding. The delay in this project will result in the
34   continuation of inefficient manual work processes for
35   collecting asset information, conducting audits and
36   inspections, and updating asset data to support other
37   interdependent business processes, such as work order
38   assignments, etc.
39

1   **Q.   How does Avista cut costs during a Technology Refresh**

2   **and/or Expansion initiative?**

3   A.   The cost of a refresh is dependent on several factors.

4   During the time spent evaluating, vetting, and negotiating with

5   vendors, we work to identify the best products and service

6   pricing. Avista considers the IT components or systems being

7   refreshed, the new technology replacement, and the costs to

8   integrate with other components and systems. Multiple vendors

9   and subject matter expert teams are often needed when multiple

10   components are involved. However, integrated solutions that

11   offer a single-vendor solution that may help cut costs by

12   integrating a portion, or in some cases, components of a

13   traditional IT application portfolio into a platform (e.g.,

14   CC&B and Meter Data Management share a common Oracle platform)

15   are pursued.

16   **Q.   Please explain how Avista prioritizes technology**

17   **investments.**

18   A.   During each annual planning cycle, the respective

19   technology business case owner surfaces the project demand or

20   roadmap for the upcoming five years to the Technology Planning

21   Group ("TPG") and Executive Technology Steering Committee

22   ("ETSC") with a recommended business case priority, including

23   the factors driving the current and expected need and timing

24   for the investment. Avista's technology initiatives are

1   established by senior executives who are members of the ETSC.

2   The TPG sets priority across the technology investment

3   portfolio, balancing business value and customer benefits, and

4   based on the ETSC's guidance. Through a mid-year special

5   session, the TPG and ETSC provide a comprehensive review of all

6   technology investment demands and prioritize requests based on

7   mandatory investment drivers and customer benefits. Projects

8   with the highest business value and customer benefit are

9   prioritized, while projects that cannot demonstrate similar

10 merits are returned for reconsideration. An additional filter

11 is applied following this vetting by the TPG and respective

12 business case owners considering resource capacity, risk

13 assessment criteria, and alternatives. Following this exercise,

14 the overall technology investment plan of approved projects is

15 submitted to the CPG for funding consideration across all other

16 Avista business cases, as part of the overall demand for

17 capital. Projects that are not approved for consideration are

18 not included in the list of project demand provided to the CPG.

19   The CPG establishes limits on annual capital investment

20 through a published five-year plan. The five-year plan requires

21 the TPG and technology business case owners to review and revise

22 their initial investment plan annually to fit within the new

23 established investment level. Steering committees prioritize

24 technology asset risks, such as lifecycle obsolescence,

business impact if failure occurs, vendor specifications to

maintain support, and roadmaps of integrated technology

strategy, while considering the resource capacity and funding

constraints for each year. Technology asset refresh funding is

generally assigned priority in this sequence: Safety, Energy

Control, Customer Facing, and Back Office.

IV. IS/IT OPERATING AND MAINTENANCE EXPENSES

Q.   Please summarize the increases in O&M expenses, to
arrive at IS/IT O&M expenses included in this case effective
January 1, 2018.

A.   In Company witness Ms. Andrews' electric and natural

gas Pro Forma Studies, she has pro formed the level of expected

information services and technology expenses, which includes

both incremental labor costs and non-labor costs, associated

with software development, application licenses, maintenance

fees, and technical support for a range of information services

programs that will be in place beginning January 1, 2018. 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.

1   Table No. 2 below summarizes the net increase in IS/IT O&M

2   expenses included on a <u>system</u> basis. A discussion of these

3   increases is provided following Table No. 2.

4   **Table No. 2:**

IS/IT Incremental Labor and Non-Labor Expenses Included	
	System
Incremental Labor Increases	
Project Atlas (Avista Facility Management)	$ 32,357
Project Phoenix (AvistaUtilities.com redesign)	64,713
Total Incremental Labor Change	$ 97,070
Non-Labor Increases	
Product Maintenance and Support	$ 1,129,918
Contracted Professional Services	209,058
Total Non-Labor Change	$ 1,338,976
Total Change	**$ 1,436,046**

14   **Q.   Please discuss the specific projects driving the**

15   **incremental labor expense increases?**

16   A.   The incremental increase to labor operating expenses

17   are largely driven by capital investments in core business

18   systems necessary to provide safe and reliable electric and

19   natural gas service to our customers, as discussed earlier in

20   the IS/IT Overview and IS/IT Capital Additions sections. As

21   shown in Table No. 3 below, there are two specific projects

22   driving the labor increases which have been pro formed in this

23   case.

