BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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IN THE MATTER OF ADVICE NO. 993-GAS OF PUBLIC SERVICE COMPANY OF COLORADO TO REVISE ITS COLORADO PUC NO. 6-GAS TARIFF TO INCREASE JURISDICTIONAL BASE RATE REVENUES, IMPLEMENT NEW BASE RATES FOR ALL GAS RATE SCHEDULES, AND MAKE OTHER PROPOSED TARIFF CHANGES EFFECTIVE FEBRUARY 24, 2022	**)**	**PROCEEDING NO. 22AL-_____G**

DIRECT TESTIMONY AND ATTACHMENTS OF MICHAEL O. REMINGTON

ON

BEHALF OF

PUBLIC SERVICE COMPANY OF COLORADO

January 24, 2022

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO**

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DIRECT TESTIMONY AND ATTACHMENTS OF MICHAEL O. REMINGTON

I. INTRODUCTION, QUALIFICATIONS, PURPOSE OF TESTIMONY, AND RECOMMENDATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Michael O. Remington. My business address is 414 Nicollet Mall, Minneapolis, Minnesota 55401.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?

A. I am employed by Xcel Energy Services Inc. ("XES"), the service company subsidiary of Xcel Energy, as Business Systems Regulatory Director, Advanced Grid. XES is a wholly-owned subsidiary of Xcel Energy Inc. ("Xcel Energy"), and provides an array of support services to Public Service Company of Colorado ("Public Service" or the "Company") and the other utility operating company subsidiaries of Xcel Energy on a coordinated basis.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THE PROCEEDING?

A. I am testifying on behalf of Public Service.

Q. PLEASE SUMMARIZE YOUR RESPONSIBILITIES AND QUALIFICATIONS.

A. I am currently responsible for directing and preparing testimony, supporting documents, and discovery responses related to Business Systems in filings before the Colorado Public Utilities Commission ("Commission") as well as for other Xcel Energy operating companies ("OpCos"). I am also responsible for the regulatory aspects of Business Systems' role in the Advanced Grid Intelligence and Security ("AGIS") initiative.

A description of my qualifications, duties, and responsibilities is set forth in my Statement of Qualifications at the conclusion of my Direct Testimony.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY AND ATTACHMENTS?

A. In this Direct Testimony, I represent the Xcel Energy Business Systems organization, which performs Xcel Energy's shared IT functions. The key types of activities performed by Business Systems include all enterprise application development and maintenance, management of IT infrastructure, data center operations and architecture, and IT governance. Business Systems provides IT services to Xcel Energy and the Xcel Energy OpCos, including Public Service, primarily on a common platform, with costs allocated to specific utilities and jurisdictions consistent with the Direct Testimony of Company witnesses Mr. Ross L. Baumgarten, Ms. Laurie J. Wold, and Mr. Arthur P. Freitas. The purpose of my Direct Testimony is to support the Business Systems capital additions and

operations and maintenance ("O&M") expenses that are allocated to Public Service retail gas and included in the 2022 Current Test Year ("CTY") cost of service that is presented by Company witness Mr. Freitas. In addition, I provide forecasted capital additions for two "step" years, 2023 and 2024, after the 2022 CTY. The Company's overall capital additions for the 2023-2024 step years are explained in more detail by Company witnesses Mr. Steven P. Berman and Ms. Deborah A. Blair.

The Company's last gas rate case was Proceeding No. 20AL-0049G (the "2020 Combined Gas Rate Case"), in which an Historical Test Year ("HTY") ending September 30, 2019 was approved. I provide support for capital additions placed into service since the Company's 2020 Combined Gas Rate Case, from October 1, 2019 through the CTY consisting of the calendar year ending December 31, 2022. The Company's Business Systems plant additions since the 2020 Combined Gas Rate Case total $388.0 million through the 2022 CTY. These capital additions are discussed in Section IV of my Direct Testimony. In addition, the Company's forecasted Business Systems capital additions for step years 2023 and 2024 are $113.2 million and $75.7 million respectively, which are presented in Attachment MOR-1. Company witness Ms. Wold has calculated the monthly plant balances to develop the plant-related roll forward, which is in turn used by Mr. Freitas to incorporate the 13-month average plant in service balances into the 2022 CTY cost of service.

I also support the $30.7 million in Business Systems' O&M included in the Company's CTY, while also supporting the O&M drivers for the CTY as compared

to the level of O&M currently in base rates approved in the 2020 Combined Gas Rate Case. Business Systems' O&M in this rate case is based on July 1, 2020 to June 30, 2021 actual O&M. I discuss O&M in Section V of my Direct Testimony. Mr. Berman and Mr. Freitas support the Company's overall CTY development.

Q. ARE YOU SPONSORING ANY ATTACHMENTS WITH YOUR DIRECT TESTIMONY?

A. Yes, I am sponsoring the following attachments:

- Attachment MOR-1: Business Systems Capital Additions October 1, 2019 – December 31, 2024;
- Attachment MOR-2: Business Systems July 1, 2020 to June 30, 2021 O&M Expenses by Cost Element; and
- Attachment MOR-3: Business Systems July 1, 2020 to June 30, 2021 O&M Expenses by Federal Energy Regulatory Commission ("FERC") Account.

II. BUSINESS SYSTEMS – BACKGROUND AND OVERVIEW

Q. PLEASE PROVIDE AN OVERVIEW OF THE BUSINESS SYSTEMS BUSINESS AREA.

A. Business Systems is Xcel Energy's centralized IT organization, providing technology services to support all aspects of the operations of the Xcel Energy operating companies, including Public Service. While some IT projects are specific to an individual operating company and/or to electric or gas jurisdictions, the majority of Business Systems work is completed on an Xcel Energy-wide basis. In this era, it is hard to identify an aspect of Xcel Energy's operations that Business Systems does not support in some manner.

Q. PLEASE DESCRIBE ANY CHANGES TO BUSINESS SYSTEMS' KEY FUNCTIONS AND RESPONSIBILITIES SINCE THE 2020 COMBINED GAS RATE CASE.

A. We have continued to invest in routine maintenance as well as projects to address outstanding business needs, but we have also significantly enhanced our focus on customer experience. In the Company's 2020 Combined Gas Rate Case, we first introduced Customer Experience as a new category of Business Systems' key functions. Customer experience investments will continue for the next several years, as changing customer expectations are requiring us to work to continuously improve and maximize the performance of the tools serving customers (such as MyAccount, our builder's call line, and other interfaces and support).

Q. PLEASE DESCRIBE BUSINESS SYSTEMS' KEY FUNCTIONS AND RESPONSIBILITIES.

A. The key services Business Systems provides include the following:

- *Foundational Technology Infrastructure:* Support for each employee's hardware and software needs, including the provision and maintenance of hardware such as computers, phones, and servers; maintaining and updating operating systems; and providing sufficient data storage capabilities. Business Systems also provides protection from cyber security attacks, including but not limited to computer viruses.

- *Systems Control:* Technology support to our electric Generation, Transmission, Distribution, and Gas Operations business areas to enable management and operation of the electric and gas systems. One of the systems that we maintain is the Outage Management System ("OMS"), which tracks customer outages and dispatches repair crews to restore service. Business Systems also supports the Supervisory Control and Data Acquisition ("SCADA") system, which is used to monitor the health of the electric and gas transmission and distribution systems.

- *Customer IT Support:* Hardware and software needed to facilitate interactions with Public Service customers. These activities include maintaining the Xcel Energy website that provides important information to customers about outages, the status of their account, safety, information required by our regulators, and Public Service operations. Business Systems also maintains the Customer Response System ("CRS"), which is our customer information system, and which generates billing statements to Public Service retail customers on a monthly basis. Business Systems also supports the Interactive Voice Response software that enables interaction with customers via telephone keypad or speech recognition.

- *Corporate IT Support:* Business Systems provides IT support for necessary corporate functions such as Human Resources and Financial Management.

Q. HOW DOES BUSINESS SYSTEMS SUPPORT THE FUNCTIONS DESCRIBED ABOVE?

A. Along with day-to-day work on the technology we have deployed, Business Systems makes capital investments and incurs O&M expenses to support other business areas and functions across Xcel Energy.

Q. ARE THERE CHALLENGES UNIQUE TO BUSINESS SYSTEMS?

A. Yes. Technology changes constantly. As a result, issues with older software or equipment can arise and cyber security threats and tools are constantly in flux. As IT has become increasingly critical to the business, the demand for IT solutions and fixes far outpaces the dollars available to meet those requests. As a result, it is necessary to constantly monitor the Company's IT needs.

Q. ARE THERE ANY OTHER BUSINESS TRENDS RELEVANT TO BUSINESS SYSTEMS?

A. Yes, just briefly. As the technology landscape continues to evolve, cloud computing is becoming a more common way for companies to provide IT services. This presents unique decision-making requirements as we look to future IT solutions, and can also present financial challenges because some cloud solutions might be treated as O&M whereas the same solution would be capitalized when owned by the Company.

Q. WHAT ARE THE POTENTIAL BENEFITS OF CLOUD COMPUTING?

A. In some cases, there may be cost benefits associated with transitioning to cloud computing because third-party service providers can offer pricing that is leveraged across many customers since costs of operating and maintaining servers would

be shared among many parties utilizing cloud services. Additionally, cloud computing benefits may also include having the most up-to-date technology available, allowing for more seamless, regular upgrades that are less disruptive to business operations, affording more scalability and flexibility as Company needs change to meet Company and customer needs, and could bring increased security.

Q. HOW WILL THE COMPANY MAKE THE TRANSITION TO INCREASE UTILIZATION OF CLOUD COMPUTING?

A. The Company will need to continue to create a decision framework to identify when leveraging cloud technology may improve business objectives, productivity, and the customer experience.

Q. WHAT IS THE FINANCIAL TREATMENT OF HOSTED SOLUTIONS?

A. When capital policy requirements are met, the Company will capitalize a hosted solution in a similar way as an on-premise solution. In some scenarios, the on-premise storage is capital because the Company effectively takes ownership of the hardware and/or code, while others are O&M when they do not meet the Company's capitalization requirements. The general terms of the Company's capitalization policy are discussed by Ms. Wold in her Direct Testimony.

I discuss these capital investments and O&M expenses throughout the remainder of my Direct Testimony.

III. BUSINESS SYSTEMS BUDGETING AND PLANNING

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR DIRECT TESTIMONY?

A. The purpose of this section of my Direct Testimony is to discuss Business Systems' project development and management processes, along with its capital spending, budgeting, and funding. I also provide an overview of the Company's customer experience investments, a significant driver of Business Systems capital additions since the Company's 2020 Combined Gas Rate Case.

A. Overview of Capital Project Needs

Q. WHAT ARE THE PRIMARY DRIVERS OF BUSINESS SYSTEMS CAPITAL ADDITIONS?

A. The five key areas that drive Business Systems budget forecasts are:

- Addressing evolving **cyber security** threats and requirements;
- Replacing **aging technology**;
- **Enhancing capabilities** of our business and our ability to serve customers;
- Advancing and modernizing the **customer experience**, including updating systems through our Customer Experience Transformation Programs; and
- Responding to **emergent demands** for IT services and solutions.

Q. GIVEN THESE BUSINESS DRIVERS, WHAT TYPES OF CAPITAL PROJECTS DOES BUSINESS SYSTEMS UNDERTAKE?

A. Business Systems capital additions include hardware (desktop and laptop computers, servers, routers, phone systems, radio systems, microwave communication systems, and network equipment), software (computer programs), related technology infrastructure investments, and cyber security solutions that support the Xcel Energy operating companies' business operations. Business Systems investments within a utility company are just as essential as investments in poles and wires, meters, and fleet. In today's world, very few large businesses can function in a safe and reliable manner, or provide appropriate customer service levels, without IT investments.

