

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

* * * * *

IN THE MATTER OF ADVICE LETTER)
NO. 1857-ELECTRIC OF PUBLIC)
SERVICE COMPANY OF COLORADO)
TO REVISE ITS COLORADO PUC NO.)
8-ELECTRIC TARIFF TO REVISE)
JURISDICTIONAL BASE RATE) PROCEEDING NO. 21AL-_____E
REVENUES, IMPLEMENT NEW BASE)
RATES FOR ALL ELECTRIC RATE)
SCHEDULES, AND MAKE OTHER)
PROPOSED TARIFF CHANGES)
EFFECTIVE AUGUST 2, 2021)

DIRECT TESTIMONY AND ATTACHMENTS OF EMMETT R. ROMINE

ON

BEHALF OF

PUBLIC SERVICE COMPANY OF COLORADO

July 2, 2021

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GLOSSARY OF ACRONYMS AND DEFINED TERMS

| <u>Acronym/Defined Term</u> | <u>Meaning</u> |
|---|--------------------------------------|
| Advanced Grid Intelligence & Security | AGIS |
| Advanced Metering Infrastructure | AMI |
| Back-Up Generation | BUG |
| Battery Energy Storage System | BESS |
| Certificate of Public Convenience and Necessity | CPCN |
| Commission | Colorado Public Utilities Commission |
| Commercial and Industrial | C&I |
| Customer Experience Transformation | CXT |
| Customer Relationship Management | CRM |
| Customer Service Agreement | CSA |
| Distributed Energy Resource | DER |
| Distributed Intelligence | DI |
| Electric Vehicle | EV |
| Field Area Network | FAN |
| Future Test Year | FTY |
| Home Area Network | HAN |
| IT | Information Technology |
| ICT | Innovative Clean Technology |
| O&M | Operations and Maintenance |
| Photovoltaic | PV |
| Public Service or Company | Public Service Company of Colorado |

| <u>Acronym/Defined Term</u> | <u>Meaning</u> |
|-------------------------------------|---------------------------|
| Request for Proposal | RFP |
| Transportation Electrification Plan | TEP |
| Time-Of-Use | TOU |
| XES | Xcel Energy Services Inc. |
| Xcel Energy | Xcel Energy Inc. |

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DIRECT TESTIMONY AND ATTACHMENTS OF EMMETT R. ROMINE

1 I. **INTRODUCTION, QUALIFICATIONS, PURPOSE OF TESTIMONY, AND**
2 **RECOMMENDATIONS**

3 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

4 A. My name is Emmett R. Romine. My business address is 1800 Larimer Street,
5 Denver, Colorado 80202.

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

7 A. I am employed by Xcel Energy Services Inc. ("XES") as Vice President Customer
8 Solutions and Innovation. XES is a wholly owned subsidiary of Xcel Energy Inc.
9 ("Xcel Energy") and provides an array of support services to Public Service
10 Company of Colorado ("Public Service" or the "Company") and the other utility
11 operating company subsidiaries of Xcel Energy on a coordinated basis.

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

2 A. I am testifying on behalf of Public Service.

3 **Q. PLEASE SUMMARIZE YOUR RESPONSIBILITIES AND QUALIFICATIONS.**

4 A. As Vice President, Customer Solutions and Innovation, I am responsible for
5 aligning and delivering customer-focused products and services for residential,
6 commercial, and industrial customers on behalf of Public Service. My duties
7 include, among other things, developing customer and stakeholder strategies, new
8 products and services, and processes and approaches to achieve long-term
9 customer support and service goals. This includes oversight of demand-side
10 management, demand response, renewable choice, economic development, and
11 product development teams and ensuring performance management of core
12 business elements are met. A more detailed description of my qualifications,
13 duties, and responsibilities is set forth in my Statement of Qualifications at the
14 conclusion of my Direct Testimony.

15 **Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

16 A. The purpose of my Direct Testimony is to provide an overview of Xcel Energy's
17 Customer Solutions and Innovation Business Area ("Customer Solutions"),
18 including an overview of our strategy for enhancing the customer experience and
19 keeping bills low. In addition, I support the Company's request for capital additions
20 and operations and maintenance ("O&M") expenses related to Distributed
21 Intelligence ("DI") that are included in the 2022 Future Test Year ("FTY") cost of
22 service that is presented by Company witness Ms. Deborah A. Blair. I also support

1 the Company's request to defer DI costs incurred after 2022, which is explained in
2 more detail by Company witness Mr. Steven P. Berman. I further support the
3 Company's proposed forecasted adjustment to the 2022 FTY for labor expense
4 related to additional headcount in Xcel Energy's Electric Transportation group to
5 support electric vehicle ("EV" growth), and support the Company's request for
6 approval of a proposed Resiliency Service Tariff.