1   Beginning in mid-2017, when Project Atlas goes into

2   service, we will need to hire an Integration Analyst to provide

3   operational support.   Project Atlas is used to manage the

4   location and current operating state of its critical electric

5   and natural gas assets (e.g. pipes, poles and wires). Likewise,

6   the Company will hire two System Analysts to manage the

7   operation of Project Phoenix.   Project Phoenix upgrades

8   Avista's existing website to provide a more effective channel

9   to meet customer expectations for self-service options,

10   including mobile access, energy efficiency education, and to

11   drive self-service as a means to lower transaction costs. Table

12   No. 3 below summarizes the incremental labor changes for

13   projects Atlas and Phoenix.

14   **Table No. 3:**[4]

15
Operations Incremental Labor Expenses		
	System	
	Annual Labor Expense	Amount Included in Filing
Project Drivers		
Project Atlas (Avista Facility Management)	$ 65,402	$ 32,357
Project Phoenix (AvistaUtilities.com redesign)	130,803	64,713
Total Incremental Labor Expenses	$ 196,205	$ 97,070

20

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[4] After completion of the Company's revenue requirement it was determined that the labor increases in mid-2017 as shown in Table No. 3 should have been annualized and included in full in electric and natural gas Pro Forma adjustments 3.06.   Correction for this would increase system expense approximately $99,135 ($196,205 total - $97,070 included), increasing the requested revenue requirement approximately $24,000 for electric and $6,000 for natural gas.

1   **Q.   What are the increases in IS/IT non-labor O&M**

2   **expenses?**

3   A.   There are two increases in non-labor O&M expenses,

4   which include product maintenance and support provided by our

5   technology vendors ($1,129,918 from Table No. 2 below), as well

6   as contracted professional services ($209,058). Product

7   maintenance and support typically includes vendor provided

8   security patches, bug fixes, incremental upgrades, and expert

9   technical support with pre-determined service level agreements.

10   Contracted professional services provide Avista's IS/IT team

11   with external subject matter expertise for various systems

12   outside of our internal expertise.

13   **Q.   What is driving the increase in these non-labor O&M**

14   **expense categories?**

15   A.   There are several factors driving the increase in

16   IS/IT non-labor operational expenses. Drivers of non-labor

17   costs include: growth in capital investments in technology that

18   results in an increase to product maintenance and support

19   expenses for each of the systems; vendor changes to their

20   licensing models and related implementation costs – for

21   instance, from an on-premises solution to a cloud-based

22   solution or increased cost of maintenance and support for older,

23   non-current versions of systems; and demand for highly

24   specialized contracted professional services to implement,

1   integrate, and maintain technology systems where such skills

2   are outside of Avista's core expertise.

3   The non-labor expense increase of $1.34 million represents

4   a 6.7 percent increase between 2016 and 2017. The majority (84.3

5   percent, or $1.13 million) of this increase is directly related

6   to product maintenance and support. Table No. 4 below lists

7   major systems with incremental increases to required product

8   maintenance and support.

9   **Table No. 4:**

Incremental Product Maintenance and Support	
	(System)
	Pro Forma Amount[1]
Project Drivers	
App Dynamics	$ 200,000
Login Radius	40,000
Microsoft	180,000
Oracle	396,000
Data management & analytics	50,000
SiteCore	50,000
Security Systems	137,000
Minor new items and incremental changes	76,918
Total Incremental Change	$ 1,129,918

(1) Increase in expense included in filing above 2016 levels.

18   **Q.   Please discuss a few examples of product maintenance**

19   **and support and how it affects core systems used by the Company.**

20   A.   Core systems are becoming more and more highly

21   integrated as business transactions transmit across various

22   systems to deliver information. In some cases, issues can arise

23   while business transactions are traveling through these paths

24   and result in system errors, which can cause data transmission

1 delay or overall system unresponsiveness directly affecting

2 those using the tools (e.g. outage management, financial and

3 accounting systems, billing systems, etc.). Quick

4 identification and root cause analyses of these issues is

5 paramount to system recovery and mitigation of future similar

6 causes.