Q. TO WHAT EXTENT ARE BUSINESS SYSTEMS' CAPITAL NEEDS READILY PREDICTABLE?

A. While Business Systems undertakes significant long-term planning, in other cases Business Systems must react quickly to changing information technology risks and needs. New cyber security risks and new technologies are emerging all the time, requiring flexibility within Business Systems to respond to those risks and needs. Given the nature of the issues Business Systems responds to and our capital additions, our capital additions tend to vary from year to year.

Q. PLEASE DESCRIBE CYBER SECURITY PROJECTS.

A. Investments in cyber security ensure the availability, integrity, and confidentiality of our IT systems, as well as compliance with legal and regulatory obligations. These investments provide prevention, detection, containment, and repair services

to protect the Company from cyberattacks and to assist in recovery if such an attack occurs. An example of a cyber security project is the Multi-factor Authentication project, which implemented a multi-method, multi-level process for the authentication of individuals and who attempt to access Xcel Energy's network, as well as ensuring that the device used is compliant from a security perspective.

Cyber security does not include physical security investments, such as property security. Physical security is part of Shared Corporate Services, and is discussed by Mr. Adam R. Dietenberger.

Q. PLEASE DESCRIBE AGING TECHNOLOGY PROJECTS.

A. IT assets are no different from other physical assets, in that they are subject to aging and (in this case, technical) obsolescence. A reasonably up-to-date infrastructure is necessary for the Company to continue to meet current legal and regulatory requirements, as well as the service expectations of Public Service's customers. Business Systems seeks to maximize investments by harvesting the value of existing systems prior to replacing them. However, there comes a time when we must upgrade our aging systems due to business, reliability, or compliance needs. Aging technology projects include routine and specific refresh projects update older IT systems, hardware, and programs.

Q. WHAT ARE ROUTINE REFRESH PROJECTS?

A. Given the breadth and depth of the different equipment Xcel Energy utilizes and manages, Business Systems refreshes smaller components of technology infrastructure on regular cycles. We annually budget for these replacements as routine refresh projects. An example of an aging technology routine refresh project

is the Annual Personal Computer ("PC") Refresh, which replaces approximately twenty percent of PCs annually as they reach the end of their service life.

Q. WHAT ARE SPECIFIC REFRESH PROJECTS?

A. Unlike routine refresh projects, which generally address smaller capital replacements on a regular cycle or which are routinely needed, we also must manage larger technology replacements for equipment that is nearing the end of its useful life. Specific refresh projects are often managed over a longer term, reoccur less frequently, and are significantly more complex than routine refresh projects. An example of a specific refresh project was the multi-year Next Generation Desktop initiative. This project involved moving desktop and mobile computing devices throughout Xcel Energy to the most current operating system, Windows 10, and to move from the Office 2010 suite of applications to Office 365. The legacy operating system and application suite was near the end of its useful life, and vendor support ended in January 2020.

Q. PLEASE DESCRIBE PROJECTS THAT ENHANCE CAPABILITIES.

A. Technology can offer the opportunity to improve productivity, enhance communications between systems and between people, and use data more efficiently. Business Systems is constantly evaluating new technologies and helping business areas examine ways to increase efficiencies and enhance communications between systems that benefit the Company and our customers. An example of an enhancing capabilities project is the Digital Ops Factory, which is a cloud-based, modern data and analytics platform that will enable the Company to make better use of available data as a foundational engine for additional

capabilities, such as a reusable data lake, common integrations, analytics workbench, mobile platforms, dashboard framework, and artificial intelligence models. The core application goes into service 2021.

Q. HOW DO YOU DIFFERENTIATE BETWEEN THE ENHANCE CAPABILITIES INVESTMENTS AND THE AGING TECHNOLOGY INVESTMENTS?

A. As noted above, some of the investments overlap between categories. That said, the projects in the aging technology category typically involve the replacement of assets that were already in service, while the projects in the Enhance Capabilities category typically involve implementing systems that are new applications or application modules that add to business capability or efficiency. When applications are upgraded, business judgment is necessary to determine which categorization is most appropriate.

Q. PLEASE DESCRIBE CUSTOMER EXPERIENCE PROJECTS.

A. The customer experience refers to the Xcel Energy customer's direct interactions with the Company, whether by digital platforms, through the call center, in person, or otherwise. Managing that experience, requires both system tools and customer interfaces that work for the customer, supporting their satisfaction with their service and overall experience with the Company.

Prior to 2019, it had been several years since we had invested significantly in primary customer touch points and relationship management tools. In support of the enterprise focus on enhancing customer experience, Xcel Energy launched a specific Customer Experience Transformation ("CXT") program in 2019 to help create smarter and simpler experiences for employees and customers and created

a new category called customer enhancements. This multi-year effort is designed to simplify Company technology, transform customer experiences, improve customer satisfaction and employee engagement, and continue to drive more efficient operations. CXT has been developed to work strategically on enhancing digital channels, developing a data fabric model and migrating customer and business data into the model, and designing, building, testing, and deploying the foundational components to allow the first two to operate. More specifically, Xcel Energy is utilizing more modern technologies that customers have come to expect through experiences with other companies. This includes interactive websites, account management options, and smart phone applications.

As more modern technologies become available for customers, it will be necessary to simultaneously invest in new capabilities like data science, user design, and development. Employees' innovative thinking is being used to align with our customers' needs and expectations.

Q. PLEASE DESCRIBE EMERGENT DEMAND PROJECTS.

A. This category relates to projects that are typically in the early stages of planning. The emergent demand category is an account created to ensure Business Systems is able to meet the cyber security, aging technology, and efficiency needs that inevitably emerge in a given year. Because of the ever-changing nature of technology and emerging risks, it is not possible to identify in advance all necessary projects that may arise or become critical in a given year. For example, it is not always possible to predict what kind of cybersecurity risks might emerge that hackers could exploit as technology continues to develop. In other situations,

it may become clear during detailed project development that additional benefits or long-term cost savings could be captured by expanding the scope of the project.

The emergent demand category is used to fund important and unexpected projects or changes in scope of previously-planned projects. Each year, funds are allocated to the emergent demand category for these purposes. As the dollars are spent, they are re-classified to the specific project for which the expense was incurred. In this way, Business Systems' year-end cost summaries do not show expenses allocated to emergent demand. Similarly, there would not be any actual capital additions classified as emergent demand. That is, the emergent demand funds are used for forecasted data only.

B. <u>Business Systems Budget Development and Management</u>

Q. HOW DOES BUSINESS SYSTEMS IMPLEMENT CAPITAL PROJECTS FOR PUBLIC SERVICE?

A. Although Business Systems implements some projects specific to individual operating companies, including Public Service, it achieves efficiencies of scale by performing most activities on a system-wide basis. Accordingly, many of the Business Systems projects are planned and budgeted at the Xcel Energy level, allocated or assigned to the appropriate operating companies, and implemented throughout the different operating companies. When projects are developed and implemented solely for Public Service or other individual operating companies, the costs are directly assigned to that utility. In other cases, common projects are allocated across Xcel Energy OpCos. Mr. Baumgarten supports the Company's allocation of common capital costs to the Public Service Gas Department.

Q. HOW DOES BUSINESS SYSTEMS DETERMINE WHEN AN EXISTING APPLICATION OR SYSTEM NEEDS TO BE REPLACED OR UPGRADED?

A. Business Systems works with each of the business areas and Operating Companies to identify short- and long-term technology needs. The needs typically are greater than the organization's ability to fund them, so Business Systems partners with business leaders to evaluate and prioritize all proposed Business Systems investments. Business Systems strives to maximize technology investment value by maintaining existing systems until the risk and costs associated with keeping these aging technologies in place outweigh the benefits.

Q. PLEASE DESCRIBE THE PROCESS BUSINESS SYSTEMS USES TO PREPARE ITS CAPITAL BUDGETS.

A. Business Systems uses a Technology Investment Governance ("TIG") process to evaluate all proposed Business Systems investments. The TIG process is the Company's IT budget development, project prioritization, and project oversight process, which helps to establish budgets that are reasonable and to manage our capital expenditures accordingly. The TIG process helps ensure Company budgets are reasonably reflective of the projects that will be placed in service during the relevant year or years.

As part of the TIG process, key business and IT leaders are accountable for managing demand intake, prioritization, and business outcomes of the IT projects in their portfolios as they move from project inception towards in-service, thereby ensuring that projects comply with IT portfolio and project management requirements. TIG leadership is comprised of executive level and senior business

leaders in a partnership with IT leadership. Projects are reviewed so that scope and costs are managed from inception through implementation. The TIG process provides oversight of all IT projects during each phase of project lifecycles.

Q. PLEASE GENERALLY DESCRIBE HOW BUSINESS SYSTEMS DEVELOPS COST ESTIMATES FOR PROPOSED CAPITAL ADDITIONS.

A. When a Business Systems project is in the initial stages of planning, we develop cost and schedule estimates based on internal experience with similar implementations. We then utilize a competitive bid process to ensure that Xcel Energy receives quality service at a fair price, that business value is delivered according to the agreed requirements, and that costs remain in line with the approved budget.

Q. HOW DOES BUSINESS SYSTEMS MANAGE PROJECT COSTS?

A. After cost estimates are developed, all projects follow the TIG process requiring reviews and approvals of the budget by Business Portfolio Owners, while the portfolio level budgets are approved at the senior leader and executive levels. After these approvals, projects are reviewed monthly to compare the monthly budget to actual expenditures. Business Systems and the TIG leaders evaluate deviations to determine whether costs are appropriate. In addition, Business Systems develops action plans to mitigate variations in actual to budgeted expenditures. These mitigation plans may either reduce or delay expenditures to support the overall authorized budget. If authorized budget adjustments are required, they are identified and approved through the TIG process.

Q. DOES BUSINESS SYSTEMS MAINTAIN CONTINGENCY AMOUNTS FOR ALL PROJECTS?

A. No. For the most part, Business Systems does not include contingencies in its project estimates and instead manages within its overall budget. However, the Company does include contingency amounts for larger, particularly complex projects. The emergent demand discussion later in my Direct Testimony explains how the Company manages project changes and unplanned demand events.

Q. HOW DO CAPITAL PROJECTS EXECUTED BY BUSINESS SYSTEMS AFFECT THE PUBLIC SERVICE GAS JURISDICTION FROM A COST ALLOCATION OR ASSIGNMENT PERSPECTIVE?

A. Many of the Business Systems projects are planned and budgeted at the Xcel Energy Services or operating company level, and implemented throughout our system. Most projects benefit multiple jurisdictions – as when we implement new software throughout Xcel Energy – and therefore must be allocated or assigned to the appropriate operating companies.

In instances where a project is more fully dedicated to the Colorado jurisdiction, a greater portion of the project costs may be assigned to Colorado. In some cases where projects are dedicated wholly to Colorado, as with the Public Service Microwave Mountain Range Refresh, those costs may be directly assigned to Colorado. Capital additions in my Direct Testimony are stated at the Public Service (Total Company) level, including gas and common projects, but excluding any electric-only projects. Overall, Xcel Energy cost allocations are discussed by Company witness Mr. Baumgarten.

C. Overview of 2019-2024 Capital Additions

Q. PLEASE DESCRIBE THE PRIMARY DRIVERS OF THE COMPANY'S INVESTMENT IN BUSINESS SYSTEMS SINCE THE 2020 COMBINED GAS RATE CASE.

A. There have been multiple areas driving Company investments. Investment in the customer experience has increased as customer expectations in how they interact with service providers have also increased, and has been a key driver. In today's evolving technology market, utility customers' expectations are not set exclusively by utility companies; rather, high expectations are being set by companies like Google, Apple, and Amazon, who show customers what is possible and lead them to expect responsive, integrated, and problem-solving interactions with their service providers. Living in an era where customer's expectations are higher than they have ever been, the Company must be prepared to meet our customer's needs to remain a trusted provider of their energy services.