7 **Q. HOW IS YOUR DIRECT TESTIMONY ORGANIZED?**

8 A. My Direct Testimony is organized into the following sections:

- 9
- 10 • In Section II, I discuss the Company's strategy with respect to the
11 customer experience and certain new and expanded products and
12 services that the Company offers and plans to offer its electric
13 customers. These offerings align with our three strategic pillars of
14 keeping customer bills low, enhancing the customer experience, and
15 leading the clean energy transition. I explain how the Company is laying
16 the foundation for these products and services through initiatives
17 implemented with the support of various business areas across the
18 Company, all working together. These initiatives include Advanced Grid
19 Intelligence & Security ("AGIS") including Advanced Metering
20 Infrastructure ("AMI") as discussed by Company witnesses Mr. Chad S.
21 Nickell and Mr. Michael O. Remington, and the Customer Experience
22 Transformation ("CXT") initiative discussed by Mr. Remington. In this
23 section, I also provide an overview of the DI platform enabled by AMI,
24 which provides another foundational technology platform to deliver the
25 products and services defined by our strategy. I also discuss how these
26 initiatives work together and present the Company's roadmap for
27 offering new products and services for customers that support
28 conservation and increase their optionality and control over their electric
service.

- 29
- 30 • In Section III, I provide additional detail specifically related to DI
31 capabilities and provide support for the Customer Solutions' DI budget
32 for the 2022 FTY, including capital additions and O&M costs. In doing
33 so, I provide an overview of the DI program goals, discuss the interaction
34 of DI and AGIS, and describe the work undertaken by Customer
35 Solutions to implement DI applications. Company witness Ms. Brooke
A. Trammell also addresses the relationship between the DI portion of

1 this electric rate case and the Company's separate proceeding
2 addressing DI in the context of the Company's Certificate of Public
3 Convenience and Necessity ("CPCN") for the AGIS Initiative and Home
4 Area Network ("HAN") proceeding.

- 5 • In Section IV, I provide support for the Company's proposed forecasted
6 adjustment to the 2022 FTY for labor expense related to additional
7 headcount in Xcel Energy's Electric Transportation group. This group,
8 within the Strategic Partnerships and Ventures business unit, supports
9 the management and implementation of the Company's growing EV
10 programs and customer offerings.
- 11 • In Section V, I provide support for a new Resiliency Service Tariff, which
12 will leverage the foundational technology capabilities discussed above
13 to support customer renewable initiatives and is directly aligned with the
14 Company's product and service strategy.

15 **Q. HAS THE COMPANY PREVIOUSLY PROVIDED INFORMATION RELATIVE TO**
16 **AGIS, AMI, AND DI CAPABILITIES?**

17 A. Yes. In 2016, the Company requested Commission approval of a CPCN to
18 implement portions of the AGIS Initiative (Proceeding No. 16A-0588E) (the "AGIS
19 CPCN Proceeding"). The Commission approved the Company's request for a
20 CPCN pursuant to a settlement between the parties in the AGIS CPCN Proceeding
21 (the "AGIS CPCN Settlement").¹ Company witness Mr. Berman discusses the
22 AGIS CPCN Settlement in greater detail.

23 I also note that on June 15, 2021, in compliance with Commission
24 Decisions,² the Company filed an Application to amend its existing AGIS CPCN
25 ("Amended CPCN") in Proceeding No. 21A-0279E. Specifically, the Company
26 requested that the AGIS CPCN be amended to allow for the deployment and

¹ Unopposed Comprehensive AGIS CPCN Settlement in Proceeding No. 16A-0588E.

² Decision Nos. C21-0176 and C21-0177, both mailed March 19, 2021.