7   In 2016, Avista invested in an application performance

8 management and IT operations tool that optimizes resource time

9 in identifying issues when they arise to assist in the quick

10 identification of the root cause in application or system

11 performance degradation. Although the introduction of this tool

12 increases non-labor expenses, it provides visibility into each

13 and every business transaction and its path across multiple

14 complex core system integrations, allowing the technology

15 operations team to quickly respond to and recover from unknown

16 issues. Based on the number of business transactions that occur

17 across various core systems, it would be humanly impossible to

18 meet system or transaction recovery time objectives without

19 automation.

20   **Q.   What is the second driver increasing non-labor**

21 **operational expense costs for Avista's technology department?**

22   A.   The second driver of the non-labor increases are the

23 contracted professional services. Approximately 15.7 percent

24 or $209,000 of the incremental increase above 2016 levels is

1   for contracted professional services, which is largely to

2   support nearly a dozen business systems, including COTS

3   integration, financial systems, geographic information systems,

4   energy settlement systems, billing systems, asset management

5   systems, and the web.
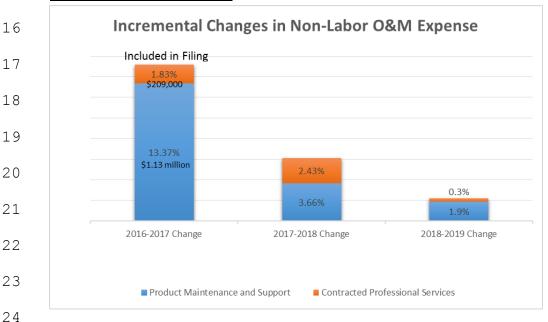
6   In subsequent years (2018-2019), the incremental changes

7   are less substantial, 3 percent and 1 percent, respectively.

8   However, as in the current year, much of the increase in the

9   non-labor costs is in product maintenance and support, as seen

10 in Illustration No. 4. These slight increases beyond 2017 are

11 mainly due to Avista's efforts in negotiating multi-year,

12 enterprise agreements with technology vendors that result in

13 less significant increases for technology maintenance and

14 support.

15 **Illustration No. 4:**

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Incremental Changes in Non-Labor O&M Expense

1   **Q.   How has Avista focused on managing its overall IS/IT**

2   **expenses for the benefit of its customers?**

3   A.   Avista   focuses   on   increasing   reliability   and

4   optimizing   systems   for   our   customers'   needs   through   the

5   deployment, maintenance and support of technology.

6   To mitigate operating expense increases, Avista works to

7   automate our systems through technology where reasonable to do

8   so, and we work to negotiate discounted multi-year contracts

9   with vendors that result in discounted maintenance and support

10   rates. For example, in 2016 we introduced a cloud-based business

11   performance monitoring tool that automates a portion of the

12   labor performed by our IS/IT teams. As a subscription-based

13   license model, the cost of the tool is amortized over three

14   years,   resulting   in   approximately $192,000   per   year   in

15   additional expense costs. However, this particular increase in

16   product   maintenance   and   support   expense   resulted   in   a

17   significant reduction of internal labor costs modeled over the

18   same three year period, allowing us to redeploy our IS/IT

19   operations team labor resources and providing an immediate

20   benefit by reducing the time to determine root cause and rectify

21   system issues when they arise.

22   A   second   example   where   the   Company   has   successfully

23   managed   its   O&M   expenses   was   a   2017   telecommunications

24   contract,   which   had   two   years   remaining   on   its   term.   The

1   contract was renegotiated early in the term in order to commit

2   to a longer, five year term which resulted in approximately

3    $215,000 in annual savings over the life of the contract.

4   These two examples of cost reductions required no changes

5   to service or quality, no equipment deployments, and were

6   implemented by changing the delivery model in one instance and

7   committing to a longer term in the other. Both are continuous

8   improvement practices to manage costs over time.

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

10   A.   Yes.