In addition, our aging network infrastructure is a key driver of increased investment and requires attention on an ongoing basis. Network connectivity is a critical operational foundation required for the Company to provide a safe and reliable product. Failure to replace aging network mechanisms would increase the risk of component level failures resulting in systemic outages across service venues.

Specific Business Systems aging projects include replacement of aging network, Western Slope Backhaul, the Wide Area Network ("WAN") Public Service project, and Mainframe Modernization, which are all discussed in the project

sections of this direct testimony. Future investment levels will depend on the evolving needs of the Company and the emergence of technologies over time.

Q. CAN YOU DEPICT THE TREND OF BUSINESS SYSTEMS CAPITAL ADDITIONS AFFECTING PUBLIC SERVICE'S RATE BASE FROM 2019-2024?

A. Yes. Table MOR-D-1 below depicts Public Service's Business Systems capital additions (i.e., plant in service) trend from October 1, 2019 to December 31, 2024. Throughout my Direct Testimony, capital additions data from 2019 and 2020 represents actual costs, while 2021 capital additions include actual plant in service from January 1, 2021 to June 30, 2021 and forecasted data for the remainder of 2021 and all of 2022-2024.

Table MOR-D-1 illustrates capital additions by category, but it is important to note that many technology projects are planned, developed, and implemented (placed into service) over multiple years. As such, capital additions trend information will show larger increases when more or larger projects are placed in service, rather than when the expenditures are made.

TABLE MOR-D-1:
Business Systems 2019-2024 Capital Additions
Public Service (Total Company)
(Dollars In Millions)

	Actual Additions 10/1/2019-6/30/2020	2021 HTY Actual Additions 7/1/2020-6/30/2021	Forecasted Additions 7/1/2021-12/31/2021	2022 CTY Forecasted Additions 1/1/2022-12/31/2022	2023 Step 1 Forecasted Additions 1/1/2023-12/31/2023	2024 Step 2 Forecasted Additions 1/1/2024-12/31/2024
Aging Technology	$49.5	$40.9	$69.9	$62.3	$64.8	$44.5
Customer Experience	0.1	24.7	55.8	10.5	1.4	0.5
Cyber Security	3.1	7.1	4.4	6.5	10.8	12.7
Enhancing Capabilities	7.5	5.2	27.7	18.7	31.6	6.7
Emergent Demand	-	-	(3.5)	(2.4)	4.7	11.3
Total	**$60.1**	**$78.0**	**$154.3**	**$95.6**	**$113.2**	**$75.7**
Any differences between sum of individual category amounts and Total are due to rounding						

The figures in Table MOR-D-1 are stated on a Total Company (Public Service) basis, meaning that they include both gas utility-specific projects and common electric/gas projects stated at the total Public Service level. Attachment MOR-1 contains Business Systems capital additions. I discuss our capital additions from October 1, 2019 through the 2022 CTY in Section IV. As I indicated above, overall forecasted capital additions for step years 2023 and 2024 are supported by Ms. Blair.

Q. WHY ARE CAPITAL ADDITIONS FOR 2023 AND 2024 INCLUDED IN TABLE MOR-D-1?

A. While the test year in this case is the 2022 CTY, the Company is requesting step increases for 2023 and 2024 tied to estimated capital investment during those years, as explained by Mr. Berman and Ms. Blair in their Direct Testimonies. While Table MOR-D-1 reflects the currently forecasted capital investment during those

years, this information is provided not to obtain specific approval of the referenced investments at this time, but to illustrate the forecasted level of capital additions at that time.

Q. ARE THE 2023 AND 2024 FORECASTED CAPITAL ADDITIONS REASONABLE?

A. Yes. These forecasts are reflective of actual expected capital investment by Business Systems during those years as reflected in the Company's approved five-year plan. The forecasted levels of spend are also generally consistent with our annual gas operations investment today.

Q. WHAT IS THE OVERALL IMPACT OF RECENT BUSINESS SYSTEMS INVESTMENTS ON PUBLIC SERVICE'S COST OF PROVIDING UTILITY SERVICE?

A. Business Systems investments affecting Public Service's gas business have increased in recent years due to the need for greater focus on and attention to IT needs within the Company and the customer experience. Our investment evolution continues to see an upward trend in the technology investments needed to keep pace with the emergence of cyber security issues as well as refreshing aging technology and addressing changing customer expectations. These investments are keeping the Company operating, protecting important data, supporting customer service, and helping other business areas effectively manage O&M to reasonable levels.

IV. BUSINESS SYSTEMS 2019-2022 CAPITAL ADDITIONS

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR DIRECT TESTIMONY?

A. The purpose of this section of my Direct Testimony is to describe the Business Systems capital additions since the Company's 2020 Combined Gas Rate Case through the 2022 CTY. Below, I discuss the Company's 2019-2021 capital additions, totaling $138.1 million, as shown in Attachment MOR-1. These reflect actual capital additions from October 1, 2019 through June 30, 2021. I also address the Company's forecasted capital additions planned to be placed into service from July 1, 2021 through December 31, 2022, totaling $249.9 million, as shown in Attachment MOR-1. In this section, I present these 2019-2022 capital additions by category for cyber security, aging technology, enhancing capabilities, customer experience, and emergent demand.

A. Cyber Security

Q. WHAT TYPES OF CYBER SECURITY PROTECTION CAPITAL PROJECTS HAS THE COMPANY PLACED IN SERVICE SINCE ITS 2020 COMBINED GAS RATE CASE AND WILL PLACE IN SERVICE THROUGH THE 2022 CTY?

Since its 2020 Combined Gas Rate Case and through the 2022 CTY, Public Service will have placed $21.0 million in cyber security-related capital additions into service. Key cyber security projects from 2019 through 2022 are set forth in Table MOR-D-2 below:

TABLE MOR-D-2:
Public Service 2019-2022 Cyber Security Capital Additions (Total Company)
(Dollars In Millions)

Capital Additions	Actual Additions 10/1/2019-6/30/2020	2021 HTY Actual Additions 7/1/2020-6/30/2021	Forecasted Additions 7/1/2021-12/31/2021	2022 CTY Forecasted Additions 1/1/2022-12/31/2022
SIEM+SOAR	$0.0	$0.0	$0.0	$2.0
OT Shared Services	0.0	0.2	0.2	1.5
SailPoint 2021	0.0	0.0	1.8	0.0
Email Advanced Threat Protection	0.0	1.5	0.0	0.0
Host Intrusion Prevention for Servers	0.1	1.1	0.0	0.0
Analog Security Camera Upgrade	0.0	0.1	0.6	0.5
Cyber Security Data Lake	0.0	1.1	0.0	0.0
Verint Security Camera Server Replacement	0.0	0.0	0.0	1.0
Cyber Security Small Projects	2.9	3.2	1.8	1.4
Total	**$2.9**	**$7.1**	**$4.4**	**$6.5**
Any differences between sum of individual category amounts and Total are due to rounding.				

Q. PLEASE DESCRIBE KEY BUSINESS SYSTEMS CAPITAL ADDITIONS PLACED IN SERVICE FROM OCTOBER 1, 2019 THROUGH DECEMBER 31, 2022 TO ADDRESS EVOLVING CYBER SECURITY THREATS AND REQUIREMENTS.

A. Below are descriptions of projects with capital additions over $1 million that were or will be placed in-service during 2019-2022 to address evolving cyber security threats and requirements:

- *SIEM+SOAR project*: This project will implement and operationalize a combined suite of software products for Security Information and Event Monitoring ("SIEM"), User Behavior Analytics, and Security Orchestration, Automation, and Response ("SOAR") for the Enterprise Command Center that, once implemented, will increase and establish their cyber security capabilities. This project will mature and expand security capabilities and will provide benefits by more effectively and seamlessly protecting the Company from threats to its systems and allow it to better correlate and analyze a growing volume of data within the environment in a fast, accurate, and efficient manner by having the various capabilities of these programs in a common stack.

- *OT Shared Services*: Across 2019 through 2022, the OT Shared Services project consists of investments in the operational technology environment that are needed to support operations applications. This project will reduce operational technology and regulatory business risks for enterprise strategic initiatives while providing value by supporting this environment with shared services.

- *SailPoint 2021*: This project encompasses a major version upgrade of SailPoint, which the Company utilizes to provide access security to certain applications. Specifically, SailPoint is used to provide identity and access governance to a limited number of applications and associated platforms governed by North American Electric Reliability Council ("NERC") Critical Infrastructure Protection ("CIP") and Sarbanes-Oxley Act requirements. This upgrade will minimize compliance risk and will integrate SailPoint with new programs.

- *Email Advanced Threat Protection*: This project upgraded existing and implemented new security solutions for threat analysis and to defend against malware or hacking-based attacks.

- *Host Intrusion Prevention for Servers*: This project involved the installation of Host Intrusion and End-Point protection on servers and workstations to protect Xcel Energy and its computer infrastructure against unauthorized access to the computer environment.

- *Analog Security Camera Upgrade*: This is a multi-year project that will involve the replacement of older, analog security cameras with new, digital security cameras across Company facilities. This project will enhance security efforts by moving security camera assets to vendor supported technology that can be updated as patches are available, which will increase the Company's cyber security capabilities.

- *Cyber Security Data Lake*: This project involves implementation of a solution allowing users access to only the data they need (a data lake is a repository of raw and unstructured data) and provides data analytics for cyber security needs, including anticipation of cyber security events or activities and the means to reach back with granular visibility to aggregated past events. This project involves implementation of a solution that provides users of data within a data lake with access to only the data they are authorized to access. The solution also enables analysis of the data from a cyber security perspective, including the amount of sensitive data within the lake, who is accessing it, what tools are being used to access it, anticipation/prevention of security events, and forensic historical analysis of any events that occur.[1]

- *Verint Security Camera Server Replacement*: This project involves the replacement of security camera servers that are at end of life are not being patched, which presents significant security vulnerability risk if not upgraded. This project will also involve installing and migrating applications to the most current server operating system, upgrading to the most current version of the VMS software, and establishing regulating patching and standard support within Business Systems.

Q. WHAT ARE CYBER SECURITY SMALL PROJECTS?

A. These are projects that are under $1 million in capital spend and are included in Attachment MOR-1 with the larger projects I describe above. Like larger projects, these numerous, smaller projects are also necessary for the Company to ensure

[1] A data lake is a large repository of raw structured and unstructured data from varied sources. It is maintained for future analysis and use.

the availability, integrity, and confidentiality of our IT systems, compliance with legal and regulatory obligations, and otherwise protect the Company from cyberattacks. These smaller projects include continued, incremental upgrades to programs like SailPoint, smaller projects for data loss prevention, risk assessment services and platforms, implementation of OT monitoring resources, upgrades to spam filters, and other upgrades to our cyber security systems.

B. Aging Technology

Q. PLEASE DESCRIBE KEY BUSINESS SYSTEMS CAPITAL ADDITIONS RELATED TO REPLACING AGING TECHNOLOGY SINCE THE COMPANY'S 2020 COMBINED GAS RATE CASE AND PLANNED THROUGH THE 2022 CTY.

A. Since its 2020 Combined Gas Rate Case and through the 2022 CTY, the Company's capital additions total $222.6 million for aging technology. Key aging technology projects from 2019 through 2022 are set forth in Table MOR-D-3 below. Within the aging technology category, we further divide projects into routine refreshes and specific, individual refresh projects.