1 utilization of the DI capabilities that are embedded within the advanced meters that
2 are being installed pursuant to the initial AGIS CPCN. The Company also
3 requested that the Commission recognize the new industry standard
4 communication protocol between an advanced meter and a customer's HAN and
5 that providing customers usage information over the Wi-Fi radio included in the
6 advanced meters is beneficial to customers. Further, the HAN implementation
7 plans discussed in my Direct Testimony reflect the Company's initial plans;
8 however, during development of this rate case application, the Commission issued
9 a decision precluding the Company from activating HAN capabilities prior to the
10 completion of the Amended CPCN proceeding. To the extent the schedule or
11 Commission decisions in the Amended CPCN proceeding alter the implementation
12 of HAN capabilities described in my Direct Testimony, the Company will make any
13 necessary adjustments to the rate case revenue requirements.

14 **Q. ARE YOU SPONSORING ANY ATTACHMENTS AS PART OF YOUR DIRECT**
15 **TESTIMONY?**

16 A. Yes, I am sponsoring Attachments ERR-1, ERR-2, and ERR-3, which were
17 prepared by me or under my direct supervision. The attachments are as follows:

- 18 • Attachment ERR-1: Customer Research Summary
- 19 • Attachment ERR-2: C&I Customer Survey Results
- 20 • Attachment ERR-3: Resiliency Service Program Process

1 **Q. WHAT RECOMMENDATIONS ARE YOU MAKING IN YOUR DIRECT**
2 **TESTIMONY?**

3 A. As part of approving the cost of service developed by Company witness Ms. Blair,
4 I recommend that the Commission approve the DI capital and O&M
5 implementation costs that are included in the Company's 2022 FTY cost of service
6 presented in this rate case, and described below. Along with Mr. Berman, I also
7 recommend approving deferral of additional costs for DI incurred after 2022. I also
8 recommend approval of the adjustment included in Ms. Blair's cost of service for
9 additional labor expense associated with expansion of the Company's growing
10 Electric Transportation group as described in Section IV. Further, I recommend
11 that the Commission approve the Company's proposed Resiliency Service Tariff
12 as described in Section V.

1 **A. Customer Experience Strategy**

2 **Q. WHAT IS THE COMPANY REFERRING TO WHEN IT DISCUSSES THE**
3 **“CUSTOMER EXPERIENCE”?**

4 A. The customer experience refers to the Public Service customer’s direct
5 interactions with the Company, whether by digital platforms, through the call
6 center, in person, or otherwise. To manage that experience, the Company must
7 have in place both system tools and customer interfaces that work for the
8 customer, supporting their satisfaction with their utility service and their overall
9 experience with the Company.

10 **Q. WHY IS THE COMPANY CURRENTLY FOCUSED ON ENHANCING THE**
11 **CUSTOMER EXPERIENCE?**

12 A. The customer experience is critically important to providing high quality electric
13 service, which is why enhancing the customer experience is one of the Company’s
14 three strategic priorities. While all of the Company’s work puts the customer front
15 and center, as of 2019, it had been several years since the Company invested
16 significantly in primary customer touch points and relationship management tools.
17 At the same time, over the last several years the Company has experienced a
18 variety of converging needs and opportunities related to distribution grid
19 modernization and the Company’s desire to meet the growing expectations of our
20 customers. Some of these needs are driven by internal system aging, others by
21 the direction of the industry, and still others by customers and other stakeholder
22 considerations. The Company’s extensive assessments of these multi-faceted

1 needs have resulted in a coordinated approach to implement specific foundational
2 initiatives, including both infrastructure projects (like AGIS) and customer
3 communications projects (like the CXT initiative). These foundational initiatives
4 enable capabilities that allow the Company to focus on improving the overall
5 customer experience.

6 **Q. WHAT IS CUSTOMER SOLUTIONS' ROLE IN IMPLEMENTING INITIATIVES**
7 **THAT ENHANCE THE CUSTOMER EXPERIENCE?**

8 A. While other areas of the Company focus on the foundational distribution
9 infrastructure and information technology ("IT") initiatives, Customer Solutions is
10 responsible for contributing to the strategy, planning, management, and
11 implementation of products and services to be offered to customers that are
12 enabled by and rely upon the foundational initiatives. For example, Customer
13 Solutions is responsible for development and implementation of customer-facing
14 online and mobile applications, as well as new products and services, that will be
15 enabled by the advanced grid capabilities. The Customer Insights group (a sister
16 organization to Customer Solutions) is responsible for survey and research efforts
17 necessary to determine the needs and preferences of our customers with respect
18 to development of new products and services, as well as measurement of
19 customer satisfaction with new products, services, or advanced grid capabilities.
20 The Customer Solutions product development group often works with the
21 Customer Insights group to perform customer research in the development of new
22 products. In terms of customer programs and services, Customer Solutions is

1 primarily responsible for Product Development and Commercialization, Energy
2 Efficiency, Demand Response, Renewable Energy, Advanced Grid Experience,
3 Distributed Intelligence, and Economic Development services across all customer
4 segments.

5 **Q. DID THE COMPANY ENGAGE IN CUSTOMER SURVEY AND MARKET**
6 **RESEARCH EFFORTS WITH RESPECT TO NEW OR EXPANDED PRODUCTS**
7 **AND SERVICES FOR RESIDENTIAL CUSTOMERS?**

8 A. Yes. The Company routinely conducts customer surveys to monitor and learn
9 about customers' general opinions and satisfaction with their service. In addition,
10 the Company conducted market research specific to advanced grid applications to
11 determine customer understanding, perceptions, and preferences with respect to
12 advanced meter and grid capabilities. The Company has also worked closely with
13 consultants and in partnership with vendors to better inform development of its
14 customer experience strategy. This information was supplemented by insights
15 from relevant industry research.

16 **Q. WHAT WERE THE KEY TAKEAWAYS FROM THE COMPANY'S PRIMARY**
17 **RESEARCH EFFORTS?**

18 A. Overall, customers are seeking more optionality and increasing levels of service
19 from all their service providers – including their electric utility. A summary of the
20 Company's primary customer research efforts is included in Attachment ERR-1.
21 Key takeaways from our primary surveys and market research include needs in
22 the following areas:

- 1 • Delivering on the basics of safe, reliable energy at an affordable cost is
2 paramount. Safety and energy savings are rated most highly.
3 Customers have strong feelings about the cost of the advantages
4 available through advanced meters.
- 5 • Outages and Interruptions: Addressing service interruptions is
6 important to all customer classes. Improved reliability will allow the
7 Company to focus more on other customer priorities. Customers expect
8 that service interruptions will be less frequent and of shorter duration.
- 9 • Communications: Customers expect their utility to provide personalized,
10 proactive communication, consistent with technology service providers
11 that they interact with on a regular basis. They also expect their
12 experiences to be seamless across interactions with the Company.
- 13 • Optionality: Customers expect to be empowered with more tools and
14 information for them to make decisions about their energy usage.
15 Customers indicated more information allowed them to better identify
16 opportunities and strategies to save energy, reduce their costs, and
17 make an impact on the environment.

18 **Q. DID THE COMPANY REVIEW UTILITY INDUSTRY RESEARCH WITH**
19 **RESPECT TO NEW OR EXPANDED PRODUCTS AND SERVICE SOLUTIONS**
20 **TO ADDRESS THESE CUSTOMER NEEDS?**

21 A. Yes. To develop a responsive products and services strategy, the Company used
22 research and analysis from many industry sources, including peer utilities, industry
23 consortiums, and third-party organizations to better understand the landscape of
24 utility-delivered products and services in the evolving landscape of the current
25 state of the energy industry. A summary of these research efforts also included in
26 Attachment ERR-1.

27 **Q. WHAT WERE THE KEY TAKEAWAYS FROM THESE INDUSTRY ANALYSIS**
28 **EFFORTS?**

29 A. Key takeaways from this industry analysis include the following:

- 1 • Increased interest by consumers as well as increased viability of customer-
2 sited renewable energy sources has increased the number and diversity of
3 programs offered to connect customers with renewable energy.

- 4 • Demand-side management programs, which have traditionally relied on
5 replacement of equipment with newer, more efficient equipment, are
6 transitioning toward more demand-based, time of use-based service
7 offerings.

- 8 • Advances in metering, sensors, and control have increased the options for
9 direct control of systems to accomplish both energy and demand savings
10 opportunities.

- 11 • An emphasis on integrating customer programs which have historically
12 been delivered to customers as disparate, separate experiences from each
13 other as well as from core utility services is leading to the convergence of
14 services across product platforms in various forms, including bundling and
15 co-promotion via marketing and customer engagement approaches.