TABLE MOR-D-3:
Public Service 2019-2022 Aging Technology Capital Additions (Total Company)
(Dollars In Millions)

Capital Additions	Actual Additions 10/1/2019-6/30/2020	2021 HTY Actual Additions 7/1/2020-6/30/2021	Forecasted Additions 7/1/2021-12/31/2021	2022 CTY Forecasted Additions 1/1/2022-12/31/2022
Annual Refresh	$10.4	$15.9	$12.2	$13.8
WAN PSCO	3.5	3.8	5.4	4.0
Mainframe Modernization	0.5	-	7.9	0.9
ESB Environment Refresh	8.7	-	-	-
DR Technology Refresh	-	-	5.2	2.9
Infrastructure Modernization	-	0.1	1.9	5.0
Western Slope Backhaul	-	-	6.7	-
Next Generation Desktop	5.1	0.7	-	-
Gas Transaction System	5.1	-	-	-
PSCo Microwave Mountain Range Refresh	3.4	1.5	-	-
Oracle Exadata Refresh	-	-	0.8	3.6
Bentley OpenUtilities Designer (BUD) Upgrade	-	-	3.5	-
VoIP Refresh	-	-	1.4	2.0
ServiceNow	-	-	3.4	-
Technology License	-	-	1.6	1.5
Motorola LMR Core Upgrade	-	1.5	-	1.6
Emptoris Contract Management Replacement	-	2.8	-	-
Rugged Tablets Refresh	-	-	0.8	1.9
DRMS Phase II (Demand Response Management System) Phase II	-	-	-	2.7
Network Inventory and Planning Solution	2.7	-	-	-
Teradata-Hadoop HW Purchase	-	2.5	-	-
10G Backhaul	2.5	-	-	-
Facility IT Investments	0.2	0.4	1.1	0.7
Technology License 2020	-	2.2	-	-
Tapeless Data Center	2.1	-	-	-
F5 Renewal	-	-	2.1	-
Kafka Data Streaming	-	-	2.1	-
Integration Resiliency	-	-	1.8	0.1
Video Conferencing Enablement	0.7	0.5	0.3	0.3

Capital Additions	Actual Additions 10/1/2019-6/30/2020	2021 HTY Actual Additions 7/1/2020-6/30/2021	Forecasted Additions 7/1/2021-12/31/2021	2022 CTY Forecasted Additions 1/1/2022-12/31/2022
Firewall Rule Management 2021	-	-	-	1.7
2022 Oracle License	-	-	-	1.7
VDI Refresh	-	0.7	1.0	-
2020 Handheld Mobile Collector Refresh	0.0	0.0	0.9	0.7
Core HR Application (Payroll Benefits)	-	-	1.1	-
2020 Oracle Licenses	1.0	-	-	-
2021 Oracle Licenses	-	1.0	-	-
Upgrade Corporate Financial Model (CFM)	-	-	1.0	-
Enterprise Purge Archive	-	0.5	0.5	-
Cloud Access Security Broker (CASB) Beyond Microsoft Cloud App Security (MCAS)	-	-	-	1.0
Aging Technology Small Projects	3.6	6.9	7.0	16.2
Total	**$49.5**	**$40.9**	**$69.9**	**$62.3**
Any differences between sum of individual category amounts and Total are due to rounding.				

Q. HOW ARE ROUTINE REFRESH PROJECTS DEVELOPED?

A. As I noted earlier in my Direct Testimony, routine refresh projects refer to those projects that relate to updating or refreshing day-to-day technology on a routine basis. Budgets to upgrade technology components on an aggregate level are based on the lifecycles outlined by various original equipment manufacturers. Equipment lifecycles can differ based on each category, but generally speaking most of our network, server and end user computing equipment are on an approximately five-year refresh lifecycle. Budgets are therefore based on refreshing approximately 25 percent of most equipment each year. The funding

allocated within each specific group/year represents the aggregate of calculations to address two needs: (a) equipment replacement as outlined above; and (b) net new incremental, or "business-as-usual," growth. Routine refresh projects include the annual data storage project, the annual network refresh, the annual PC refresh, and the annual server refresh. I provide capital additions for these projects for 2019-2022 in Table MOR-D-4 below.

TABLE MOR-D-4:
Public Service 2019-2022 Annual Refresh Capital Additions (Total Company)
(Dollars In Millions)

Capital Additions	Actual Additions 10/1/2019-6/30/2020	2021 HTY Actual Additions 7/1/2020-6/30/2021	Forecasted Additions 7/1/2021-12/31/2021	2022 CTY Forecasted Additions 1/1/2022-12/31/2022
Annual Network Refresh	$3.1	$4.4	$4.2	$4.9
Annual PC Refresh	0.5	7.9	1.2	5.7
Annual Server Refresh	2.1	0.9	1.6	0.3
Annual Storage Refresh	4.7	2.7	5.2	2.8
Total	**$10.4**	**$15.9**	**$12.2**	**$13.8**
Any differences between sum of individual category amounts and Total are due to rounding.				

Q. PLEASE BRIEFLY DESCRIBE THE ANNUAL REFRESH PROJECTS.

A. Below are descriptions of these annual refresh projects:

- *Annual Network Refresh:* The Annual Network Refresh project replaces network devices (switches, routers, radios, channel banks, and voice systems) due to aging technology, out-of-support equipment, security vulnerabilities, and to enable new required capabilities.

- *Annual PC Refresh:* The Annual PC Refresh project replaces aging desktop and laptop computers, as well as those that are lost or inoperable. This project also provides devices to new employees.

- *Annual Server Refresh:* The Annual Server Refresh project replaces aging servers prior to failure to support business growth and maintain reliability.

- *Annual Data Storage Refresh*: The Annual Data Storage project replaces data storage hardware that is no longer cost-effective to support, or that presents significant risk to operations due to aging components or lack of vendor support.

Q. CAN YOU PROVIDE SOME EXAMPLES OF SPECIFIC REFRESH PROJECTS?

A. Yes, the WAN Public Service project, the Mainframe Modernization, Enterprise Service Bus ("ESB") Environment Refresh, the Disaster Recovery ("DR") Technology Refresh project, the Infrastructure Modernization project, and the Western Slop Backhaul are examples of these projects.

Q. WHAT IS THE WAN PUBLIC SERVICE PROJECT?

A. This project includes the detail design, planning, installation and commissioning of equipment that comprises an update of the Company's corporate WAN across its service territories. The WAN work includes network infrastructure investments to support connection between the Company's various locations and providing the pathway to enable critical business services. Investments support communication services for our business, including SCADA connectivity for monitoring and control of the gas system. In addition, enterprise services are delivered to enable end users to connect to corporate applications like email, SAP (the General Ledger ("GL") and Work and Asset Management ("WAM") systems), and internet access. Significant factors driving project costs are the age of infrastructure being replaced

and the difficult terrain in certain areas where WAN work is taking place. The project focuses on supporting communication assets to mitigate risk of wildfire from Company operations, replacing analog circuits to improve connectivity (retirement of copper circuits), relocating a leased microwave tower to better access, and redesigning WAN connectivity.

Q. WHAT IS THE MAINFRAME MODERNIZATION PROJECT?

A. There are core applications running on a mainframe that was placed in service over eight years ago and is now out of support. This project is to replace the existing mainframe and Disaster Recovery with a solution that meets the needs of Xcel Energy.

Q. WHAT IS THE ESB ENVIRONMENT REFRESH PROJECT?

A. This ESB project integrated a platform that provides fundamental interaction and communication services between complex software applications. The project upgraded the existing asset to ensure reliable data integrations.

Q. WHAT IS THE DR TECHNOLOGY REFRESH PROJECT?

A. This project will enable the Company to proactively test and implement a new methodology for system recovery during a disaster, such as power outages and other system failures, that can result in lost data and system issues. The project will help ensure business continuity, regardless of the circumstances. The DR Technology Refresh will replace aging disaster recovery hardware and will provide hardware and software solutions to ensure that the Company will be fully prepared to operate during a situation that could negatively impact the operation of the Company's primary systems.

Q. WHAT IS THE INFRASTRUCTURE MODERNIZATION PROJECT?

A. This project is made up of two major components that are intended to support our overall technology infrastructure:

- *Server OS Refresh*: There are Windows servers still using 2012 (or older) Operating Systems ("OS") that need to be updated to a new version of Microsoft Server. This project involves managing the application teams to review their needs for the application residing on older Windows Server OS; if assessment reveals the need to migrate to a more current version, a migration strategy is created and executed to more current Windows Server OS. In some cases, it may be necessary to move to new infrastructure and away from physical servers to virtual machines ("VM"). VMs provide the functionality of physical assets through the use of specialized hardware and software.
- *Tanzu*: This part of the effort will institute VMware Tanzu, a container-hosting platform that helps our servers communicate with each other and enable Xcel Energy to modernize both its applications and the infrastructure it runs on by offering full-stack modernization that will simplify how the Company develops and operates software across multiple clouds.

Q. WHAT IS THE WESTERN SLOPE BACKHAUL?

A. Xcel Energy, the Tri-State Generation and Transmission Association, Inc., and the Western Area Power Administration used to share a network system through the Colorado Joint Communication System ("CJCS") agreement. Upon the dissolution of the CJCS, the Public Service Western Slope SCADA data would be cut off from

our corporate systems. Xcel Energy's replacement for the shared CJCS network will use a combination of leased fiber, internal fiber build, and microwave-based transmission communication technologies. The project provides the conduit wide area corporate connectivity for Public Service Mountain regions. This corporate network carries critical data, such as work force management capability for all services.

Q. PLEASE BRIEFLY DESCRIBE OTHER SPECIFIC REFRESH CAPITAL ADDITIONS THAT WERE OR WILL BE PLACED INTO SERVICE TO REPLACE AGING TECHNOLOGY THROUGH THE 2022 CTY.

A. Examples of other projects with capital additions over $1 million being placed into service since the end of the 2020 Combined Gas Rate Case through the 2022 CTY to replace aging technology include:

- *Next Generation Desktop*: This purpose of this project is to move the enterprise desktop computing devices to the most current standard operating system, and standardize vendor support for maintenance and defect resolution by ensuring overall stability and continuation of patching practices, thereby minimizing security vulnerabilities. The software upgrades enable greater business capabilities and efficiencies, such as mobile and tablet technologies across our business.

- *Gas Transaction System*: This project implemented a new gas transaction system that will accommodate the Company's growing gas business by replacing antiquated custom system main frame technology with a new solution. This project will enable the Company to meet customer needs and FERC regulatory requirements by supporting Intra Day Norms and Electronic Data Interchange ("EDI") business capability.

- *PSCo Microwave Mountain Range Refresh*: This project replaced Company microwave digital radio components in the northeast Denver metro area network that are no longer supported by the vendor, as they were past end-of-life. Replacement helps ensure continued reliability of the network by remedying frequent remote terminal unit outages, meet communication requirements, reduce safety concerns, and minimize

replacement costs. If not replaced on a cycle, there is an increasing risk of failed systems impacting the availability, stability, and supportability of our environment, which could cause loss of data and related business functions.

- *Oracle Exadata Refresh*: This project will deploy a new Oracle Exadata database platform that will replace the existing platform, which will reach the end of its life in 2021. Oracle Exadata is a software and hardware computing platform that runs Oracle Database for over 100 applications to store and organize data, which provides IT infrastructure for enterprise grid computing that manages information and applications for the Company in a flexible and cost-effective way. In addition, the Oracle Database will be upgraded to a new version in order to maintain vendor support and security patching. The Oracle Exadata platform also supports many other databases, including critical application databases.

- *Bentley OpenUtilities Designer ("BUD") Upgrade*: This project will replace the existing BUD, which is a distribution system design tool that creates and manages distribution system assets for electric and gas systems, and which is at end of life. The BUD will be replaced with the GE Smallworld Design Manager system, which will ensure that the system is completely upgraded, provide users with more design capabilities, and enable the Company to maintain vendor support allowing for lower cost enhancements in the future.

- *Voice over Internet Protocol ("VoIP") Refresh*: This project will upgrade Company technologies for the delivery of voice communications and multimedia sessions over the Internet.