16 **Q. DID THE COMPANY CONDUCT ANY MARKET RESEARCH SPECIFIC TO**
17 **COMMERCIAL AND INDUSTRIAL (“C&I”) CUSTOMERS?**

18 **A.** Yes. The Company used market research conducted by a third-party consultant
19 to understand overall interest (and trends in recent purchases) of energy industry
20 products and services among small and mid-size C&I customers. Summaries of
21 these survey results for 2019 and 2020 are provided as Attachment ERR-2.
22 Coupled with this, Account Managers responsible for relationship management of
23 large C&I customers continually meet with those customers to understand their
24 interest in new services, including resiliency solutions. Key takeaways from these
25 discussions include:

- 26 • Large C&I customers are looking for the Company to propose resiliency
27 solutions, but also the financing to support solution implementation.

- 28 • Many C&I customers have some backup or resiliency solution in place,
29 but a notable amount have insufficient coverage to prevent a full outage.

- 1 • C&I customers are seeking help with reliability planning, navigating
2 among the myriad of options available to address business operations
3 continuity.
- 4 • A sizable number of customers are sensitive to outages and process
5 disruptions – these customers need guidance on uncovering the root
6 cause of issues and putting into place an appropriate and cost
7 competitive solution.
- 8 • Customers are interested in no upfront-cost reliability solutions such as
9 Xcel Energy (“XE”)-owned backup generators at the customer premise.
10 Customers trust XE to propose and install (with a partner) the most
11 suitable resiliency-focused solution available. Customers could benefit
12 from the in-house expertise of XE and its partners while maintaining
13 focus on their core business processes and competencies.

14 **Q. HOW HAVE THESE TAKEAWAYS INFORMED THE COMPANY’S STRATEGY**
15 **AND IMPLEMENTATION PRIORITIES FOR CUSTOMER PROGRAMS?**

16 A. Informed by these customer survey and market research efforts, as well as prior
17 work on pilots such as the Panasonic Microgrid and the Community Resilience
18 Initiative, the Company first prioritized building a robust technology platform to
19 enhance the foundational customer experience while delivering the core service of
20 safe reliable energy and keeping bills low. As discussed below, the Company’s
21 AGIS and CXT initiatives represent part of these foundational efforts. Enhanced
22 products and services follow and are built on top of this foundation and are further
23 extended by Distributed Intelligence. In parallel, we began to implement a new
24 evolution of complementary programs that have started to be rolled out through
25 Expanded Renewable Energy offerings, the Transportation Electrification Plan
26 (“TEP”), Time-of-Use Rates, Demand-Side Management, and a Resiliency Service
27 Program. As these services are brought to market, they will be integrated into the

1 full customer experience foundation that is being created by implementation of the
2 AGIS and CXT initiatives, which I will discuss in the next section.

3 **B. Foundational Initiatives**

4 **Q. WHAT FOUNDATIONAL INITIATIVES THROUGH 2022 ENABLE THE**
5 **COMPANY'S EFFORTS TO ENHANCE THE CUSTOMER EXPERIENCE?**

6 A. In this section, I primarily focus on two current initiatives that contribute to the
7 delivery of this overall customer experience: AGIS and CXT. These efforts focus
8 on improvement of the technology platforms and programs related to service and
9 interaction with our customers; further, the additional data and grid capabilities, as
10 well as the CXT customer platform, enable expansion of customer experience
11 efforts.

12 CXT and AGIS are complementary foundational initiatives, with CXT
13 providing the functionality for improved customer service and communications,
14 and AGIS providing the data that can be used and acted upon to enhance
15 customer offerings and communications, as well as the grid capabilities to improve
16 customer service. In this way, CXT and AGIS will continue to work together to
17 support the enhanced customer experience. As I will discuss in Section IV,
18 Distributed Intelligence acts as an additional layer to this foundation, with the
19 potential to significantly augment these capabilities across a broad array of
20 experiences and services.

1 **Q. HOW IS THE COMPANY SUPPORTING THE BUDGET FOR THESE**
2 **FOUNDATIONAL INITIATIVES IN THIS RATE CASE?**

3 A. Responsibility for AGIS implementation and budget development is split between
4 the Distribution and Business Systems areas; accordingly, Company witnesses
5 Mr. Nickell and Mr. Remington provide support for the AGIS costs in their Direct
6 Testimonies. Mr. Nickell also discusses how the advanced meters installed to
7 implement AMI as part of AGIS include embedded components that enable DI
8 applications. Finally, costs for initial implementation of the CXT initiative were the
9 primary responsibility of Business Systems; thus, implementation of the initial CXT
10 functionality is supported in the Direct Testimony of Mr. Remington.

11 However, maximizing customer benefits of these initiatives also requires
12 Customer Solutions to develop DI applications and platforms that use this data;
13 therefore, I support the Customer Solutions DI capital additions and O&M costs in
14 Section III below. Expanding on the CXT foundation, my Direct Testimony
15 supports the costs related to additional capabilities that will be enabled through DI
16 implementation.

17 **Q. WHAT IS THE CXT INITIATIVE?**

18 A. The CXT program is, ultimately, a series of foundational investments in platform
19 infrastructure, data analytics, and automation that are intended to improve the
20 Company's digital interfaces with customers. With CXT, the Company is utilizing
21 modern technologies to help create the smarter and simpler experiences that
22 customers have come to expect through experiences with other companies. This

1 includes interactive websites, account management options, and smart phone
2 applications. This multi-year effort was initiated by Business Systems in 2019 and
3 will not only improve platforms now but also create the foundation for the
4 transformative new capabilities, products, and services that are the focus of this
5 testimony. Company witness Mr. Remington describes this process from a
6 Business Systems perspective in his Direct Testimony.

7 **Q. HOW DID THE COMPANY DETERMINE WHAT WORK IS NECESSARY**
8 **THROUGH CXT TO ENHANCE THE CUSTOMER EXPERIENCE?**

9 A. Based on the survey and research efforts described above, the Company
10 prioritized efforts to improve the customer experience by identifying those with the
11 greatest impact on the Company's core goals, the highest value, and the least
12 complexity. As a result, planned work and investments to improve the customer
13 experience is divided into four project areas: (1) Digital Channel Platforms
14 (including MyAccount, the Company's website, Xcel Energy mobile applications,
15 and new customers and real estate developers' initial connections with the
16 Company (Customer Connect); (2) the Customer Relationship Management
17 ("CRM") Platform (currently Salesforce); (3) Platform Infrastructure and
18 Technology Maintenance; and (4) Data Analytics and Automation. These core
19 systems are at the foundation of Public Service's digital interactions with
20 customers. Mr. Remington describes these areas in more detail in his Direct
21 Testimony.

1 **Q. HOW DO THE AGIS INITIATIVE AND THE NEW TYPES OF DATA IMPACT THE**
2 **COMPANY'S CUSTOMER EXPERIENCE EFFORTS?**

3 A. During the same period the CXT initiative was launched, the Company was
4 beginning implementation of AGIS, which will result in significant enhancement of
5 system capabilities and the availability of large amounts of more granular data.

6 Prior to implementation of the foundational components of AGIS, the
7 Company's systems simply could not provide the data and did not have the
8 capabilities needed take the customer experience to the next level. For example,
9 in general, and as currently constituted, the Company's distribution system only
10 provides customers with whole premise consumption data on a monthly basis. In
11 contrast, advanced meters can measure and store energy usage data at 15-minute
12 intervals. The meter will then transmit this energy usage data from customer
13 locations to the Company via the Field Area Network ("FAN") component of AGIS
14 at four-hour intervals (unless queried for an on-demand reading), and that data
15 can subsequently be consolidated and provided to customers (generally the next
16 day) through the MyAccount website. The 15-minute interval data will also be
17 available to third-party service providers via the Company's Green Button Connect
18 My Data service. By providing access to this granular data on a more timely basis,
19 AGIS will give customers the additional information that they are increasingly
20 seeking to make informed decisions about their energy usage.

1 **Q. DO ADVANCED METERS HAVE THE CAPABILITY TO PROVIDE DATA THAT**
2 **IS MORE GRANULAR AND DELIVERED ON A MORE FREQUENT BASIS**
3 **THAN DESCRIBED ABOVE?**

4 A. Yes. First, the advanced meters have the capability to communicate with a
5 customer's Home Area Network ("HAN"), which can provide customers with
6 access to even more granular data on a real-time basis. A HAN is a customer's
7 electronic data network of customer-owned "smart" devices within their premise
8 (such as smart thermostats, appliances, etc.), and advanced meters will be
9 capable of joining the HAN to provide energy and demand data to the devices
10 within that network.