- *ServiceNow*: This project will facilitate IT service delivery, asset management, and regulatory compliance, and is intended to lead to higher IT customer service satisfaction by improving the Company's ability to route information more effectively. The tool also facilitates the adoption of the more efficient industry-standard processes upon which the tool is based. Finally, the project will also help track performance in these areas, in an effort to continually improve IT service delivery and operations management.

- *Technology License project*: This project provides software license support across enterprise infrastructure and operations. To ensure adequate coverage, the Company will purchase additional licenses to support new and increasing numbers of licenses for common systems, such as Microsoft and Oracle, with users usually not tied to specific projects. Updating software licenses ensures that system devices are not over purchased and are running up-to-date licensed software, which

decreases support costs and increases the Company's cyber security profile.

- *Motorola Land Mobile Radio ("LMR") Core Upgrade*: When there is no cell phone coverage, the only means of communications for workers out in the field is the LMR system, which is critical to the safety and productivity of Xcel Energy's field personnel. This project will complete all software and hardware updates to the current LMR system to remain in support, which allows for patching, improved support from Motorola, and proper adherence to security standards.

- *Emptoris Contract Management Replacement*: This project involved replacing the hosted Emptoris application due to vendor IBM ending support in 2020. Emptoris is the Supply Chain organization's application for creating contracts with suppliers and sending requests for proposal to suppliers.

- *Rugged Tablets Refresh*: "Rugged" tablets, or Mobile Device Terminals ("MDTs"), are generally used by Xcel Energy critical employees in the field in the areas of Distribution, Construction, Transportation, Emergency, Trouble, in both the electric and gas jurisdictions. Field supervisors and other skilled staff use MDTs to receive and complete work orders in the field in real-time. Devices that need to be replaced have not been refreshed in four to six years.

- *DRMS Phase II (Demand Response Management System) Phase II*: The DRMS Phase II project will replace the old/retiring systems by implementing platform components required to manage demand response dispatches for all programs, customer segments, and endpoints. The platform will manage events, control related endpoints, monitor participation, and retrieve related meter data. The platform will also provide integrations to Xcel Energy customer and program management systems, meter data systems, and billing systems.

- *Network Inventory and Planning Solution*: Under the project, the Company developed an enterprise suite of network management tools in order to manage and maintain network assets, as well as to consolidate or retire tools. This project organizes existing network management tools and determines which to implement enterprise wide. It allows for rationalization of tools, such as consolidation or decommissioning where needed, and the building out of tools as needed.

- *Teradata-Hadoop HW Purchase*: This project upgraded the current end-of-life hardware that Teradata currently resides on. Teradata server

hardware warehouses company data vital to business needs and must be upgraded.

- *10G Backhaul:* Xcel Energy's previous corporate communications backbone had insufficient capacity for the increasing loads introduced by the new WAM system. This project involved upgrading network bandwidth to 10G to address capacity concerns.

- *Facility IT Investments*: New service centers or offices are built as needed to support growing or expanding communities. Facility IT investments represent the necessary IT network infrastructure needed to connect these sites. This includes the construction of main distribution frames, intermediate distribution frames, cabling to connect workstations and phones, deployment of wireless access points, and the installation of any routers, switches and/or firewalls to secure the site.

- *Technology License 2020 project*: This project provided software license support across enterprise infrastructure and operations, including VMware licenses that were expiring and additional Microsoft licenses. Updating software licenses ensures that system devices are not over purchased and are running up-to-date licensed software, which decreases support costs and increases the Company's cyber security profile.

- *Tapeless Data Center*: This project will protect company data and security by enhancing back-up data recovery efforts. The project upgraded and replaced the company's data-protection solution that was outdated. A new solution is also more efficient by reducing local area network traffic and back-up time by ninety percent.

- *F5 Renewal*: The current F5 hardware is at end of life and the physical appliances need to be replaced to remain in vendor support and to run efficiently. The upgrade to new hardware allows the Company to continue to focus on the delivery, security, performance, and availability of web applications, as well as the availability of servers, data storage devices, and other networking components.

- *Kafka Data Streaming*: Kafka integrations include data streaming that allows the Company to stream data in real-time from our source system applications to make them available for analytics and application builds. Examples are SAP and CRS to AWS-data lakes for analytics and application builds.

- *Integration Resiliency*: This project will upgrade and deploy interfaces within the ESB environment and integrations in order to ensure

supported technologies and to increase the resiliency of these critical interfaces so that they operate without interruption. These are considered critical interfaces because they provide the ability to transfer data between Company applications.

- *Video Conferencing Enablement*: This project work implements new collaboration technology and standardized all conference rooms with a small, medium, large, and bay configuration.

- *Firewall Rule Management 2021*: This project will implement a new centrally-managed tool to maintain the Company's multi-vendor firewall hygiene program by providing end-to-end security views of firewall policies, rules, and configurations that impact the Company's security posture in an automated fashion.

- *2022 Oracle License*: For 2022, this licensing work relates to the Company's upgrade of the Oracle database across the Xcel Energy enterprise as the current version of the Oracle database was at end of life and no longer supported by Oracle. Xcel Energy renegotiated its Oracle Perpetual Unlimited License Agreement ("PULA") in 2021, which will lock in licensing pricing for five years and will ensure licensing requirements compliance with Oracle. The Oracle database supports many Xcel Energy critical systems.

- *VDI Refresh*: This project will refresh, expand, and improve the Company's aging Virtual Desktop Interface ("VDI") environment. With the Company's move to Windows 10, storage space has become a major concern and Business Systems must implement a long-term strategy for a new VDI environment.

- *Core HR Application (Payroll Benefits)*: This project will replace the multiple existing core Human Resources ("HR") software systems and vendors at Xcel Energy – PeopleSoft, TIME, myHR, Talent Management, Learning Management System, Workforce Planning, and Workforce Analytics – with a single, integrated software solution that will be determined upon finalizing the RFP for the project. These applications comprise the core human resource system, provide payroll, benefits administration, workforce management, experience layer, and job record tracking to employees and retirees of the Company.

- *2020 Oracle License*: For 2020, this project respresents the annual cost for Oracle software licenses. In 2017, Xcel Energy entered into a five-year PULA for databases software license costs, which locked in licensing pricing for five years to ensure licensing requirements compliance with Oracle.

- *2021 Oracle License*: For 2021, this project will manage the number of Oracle licenses needed to support the enterprise by renegotiating current licenses under a PULA for an additional term. This project will maintain licensing compliance for database software and provide flexibility for additional Oracle databases.

- *Upgrade Corporate Financial Model ("CFM")*: CFM is a module of the Utilities International ("UI") Planner platform and is utilized to generate financial forecasts. The current version of CFM will no longer be supported by UI in early 2021; this project will upgrade CFM to a new version, which will make it consistent with UI's other components. With this upgrade, the Company will implement shared tables to more closely tie the CFM to the Regulatory Information System ("RIS"). In addition, the original CFM will be redesigned and updated. This project will also add and implement UI's PlannerDash and the Analytics Package. With this project, there will be more consistent data between modules, which will need less reconciliation effort and will have better analytics.

- *Enterprise Purge Archive*: The project will build an archive purge solution for CRS. CRS currently has all customer data and business transactions since it was first implemented in 2003. In order to extend the life of CRS, continue online employee performance, continue performance for customers, and preserve the performance of nightly batch processing, we need to follow existing data policies and archive and/or purge old data.

- *Cloud Access Security Broker ("CASB") Beyond Microsoft Cloud App Security ("MCAS")*: This project will deploy enhanced cloud security tools and functions. Specifically, it will implement a new CASB", the MCAS. This will identify and help combat cyber security threats. It improves visibility and mapping functions into our cloud applications, allowing the teams to see things like data travel, ensuring security and compliance across the entire base of SaaS (software as a service) applications.

Q. WHAT ARE THE AGING TECHNOLOGIES SMALL PROJECTS?

A. Overall, as with cyber security small projects, these smaller projects are individually under $1 million in capital spend and are included in Attachment MOR-1 with the projects I describe above for aging technologies that are individually

over $1 million. As with larger projects, these smaller projects will enable the Company to keep its systems reasonably upgraded to continue to meet business, reliability, or compliance needs. These smaller projects include projects like software upgrades for applications like Project Pro, Visio, and Adobe, license renewals for applications not included in the overall technology license refreshes, and numerous other technology refreshes.

C. Enhancing Capabilities

Q. PLEASE DESCRIBE KEY BUSINESS SYSTEMS CAPITAL ADDITIONS RELATED TO ENHANCING CAPABILITIES SINCE THE COMPANY'S 2020 COMBINED GAS RATE CASE THROUGH THE 2022 CTY.

A. Since its 2020 Combined Gas Rate Case and through the 2022 CTY, Public Service will have placed in service $59.1 million in enhancing capabilities capital additions. Key enhancing capabilities projects from 2019 through 2022 are set forth in Table MOR-D-5 below:

TABLE MOR-D-5:
Public Service 2019-2022 Enhancing Capabilities Capital Additions (Total Company)
(Dollars in Millions)

Capital Additions	Actual Additions 10/1/2019-6/30/2020	2021 HTY Actual Additions 7/1/2020-6/30/2021	Forecasted Additions 7/1/2021-12/31/2021	2022 CTY Forecasted Additions 1/1/2022-12/31/2022
EXT Mobile Application Development	-	$0.5	$3.8	$7.6
Digital Ops Factory	-	-	8.2	0.4
Gas Frontline Enablement and Experience	-	-	-	8.3
SAP Continuous Improvements	0.4	0.7	2.8	1.7
Avaya Cloud Voice Deployment	-	-	4.3	0.1
CIP Substation Compliance Reporting Work Stream 2	-	-	3.0	-
Enterprise Operational Monitoring	2.5	0.1	-	-
Application Performance Monitoring	-	2.5	-	-
eSOMS Project	2.3	0.0	-	-
Transmission Asset Health Analytics	-	0.1	1.9	-
Enterprise Data Management Tool	0.0	-	1.2	-
PTT Phase 3 (WAM)	1.1	-	0.0	-
UI Crev and RIS with PlannerDash	-	-	1.0	-
Enhance Capabilties Small Projects	1.1	1.3	1.5	0.5
Total	**$7.5**	**$5.2**	**$27.7**	**$18.7**
Any differences between sum of individual category amounts and Total are due to rounding.				

Q. WHAT IS THE EXT (EMPLOYEE EXPERIENCE TRANSFORMATION) MOBILE APPLICATION PROJECT?

A. The EXT program is building mobile applications for employees. The initial focus is on improving the employee experience for our field workers with apps such as

Field Time Entry, Electric Outage Restoration, and Gas Emergency Response. This project is a new platform that will provide "backend" support for all mobile applications within the EXT portfolio. This project will enhance the Company's mobile applications capabilities, providing components such as authentication and authorization services, notification services, logging and monitoring services, integrations, and processes for developer operations. By equipping employees with more modern, convenient mobile apps, it allows them to be more effective in their jobs and improve delivery of services for customers.

Q. WHAT IS THE DIGITAL OPS FACTORY PROJECT?

A. The Digital Factory is a cloud-based, modern data and analytics platform that will enable the Company to make better use of available data to enhance both customer journeys and core operational processes. This project will deliver a secure multi-tenant cloud platform as a foundational engine for each of the following capabilities: reusable data lake; common integrations; analytics workbench; mobile platforms; dashboard framework, and artificial intelligence models. Once the foundation is built the project examples include predictive modeling, real time scheduling systems, operations work management, routing and screen of data, work dashboards, and profiles.

Q. WHAT IS THE GAS FRONTLINE ENABLEMENT AND EXPERIENCE PROJECT?

A. The Gas Frontline Enablement and Experience project will implement a mobile solution that will enable efficient, safe, and effective fieldwork by leveraging the power of data and sensors through a single, seamless platform to empower crews

with accurate and reliable information to confidently complete jobs. This project will address certain key issues for our fieldworkers, such as by streamlining field documentation by enabling effective frontline data collection and simplying the documentation experience, which will improve data accuracy; will address asset tracking and traceability by creating a single interface for all necessary job and asset information; will support crews through an accessible, reliabile mobile solution that will identify the right asset for inspection using geolocation, and will enable offline work and provide knowledge about assets through relevant history and comments; and will address work order scheduling and routing and optimize such processes in real-time for location, qualifications, and equipment available, which will save time and improve safety.

Q. WHAT IS THE SAP CONTINUOUS IMPROVEMENTS PROJECT?

A. SAP is an enterprise application and continuous improvement and investment is needed to fully utilize the benefits of having an enterprise application. This is a multi-year project, with various components placed in service as assets are deployed. Examples of some of the components for this project include the Oracle Database upgrade, which is the primary database for SAP, and SAP scheduler was upgraded to improve scheduling to monitor and improve inefficiencies to optimize resources.

Q. WHAT IS THE AVAYA CLOUD VOICE DEPLOYMENT PROJECT?

A. This project will transition Xcel Energy to an Internet Protocol (IP)-based voice telephone system that will provide greater flexibility and enhanced user features over the current system for both employees and customers. This new telephone

system will be cloud based, which will reduce on-premises IT infrastructure. It will also modernize and improve telephone services by upgrading communications features that will allow for better collaboration among employees, and will replace and upgrade the Company's existing voicemail system with Microsoft. The new telephone system will also enhance our improved customer experience efforts, as it will help deliver next generation customer contact center solutions.

Q. WHAT IS THE CIP SUBSTATION COMPLIANCE REPORTING WORK STREAM 2 PROJECT?

A. This project will replace complex, labor-intensive processes, with software automation in order to better support the Company's compliance with CIP standards. In particular, it will provide software automation in the areas of asset management, ports and services, security patch management, and daily management, quarterly inventory review, and annual audit discovery. The project also will reduce labor costs and travel time for Company employees and will improve CIP-related processes as they become automated through document automation and password automation of equipment, which is anticipated to decrease reporting errors and improve compliance.

Q. WHAT IS THE ENTERPRISE OPERATIONAL MONITORING PROJECT?

A. The Company employs a suite of monitoring tools that are used enterprise-wide that monitor critical infrastructure and alert to potential risks to business hardware in order to prevent failures and mitigate security concerns. The project provides and employs monitoring tools for hardware supporting critical applications such as CRS, SAP, and other major application hardware.

Q. WHAT IS THE APPLICATION PERFORMANCE MONITORING PROJECT?

A. The Application Performance Monitoring project will ensure that software applications perform in an expected manner and scope by measuring and evaluating performance of an application and by isolating abnormalities or issues. The project will reduce frequency and duration of application outages, improve internal productivity and decrease time spent responding to issues, and improve the end user experience across digital assets.

Q. WHAT IS THE ESOMS PROJECT?

A. The ABB Hitachi Electronic Shift Operations Management System ("eSOMS") is used across Xcel Energy for Lockout/Tagout, operator rounds, and narrative logs and is deployed to nuclear plants, other generation plants and Gas engineering and operations. This project updated the eSOMS software suite, improved recoverability, and assured continued viability as a corporate asset.

Q. WHAT IS THE TRANSMISSION ASSET HEALTH ANALYTICS ("TAHA") PROJECT?

A. This project provides a TAHA system that combines different types of asset data and capabilities to perform data mining, predictive modeling, and advanced analysis that assists the Company with accurately maintaining and replacing gas transmission and distribution assets.

Q. WHAT IS THE ENTERPRISE DATA MANAGEMENT TOOL PROJECT?

A. This project will implement a robust data management and governance solution that will better and more efficiently manage data quality across business units. The data governance initiative will increase productivity by using tools designed to

efficiently process workflow and monitor quality while also enabling incremental controls and processes that are scalable and more cost-effective.

Q. WHAT IS THE PTT PHASE 3 (WAM) PROJECT?

A. Through the Productivity Through Technology (or "PTT") initiative, the Company replaced its GL and modernized its WAM system. This project involves post-implementation upgrades and patches to continue ensuring a stable and consistent platform, which will increase innovation and contain the total cost of ownership.

Q. WHAT IS THE UI CUSTOMER REVENUE SYSTEM ("CREV") AND RIS WITH PLANNERDASH PROJECT?

A. The project will provide forecasting and regression analysis, rate design, quality bill checks, rate comparisons, and interval data analytics. PlannerDash is a tool that sits on top of CREV and makes report writing, viewing, and analysis much easier and user friendly. PlannerDash also significantly improves data entry performance for users. The combination of CREV with PlannerDash gives us the ability to have complex bill analysis by customer, class, or company at the users' fingertips.

Q. WHAT ARE ENHANCING CAPABILITIES SMALL PROJECTS?

A. As in the cyber security and aging technologies categories, these smaller projects are also included in Attachment MOR-1 with the larger projects I describe above. These smaller projects, like large projects, also enable the Company to improve productivity, enhance communications between systems and between people, and use data more efficiently. Examples of smaller enhancing capabilities projects

include an initiative to increase the resiliency of the Business Systems area, updates to the Ansible IT automation platform, Blue Prism licenses, implementation of new integrated document management solutions, new software for the Fleet area to manage all Fleet assets, and other projects to take advantage of new capabilities and increase efficiencies.

D. Customer Experience

Q. PLEASE DESCRIBE KEY BUSINESS SYSTEMS CAPITAL ADDITIONS RELATED TO CUSTOMER EXPERIENCE SINCE THE COMPANY'S 2020 COMBINED GAS RATE CASE THROUGH THE 2022 CTY.

A. Since its 2020 Combined Gas Rate Case and through the 2022 CTY, Public Service will have placed in service $91.1 million in customer experience capital additions. Customer experience projects primarily include projects that are part of the CXT program, which I discuss first below, but also include projects outside of the CXT program, which are included in the "other" category, and includes primarily CRS Tech Stack work, but also other implementations. Key customer experience projects from 2019 through 2022 are set forth in Table MOR-D-6 below:

TABLE MOR-D-6:
Public Service 2019-2022 Customer Experience Capital Additions (Total Company)
(Dollars In Millions)

Capital Additions	Actual Additions 10/1/2019-6/30/2020	2021 HTY Actual Additions 7/1/2020-6/30/2021	Forecasted Additions 7/1/2021-12/31/2021	2022 CTY Forecasted Additions 1/1/2022-12/31/2022
Digital Channel Platform	$0.1	$7.4	$30.0	-
Other	-	1.2	7.9	8.3
Data Analytics and Automation	-	8.9	4.9	0.5
Platform Infrastructure and Technology Maintenance	-	7.2	4.4	-
Customer Relationship Management	-	-	8.6	$1.7
Total Company	**$0.1**	**$24.7**	**$55.8**	**$10.5**
Any differences between sum of individual category amounts and Total are due to rounding.				

Q. WHAT IS THE COMPANY ACHIEVING THROUGH THE CXT PROGRAM?

A. The CXT program is, ultimately, a series of foundational investments in platform infrastructure and data analytics and automation that are intended to improve the Company's digital interfaces with customers. The Company's foundational work to improve the customer experience has been divided into four project areas: (1) Digital Channel Platforms (including MyAccount, the Company's website, Xcel Energy mobile applications, and new customers and real estate developers' initial

connections with the Company (New Customer Connect); (2) the Customer Relationship Management ("CRM") Platform (currently Salesforce); (3) Platform Infrastructure and Technology Maintenance; and (4) Data Analytics and Automation. The individual projects by the categories identified in Table MOR-D-6 above are provided in Attachment MOR-1. Most of the foundational work is forecasted to be placed into service by the end of 2021, but CXT program work will continue and be prioritized as needs arise, with additional components being placed in service in the future to build on the foundational work and continue to enhance customer experiences.

Q. WHAT IS THE DIGITAL CHANNEL PLATFORM PROJECT?

A. This project will build out, enhance, and redesign several components of our customers' digital interactions with the Company. This work includes enhancing and modernizing Xcel Energy's customer-facing online digital platforms and underlying technologies, MyAccount, our mobile application, and website, www.xcelenergy.com. It also involves building out the New Customer Connections experience.

Q. CAN YOU DESCRIBE THE MYACCOUNT, XCELENERGY.COM, AND MOBILE APPLICATION WORK IN MORE DETAIL?

A. Yes. This work will provide a new digital presence for Public Service's customer channels, improving optionality, providing more user-friendly interfaces, and offering more capabilities for customer data management. As part of the www.xcelenergy.com, mobile app, and MyAccount re-design and re-platform, Business Systems will conduct a content, user experience, and visual design

heuristic assessment to identify pain points for the customer and optimize the experience. In addition to the functions the customers have today, the re-design will allow customers to request additional services, see the status of service requests, and make appointments for any service issues. The MyAccount re-platform will allow customers to set up their preferences, pay their bills or set up automatic payment options, and receive information on their energy usage. The goal is to share the same usage information a call center representative would see with the customer he or she is assisting, to increase customers' options and to allow them to interact with Xcel Energy in the manner they choose.

Q. PLEASE DESCRIBE THE NEW CUSTOMER CONNECTION WORK.

A. Today, the New Customer Connection—now called the Builders and Remodelers Portal—applies to trade partners and Company customers who are building new construction and need to engage with the utility for net-new electric and gas services. An online form can be utilized, but will then need to be re-entered to begin the ordering process, with no ability to view the status on any automated channels.

Building out the New Customer Connect channel will provide a better experience for builders, developers, and other larger Commercial & Industrial customers who engage with Xcel Energy to request new, resumed, or stopped service. Specifically, the customer interface will be revamped to provide better information to customers about the phase or status of their line extension process, improve the builders' call line, and improve the process for communicating with parties engaged in that process.

These improvements will allow the Company to better partner with developers, contractors and do-it-yourself homeowners as they manage their projects from start to completion. They will be able to receive and give updates on their projects in real time, giving them control and transparency to better plan their business needs. Through account preferences, timely and accurate notifications about status, as well as a flexible appointment capability, these enhancements will provide Company employees, trade partners and homeowners with a more seamless and collaborative experience.

Q. PLEASE DESCRIBE THE CRM PLATFORM PROJECT.

A. This project involves building out the existing Salesforce CRM tool and introducing new modules to better understand and serve customers. The redesigned platform will enable tracking of different relationships with customers, whether that is commercial, residential, industrial or on a different basis. It will allow for real-time business updates to mobile applications, automated updates to the customer mobile application without requiring customers to manually update the application itself, and updates to MyAccount with minimal development support, all supporting improved customer and employee experiences.

For 2021, the CRM project capital additions forecast also includes Customer Identity and Access Management ("CIAM") work, in addition to billing and payments, outages, and notifications work I describe below. CIAM work enabled a new single sign-in customer access and identity management in support of MyAccount and Mobile App login and other products and services (including third parties). The new customer login will improve customer access to their

accounts, allow single login for all services offered by Xcel Energy and will enable continuous upgrades to our security.

Better CRM management will enable us to both identify previous searches and efforts taken by Company employees on behalf of the customer, and support a 360-degree view of existing customer location(s), energy applications, and preferences, much of which will be available to the employee efficiently through the Single Screen program I describe below for 2022. It will also provide insight into customer billing patterns to allow us to serve customers better, by counseling and advising them on conservation options, management tools, and other service options. It will also give customers the ability to have information on our technicians when it is necessary for them to visit the premise, including the technician's name and other pertinent information and also the status of the technician's location and approximate time he or she will arrive.