11 In addition, the advanced meters themselves include embedded DI
12 capabilities, which refers to computing power, analytics, decisions, and actions that
13 can be executed within the meter itself. With DI functionality, the advanced meters
14 have access to another level of data granularity and the ability to provide
15 actionable information to customers in real time based on that data.

16 Table ERR-D-1 below shows the interval of data collection and refresh for
17 15-minute interval data, HAN data, and DI data.

18 **TABLE ERR-D-1**

| Data Type | Transport | Reading Interval (Data Granularity) | Refresh Time |
|-------------------------|------------------|--|-------------------------------|
| 15-Minute Interval Data | FAN | 15 minutes | 4 hours (unless on demand) |
| HAN Data | Customer Wi-Fi | 1 second for kW (demand) 5 seconds for kWh (energy) | 1 second |
| DI Data | Within Meter | Sub-second | 1 second |

1 Mr. Nickell introduces the Company's adoption of foundational HAN
2 capabilities in his Direct Testimony, and I discuss additional HAN applications
3 enabled by DI capabilities in Section III of my Direct Testimony. In addition, I note
4 that both HAN and DI capabilities are currently under Commission review per the
5 Company's Application to amend its existing AGIS CPCN (Proceeding No. 21A-
6 0279E). As I discuss further in Section III, implementation of HAN and DI
7 functionality is dependent on Commission decisions in that proceeding.

8 **Q. CAN YOU DESCRIBE HOW THE AMI DATA WILL BE USED TO ENHANCE**
9 **THE CUSTOMER EXPERIENCE INITIATIVES?**

10 A. There are several foundational components of AGIS that work together to provide
11 data that can be gathered and used to enhance the customer experience. Specific
12 to the customer data and engagement discussion in my Direct Testimony, AMI in
13 particular will provide the Company and customers access to timely, accurate, and
14 consistent energy usage data that was not available prior to AGIS and is necessary
15 to develop personalized insights and supports informed customer decision-
16 making. This includes data regarding time-of-use price and behavior signals,
17 energy saving tips and recommendations, peak period notifications, and location-
18 specific environmental notifications.

19 With these insights and other data, customers will be empowered to make
20 energy usage decision based on their preferences that can reduce their bills and
21 enhance their lives and businesses. The advanced meters will also be able to
22 detect and report power outages and when power is restored, providing the

1 necessary information that can be used to inform customers of service outages
2 and restoration in near-real time.

3 **Q. HOW WILL THE DI CAPABILITIES WITHIN THE ADVANCED METERS HELP**
4 **ENHANCE THE CUSTOMER EXPERIENCE?**

5 A. In addition to the data itself, analytics of the data will be translated into actionable
6 and personalized insights that align with customer energy-related goals through DI
7 functionality. DI capabilities in advanced meters and other edge devices open up
8 a broad array of new uses, including customer-facing applications, that will
9 transform how customers will use energy in their homes and businesses, as well
10 as how Public Service will be able to optimize its AGIS investments. Additionally,
11 since data does not need to be continually transmitted over the Company's FAN,
12 it reduces the strain on the network and improves the computational speed,
13 efficiency, and capabilities derived from these platforms. DI has the potential to
14 significantly augment and expand a wide array of customer experiences, products,
15 and services. For example, with DI, it may be possible to detect and alert an EV
16 customer when they have started to charge their EV during a relatively high pricing
17 period, providing the opportunity for the customer to alter their EV charging if they
18 choose to do so. Generating this type of alert requires both the granular
19 information and real-time processing capability that DI can provide, which would
20 not be available absent embedding this capability across every individual EV or
21 every EV charging station. Details about benefit categories and associated
22 potential use cases for DI applications are provided in Section III below.

1 **C. Products and Services Roadmap**

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

3 A. In this section, I discuss several types of services enabled by the foundational
4 investments described above. These include enhanced web and mobile
5 applications, products and services designed to empower customers to make
6 informed decisions about their energy usage, and enhanced outage
7 communications. I also discuss how these foundational investments support
8 certain programs relevant to this rate case, such as the Company's EV programs,
9 and how the Company's proposed Resiliency Service relates to the Company's
10 efforts to enhance the customer experience.