Q. IS THE COMPANY CONTINUING TO USE SALESFORCE FOR ITS CRM PLATFORM?

A. Yes. Salesforce was selected through a platform selection process. We evaluated several solutions with similar capabilities, and noting improvements to the platform, ultimately chose to remain with Salesforce because it is the existing platform and therefore offers efficiencies in integration, time to market, and planning that would not be available by starting with a new solution altogether. This is a multi-year project that was initiated in 2019, which also includes some post-implementation and minor enhancement work.

Q. PLEASE DESCRIBE THE BILLING AND PAYMENTS WORK.

A. Billing and payment functions in our customer channels will be ported to our new platform and we will continue to enhance the ability to review more details on billing components as we expect more renewables to be added to the bill. We will also continue to enhance the ability for customers to pay their bills and arrange payment plans when needed.

Q. CAN YOU DESCRIBE THE OUTAGES AND NOTIFICATIONS WORK?

A. Yes, I can. This work will provide foundational capabilities that will enable the building out of particular components and experiences for our gas and electric customers. Outage work will create a new, multi-channel outage experience for our customers that will display more accurate and timely outage information, including supporting more accurate restoration information. Notifications work will provide new capabilities within the CRM platform that will allow the Company to provide more accurate and proactive customer event notifications for billing and payments, outages, product sales, and other customer journeys. A new notifications approach will reduce costs and create more opportunities for communicating with customers. The capability will also enable two-directional text, opening up a new channel for customers to pay their bills and to work with an agent in the future.

Q. PLEASE DESCRIBE THE CONTACT CENTER WORK.

A. This program involves redesigning our Interactive Voice Response (“IVR”) system for customers and the first phase of this project is planned to be placed in service in 2021. This will assist customers to better resolve their issues without having to

speak to a call agent and make it easy to interact with the IVR. Phase I is updating the IVR hardware to stabilize the customer experience and provide a platform where we can build new experiences. The upgraded IVR will connect more seamlessly to the customer data stack and enable omni-channel experiences and add more customer functionality to the IVR. The Company may implement additional phases as they are approved.

Q. PLEASE DESCRIBE THE PLATFORM INFRASTRUCTURE AND TECHNOLOGY MAINTENANCE AND DATA ANALYTICS AND AUTOMATION PROJECTS.

A. Xcel Energy's technological architecture has become increasingly intertwined, with core systems running at maximum capacity to support the need for emerging capabilities. To relieve the pressure from these critical core systems, new data layers were added to aggregate key information and manage extra capabilities, while providing flexibility and added capacity. To accomplish this, we developed an Application Programing Interface ("API"), which is a set of routines, protocols, and tools for building software applications to ensure software components can "talk" to each other. This infrastructure also includes operations model connectivity and security, and data architecture and governance.

This work allows the legacy applications to function in the manner they were designed, eliminating significant current customization that is very costly to maintain. API work is being conducted in two phases. Phase 1 of the API and data sets was the first set of the data and integrations that enables and provides functionality for www.xcelenergy.com, and other applications specific to the

Builders and Remodelers Portal and core www.xcelenergy.com experiences, including functionality regarding automation and the cloud. The data work specifically provides a new platform and set of tools that supports the management and quality of customer data under new quality processes and data governance mechanisms. Phase 2 of API continues the work of Phase 1 and brings additional data and integrations to www.xcelenergy.com, MyAccount, mobile app, and other experiences. Improved data aggregation and storage will allow for more customer functionality across digital channels. Functionality includes billing and payment, product sign-ups, and general customer service.

Data analytics capabilities will improve dramatically as a result of API layer improvements enabling a new customer data grid that will serve as a single source of information on our customers. Analytics teams will have access to more timely, accurate and rich data to uncover deeper insights and trends to make improved recommendations and deliver better customer service.

Q. PLEASE FURTHER EXPLAIN HOW THESE PROJECTS ALSO DEVELOP DATA ANALYTICS.

A. Work under the Data Analytics and Automation project will add a Customer Data Platform layer to the Company's technological architecture, which will act as a central repository of data from the Company's core systems and third-party vendors. It will also provide expedited consumption of data by other systems and eliminate more legacy point-to-point interfaces. For the customers, the data layer will be where the Company can store data in one location to use on all channels.

The data will be accessible from all channels to eliminate the need for redundant input.

This work will also enable querying and running analysis and reporting on information outside of our core applications, such as core ordering and billing systems, which allows core applications to conduct only the transactions they were designed to complete.

Additionally, this project will facilitate analytics to help understand customer personas, preferences, and previous issues of our customers. This will help call center agents assist incoming calls in an expedited fashion with all the information they need, as previously noted with respect to the utility's digital interfaces. Artificial Intelligence and Natural Language Understanding will be used in conjunction with each other, and with data in the CRM, to simplify the customer call experience and reroute the caller to the correct department. This will also help gather all the required information, so that the right solution for the customer will be more easily recognizable to the Company employee.

Q. WHAT IS THE CRS TECH STACK UPGRADE?

A. This project is included in "other" customer experience work for 2021 because it is not included in the CXT foundational capital additions. This upgrade will provide certification and deployment of the various software components necessary to maintain and upgrade stability, reliability, security, resilience, and efficiency of the CRS application. This type of effort happens approximately every three years, if not sooner, depending on various technology drivers. The CRS Tech Stack represents the various software components, that in concert enable the larger

application to perform daily service orders, the posting of daily payments, the processing of a typical day's worth of meter reads, the calculating invoices and producing statements, as well as the providing of customer service through agents, the interactive voice response system, the Company's website www.xcelenergy.com, and MyAccount. This upgrade will ensure that the CRS Tech Stack remains supported by various vendors, receives necessary security patches, and remains current with other major market components, such as the operating system vendor, Java (programming language), Oracle (database management system), WebLogic (web application server), and Genero (application server). This project will also refresh storage and server infrastructure related to this technology.

Q. ARE THERE ANY OTHER CUSTOMER EXPERIENCE PROJECTS YOU WISH TO DISCUSS FOR 2021?

A. Yes. Capital additions forecasted to be placed in service in 2021 also includes the Commercial and Industrial ("C&I") Segmentation project, which is a data science model built by the Company to identify and connect customers in this class with Commission-approved programs, such as demand-side management, and other existing as well as new programs that are designed to serve this class of customers.

Q. PLEASE PROVIDE AN OVERVIEW OF CAPITAL ADDITIONS FORECASTED FOR THE 2022 CTY.

A. For the 2022 CTY, we anticipate a total of $10.5 million in capital additions related to customer experience projects, primarily related to the CXT Budget, CRS

Application upgrade, and continued CRM work, the Customer Service Console – Single Screen project. The CXT Budget and CRS Application upgrade are included in the "Other" category because these capital additions represent additions outside of our CXT foundational investments.

Q. WHAT IS THE CXT BUDGET PROJECT?

A. Capital additions for 2022 within the CXT budget will continue CXT implementations I described above by adding experiences and capabilities to the core CXT program. In successive years, we will add components to the foundational investments in order to build out the overall customer program to better serve and meet our customers' service expectations.

Specifically, for 2022, the Company continues building out the CRM platform and introduces new next-generation modules to the CXT platform to better serve our customers. The redesigned platform will enable us to track the different relationships with our customers, whether that is commercial, residential, industrial or on a different basis, with a goal of reducing O&M spend across high-cost channels and improve customer satisfaction. With a project of the size and scope of CRM, we also need to budget for post-implementation enhancements that play a critical role in supporting the overall CXT program. The CRM project built out the existing Salesforce CRM tool and introduced new modules to better understand and serve customers. Overall, these capital additions reflect continuation of the customer experience projects from previous years.

Additionally, we will continue to add customer experiences to the CXT platform, including enhancing our outages and notifications functions. In addition,

we will have self-service capabilities, such as enrolling in services online and status of technicians. The outage work created a new, multi-channel outage experience for our customers that displays more accurate and timely outage information, and includes supporting more accurate restoration information.

Notifications work provides new capabilities within the CRM platform that allow the Company to provide more accurate and proactive customer event notifications for billing and payments, outages, and other customer journeys. The new notifications approach will create more opportunities for communicating with customers, such as enabling two-directional text, and opening up a new channel for customers to pay their bills and to work with an agent in the future. Notifications work for 2022 will continue moving to a scalable solution that affords more experiences for our customers.

In 2022, we also implement new experiences for our Builders and Remodelers Portal. This portal provides a better experience for builders, developers, and other larger Commercial & Industrial customers who engage with Xcel Energy to request new, resumed, or stopped service. The Company has already revamped the customer interface by providing better information to customers about the phase or status of their line extension process, improved the builders' call line, and improved the process for communicating with parties engaged in that process.

Finally, we are adding capabilities to our MyAccount platform. The MyAccount re-platform has already provided more enhancements for our customers, such as allowing for customers to set up their preferences, pay their

bills or set up automatic payment options, and to receive information on their energy usage. For 2022, we implement new experiences for our customers, such as improved billing features in MyAccount that will be more user friendly and intuitive.

Q. WHAT IS THE CRS APPLICATION UPGRADE PROJECT?

A. The CRS is the Company's customer information system, which generates billing statements to retail customers on a monthly basis. This project is the initial strategy and first of a few projects that will remediate the larger CRS application that is supported by various software components, including those implemented under the CRS Tech Stack work, which is included among the small customer experience projects for 2022. The replacement will enable the Company to continue to maintain the stability, reliability, security, resilience, and efficiency of the CRS application.

Q. WHAT IS THE CUSTOMER SERVICE CONSOLE – SINGLE SCREEN PROJECT?

A. This foundational CRM project represents a component of the core CXT platform that has not yet been implemented. Currently, Company call center agents utilize numerous screens when communicating with customers on the phone. Combining numerous screens into one screen that contains all the information needed for customer service agents will simplify the experience for employees and benefit customers who will receive the information they need more quickly and efficiently. The "Single Screen" work, or also referred to as Agent 360, will also be integrated with Artificial Intelligence capabilities to help decipher what the inbound call is most

likely about, and help identify the most immediate fix to the issue. In addition, the single screen will show the agent the current bill, history of payments, and payment plan options that are tailored specifically to the caller. Finally, this screen will suggest support offerings for the customer's home that can help save money or simplify the customer's energy experience. Together, our CXT investments support the Company's overall goal to enhance the customer experience.

E. Emergent Demand

Q. PLEASE DESCRIBE KEY BUSINESS SYSTEMS CAPITAL ADDITIONS RELATED TO EMERGENT DEMAND SINCE THE COMPANY'S 2020 COMBINED GAS RATE CASE THROUGH THE 2022 CTY.

A. Emergent demand funds are budgeted for future years, and then – when the dollars are used for specific projects – re-classified to the specific project for which the expense was incurred. From 2019 through June 30, 2021, all emergent demand funds were fully deployed to other projects (previously described in my Direct Testimony); as a result, the actual emergent demand category funds have decreased to $0 for those years. Because amounts since July 1, 2021 are forecasted, there is an emergent demand balance in the forecast for the remainder of 2021 (a credit, as I describe below). For 2022, there is a forecasted amount, which like 2021 is also a credit. The following Table MOR-D-7 provides emergent demand category funds since the Company's 2020 Combined Gas Rate Case, which reflects emergent demand funds completely re-classified for 2019 and 2020 through June 30, 2021 actuals and budgeted and forecasted amounts for 2021 through 2022.

TABLE MOR-D-7:
Public Service 2019-2022 Emergent Demand (Total Company)
(Dollars In Millions)

Emergent Demand	10/1/2019-6/30/2020 Total	7/1/2020-6/30/2021 Total	7/1/2021-12/31/2021 Total	1/1/2022-12/31/2022 Total
Total	-	-	$(3.5)	$(2.4)

Q. WHY ARE THE BUDGETS FOR EMERGENT DEMAND REMAINING IN 2021 AND FOR 2022 A CREDIT?

A. Remaining for 2021 and for 2022 as of the time the rate case budget was developed, the Business Systems budgets have been over-allocated to other capital project categories besides emergent demand, meaning that the 2021 and 2022 emergent demand is negative (a credit) so that the total 2021 and 2022 capital budgets do not exceed the overall budgets for these years. This is occurring because the demand and need for IT solutions to address aging technology, address cyber security, address customer experience, and enhance our capabilities across the enterprise is so high, and increasing. For the remainder of 2021 and for 2022, either additional dollars will be allocated to Business Systems to allow all projects to go forward, or certain projects may be delayed to a future year such that the need for a net credit in emergent demand will reduce to zero. Either way, Business Systems will be implementing, at a minimum, its overall capital budget.

Q. HOW CAN THE COMMISSION BE CONFIDENT THE COMPANY WILL MANAGE ITS BUSINESS SYSTEMS-RELATED PROJECTS INCLUDED IN 2021 AND THE 2022 CTY TO ENSURE THE FINAL, ACTUAL COSTS ARE REASONABLE AND PRUDENT?

A. As discussed in my Direct Testimony, the Business Systems capital additions for July 1, 2021 through 2022, presented in Attachment MOR-1, are reasonable and necessary to efficiently manage business operations, protect Public Service and Xcel Energy data and information, meet evolving regulatory and legal requirements, keep current with technology, maintain the stability and reliability of the existing IT systems, and provide the tools required to effectively and safely provide service to Public Service's retail customers. The rigorous processes that are followed in evaluating, selecting, and monitoring the execution and implementation of capital projects ensure that the additions are reasonable and necessary and that the costs are prudently incurred to provide safe and reliable service to Public Service's customers.

V. BUSINESS SYSTEMS O&M

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR DIRECT TESTIMONY?

A. This section of my Direct Testimony discusses Business Systems O&M expenses for the HTY July 1, 2020 to June 30, 2021, which the Company proposes to utilize as the primary basis for establishing Business Systems O&M levels included in the 2022 CTY. I also describe the drivers of O&M cost increases since the 2020 Combined Gas Rate Case, which used an HTY based on O&M expenses for the 12 months ending September 30, 2019.

Q. WHAT ARE THE TYPES OF COSTS THAT BUSINESS SYSTEMS INCURS FOR O&M?

A. I described above the various work that is performed by Business Systems. To perform this work, Business Systems generally incurs O&M costs in seven categories:

- *Application Development and Maintenance*: Costs associated with the development, enhancement, maintenance, and consultation on new or existing IT systems.

- *Software License and Maintenance*: Includes costs for maintenance payments to software vendors pursuant to license agreements associated with various software applications and desktop tools. These fees must be paid to secure vendor support for troubleshooting, enabling access to vendor patches, fixes, and version upgrades.

- *Labor*: Costs associated with all employees in the Business Systems department.

- *Contract Labor/Consulting*: Consists of fees and expenses for consultants or knowledge base experts that are not employees of Xcel Energy.

- *Hardware Maintenance and Purchase*: Includes costs for maintenance payments to hardware vendors pursuant to license agreements

associated with various storage, server and miscellaneous hardware. These fees must be paid to secure vendor support for troubleshooting, fixes and minor purchases.

- *Network Services*: Costs related to the maintenance of existing circuits, phones, microwave and radio systems, and other IT communication assets. Network activities provide operations and management of the Company's internal and external data transmission requirements.

- *Other Categories*: Includes Employee Expenses; Mainframe; Donations, Dues, and Fees; Shared Asset Allocation, outsourcing services not included in the other categories, and other small purchases.

Q. WHAT WERE BUSINESS SYSTEMS ACTUAL O&M COSTS FOR THE 2020-2021 HTY?

A. The Company's actual Business Systems O&M expenses for the 2020-2021 HTY totaled $30.7 million. TABLE MOR-D-8 below breaks down the amount of overall O&M costs by the categories I discussed above. Attachments MOR-2 and MOR-3 provide an accounting of these expenses by Cost Element and FERC account, respectively.

TABLE MOR-D-8:
Public Service Business Systems O&M (Total Gas)
(Dollars In Millions)

Category	2019 HTY	2020-2021 HTY	2022 CTY
Application Development and Maintenance	$5.3	$6.4	$6.4
Software License and Maintenance	8.4	9.3	9.3
Company Labor	2.5	3.7	3.7
Contract and Consulting	1.9	1.4	1.4
Network Services	1.9	2.1	2.1
Other	2.2	1.3	1.3
Shared Assets	5.1	6.5	6.5
Total Company Gas	**$27.3**	**$30.7**	**$30.7**

Q. ARE THE $30.7 MILLION IN 2020-2021 HTY O&M COSTS FOR BUSINESS SYSTEMS YOU DESCRIBE ABOVE REFLECTED IN THE COST OF SERVICE PRESENTED BY MR. FREITAS?

A. Yes, as I discuss in more detail, below.

Q. WHAT ARE THE MAJOR DRIVERS BETWEEN THE COSTS IN THE 2020 COMBINED GAS RATE CASE AND THE 2020-2021 HTY O&M COSTS THAT WILL BE REFLECTED IN THE 2022 CTY?

A. The major drivers are shown in Table MOR-D-9 below.

TABLE MOR-D-9:
Public Service Business Systems O&M Drivers (Total Gas)
(Dollars In Millions)

Drivers of O&M Expenses from 2019 HTY to 2021 HTY (Dollars in Millions)			
Driver	**2019 HTY Actuals**	**Driver Amount**	**2020-2021 HTY Actuals**
Total O&M (Adjusted)	$27.3		
Labor		$1.2	
Application Development and Maintenance		1.1	
Contract and Consulting		-0.6	
Software License and Maintenance		0.9	
Shared Assets		1.4	
All Other		-0.7	
Total Company Gas	**$27.3**	**$3.3**	**$30.7**

Q. CAN YOU PROVIDE MORE INFORMATION REGARDING THE SPECIFIC DRIVERS SHOWN IN TABLE MOR-D-9?

A. Yes. Several drivers explain the $3.3 million O&M increase from the year-ending September 30, 2019 HTY to the 2020-2021 HTY. First, network equipment shared asset costs increased between 2019 and 2020-2021 by $1.4 million. Shared asset costs occur when employees in two or more of Xcel Energy's operating companies use or share an asset owned by another operating company, which is the case with certain network assets supported by Business Systems. Since the 2019 HTY, Public Service's shared asset costs (recorded in FERC Accounts 931) have increased by $4.1 million. However, a large $2.7 million Public Service credit (recorded in FERC Account 922) offsets the shared costs increase, which results

in a net increase to shared assets of $1.4 million. Mr. Baumgarten and Ms. Wold address shared asset allocations in more detail in their Direct Testimonies.

Second, the Company has experienced increased labor costs through insourcing efforts, which at the same time has resulted in decreased contract labor costs over the past few years in the areas of Distributed Systems Services and Network Services. Moreover, salary increases, attributed to annual merit pay increases, also contributed to the increase in labor costs in 2020. Nevertheless, in this most recent test year (July 1, 2020 through June 30, 2021), we have experienced an increase in Application, Development and Maintenance costs due to bringing on a new outside vendor to stabilize and focus WAM and the GL SAP enterprise application. However, the net impact to Public Service's total Business Systems O&M for labor costs ($1.2 million), Application Development and Maintenance ($1.1 million), and Contract and Consulting (-$0.6 million) has been a net increase of $1.7 million.

Third, Business Systems has experienced a $0.9 million increase in Software License and Maintenance costs, stemming overall from increasing costs in the industry. Software License and Maintenance costs are driven by net new projects, and increased licensing costs are driven by users and upgrades. Finally, maintenance and support must be updated to limit security vulnerabilities.

Q. PLEASE DISCUSS HOW BUSINESS SYSTEMS O&M WILL BE MANAGED FOR 2023 AND 2024.

A. As Company witnesses Mr. Berman and Ms. Blair discuss in their Direct Testimonies, the Company is requesting certain step increases in 2023 and 2024

associated with the capital investment in those, which assume that O&M will remain flat during that time period. While there is currently inflationary pressure on O&M, it is our intention to manage Business Systems O&M for calendar years 2023 and 2024 to the 2022 CTY level if our proposed 2023/2024 capital step increases are approved.

Q. IS THE COMPANY'S 2020-2021 BUSINESS SYSTEMS O&M A REASONABLE BASIS ON WHICH TO ESTABLISH BUSINESS SYSTEMS O&M COSTS FOR THE 2022 CTY?

A. Yes. The Company's 2020-2021 HTY Business System's O&M costs are reasonably representative of the Company's forecasted O&M costs for establishing the 2022 CTY. The O&M expense reflects the reasonableness of the previously-approved year-ending September 30, 2019 O&M expense adjusted to reflect key drivers the Company has been implementing to ensure safe and reliable service for our customers while ensuring Business Systems supports utility operations and responds to ever-changing technological needs.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

Statement of Qualifications

Michael O. Remington

Michael O. Remington is the Business Systems Regulatory Director, Advanced Grid, for Xcel Energy Services Inc. Michael is responsible for the regulatory aspects of the XES Business Systems role in the AGIS program. He directs and prepares testimony, supporting documents, and discovery responses related to Business Systems in filings on behalf of XES and its operating company affiliates, including Public Service Company of Colorado.

Overall, Michael has over 20 years of experience in the field of IT, which includes his career at Xcel Energy. After almost eight years at IBM Global Services where Michael filled IT roles under contract for Xcel Energy, Michael joined Xcel Energy in July 2008 as a Senior Manager of IT Service Management, where he served continuously for 11 years. Michael's team was responsible for the administration of core IT service management processes (change, problem, request fulfillment, configuration and asset management). His team also ensured compliance and audit readiness for several NERC regulatory standards and Sarbanes-Oxley Act of 2002 controls. From October 2013 to January 2015, in addition to his role as Senior Manager of IT Service Management, Michael served on temporary assignment in the General Counsel organization where he practiced law on behalf of Xcel Energy, including transactional work and equal employment opportunity and safety investigations. From July 2019 to January 31, 2021, Michael was Director of IT Operations. In that role, he was responsible for managing major incidents, monitoring IT infrastructure and applications, disaster recovery planning, and managing several core IT service management processes.

Michael graduated from the University of Minnesota where he earned a Bachelor of Arts degree in Political Science. He earned a Juris Doctor degree from Mitchell Hamline School of Law.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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IN THE MATTER OF ADVICE NO. 993-GAS OF PUBLIC SERVICE COMPANY OF COLORADO TO REVISE ITS COLORADO PUC NO. 6-GAS TARIFF TO INCREASE JURISDICTIONAL BASE RATE REVENUES, IMPLEMENT NEW BASE RATES FOR ALL GAS RATE SCHEDULES, AND MAKE OTHER PROPOSED TARIFF CHANGES EFFECTIVE FEBRUARY 24, 2022	)	**PROCEEDING NO. 22AL-_____G**

AFFIDAVIT OF MICHAEL O. REMINGTON
ON BEHALF OF
PUBLIC SERVICE COMPANY OF COLORADO

I, Michael O. Remington, being duly sworn, state that the Direct Testimony and attachments were prepared by me or under my supervision, control, and direction; that the Direct Testimony and attachments are true and correct to the best of my information, knowledge and belief; and that I would give the same testimony orally and would present the same attachments if asked under oath.

Dated at Woodbury, Minnesota, this 18th day of January, 2022.

Michael O. Remington
Business Systems Regulatory Director, Advanced Grid

Subscribed and sworn to before me this 18th day of January, 2022.

Notary Public

CHERYL L HALL
NOTARY PUBLIC MINNESOTA
My Commission Expires Jan 31 2024

My Commission expires Jan 31, 2024