11 **Q. AT A HIGH LEVEL, HOW DOES THE AGIS DEPLOYMENT TIMELINE RESULT**
12 **IN THE ROLL-OUT OF NEW CUSTOMER PRODUCTS AND SERVICES FOR**
13 **PURPOSES OF THIS RATE CASE?**

14 A. As a general overview, impacts to the system and the customer experience will
15 evolve as the Company implements AGIS components and takes full advantage
16 of the advanced grid capabilities over time. Customer experience investments are
17 underway as the Company is actively researching and designing new products and
18 services that will be enabled by AGIS investments and innovating on existing
19 products and services that can be improved by AGIS. Public Service is also talking
20 to customers about their current expectations, their expectations for the future, and
21 how the Company can best meet their needs. At a high level, in this testimony, we
22 speak to our planning for products and services along the following timelines:

- 1 • “*Day 1*,” coincident with the installation of advanced meters beginning in
2 2021, encompassing capabilities that will be enabled and new
3 information that will be available to customers once an advanced meter
4 has been installed; and
- 5 • “*Near Term*,” through 2025, describes the period when the Company will
6 be developing, and implementing new products and services for
7 customers.

8 **Q. CAN YOU PROVIDE MORE DETAIL REGARDING THE COMPANY’S**
9 **CURRENT PLANS FOR ROLLING OUT NEW PRODUCTS AND SERVICES?**

10 A. Yes. While the product and service roadmap is dynamic and constantly changing
11 based on customer preferences, changing marketplace needs, and technology
12 advancements, the Company has assembled a general roadmap to facilitate
13 discussion with stakeholders and provide directional information about the
14 Company’s plans. This roadmap contemplates AGIS, CXT, and DI investments,
15 as well as continuing attention to the Company’s recently approved TEP.
16 However, the extent to which the Company will utilize the capabilities of DI relies
17 heavily on the outcome of Proceeding No. 21A-0279E. Below, I summarize the
18 products and services contemplated for Day 1 and Near-Term roll-out, highlighting
19 how these align with the Company’s three strategic priorities to enhance the
20 customer experience, lead the clean energy transition, and keep bills low.

21 **Q. PLEASE DESCRIBE THE PRODUCTS AND SERVICES THE COMPANY IS**
22 **PLANNING WITH RESPECT TO ENHANCING THE CUSTOMER EXPERIENCE.**

23 A. Products and services aligned with enhancing the customer experience are
24 designed to provide integrated, seamless customer interactions and to enhance
25 safety and reliability. Products and services planned for Day 1 roll-out include:

- 1 • *Enhanced Web and Mobile Applications* – The primary digital
2 engagement tools for customers will expand capabilities through not
3 only providing customer account information and options to view and
4 pay bills, but enhanced visualization energy usage and trends, features
5 to set and manage energy related goals, pursue personalized energy
6 saving tips, and manage outages. This is made possible by centralized
7 and integrated customer information as well as a robust customer
8 preference center. DI applications will enhance both the Web and Mobile
9 Application experience.
- 10 • *Energy Usage Dashboard* – Within the new web and mobile customer
11 applications, energy usage dashboards will inform customer about the
12 energy usage of both their overall home or facility and individual systems
13 within the home or business. This is made possible by the interval
14 energy usage data enabled by AMI, as well as analytics on those data.
15 DI applications will enhance these visualizations over time by providing
16 increasingly accurate and timely appliance disaggregation.
- 17 • *Green Button Services* – Allowing customers and their authorized third-
18 party service providers to use the 15-minute interval electric usage
19 information for applications, data in the standard Green Button protocol
20 will be made available through both the Green Button Download My
21 Data as well as Green Button Connect My Data feature in the customer
22 web portal.
- 23 • *Home Area Network services* – Through the Company's Home Area
24 Network services enabled by AMI and Distributed Intelligence,
25 customers and their third-party device and application service providers
26 would have the ability to access one-second energy usage information
27 directly from the meter via Wi-Fi and the IEEE2030.5 communication
28 protocol. This capability was initially planned for implementation in 2021,
29 but will be delayed until the Amended AGIS filing is resolved.³ DI
30 applications may enhance the real-time services available to customers
31 via this method.
- 32 • *Outage Notifications* – Alerts allow customers to be notified with
33 important information in a timely, relevant way. These could include
34 proactive messaging about an outage, automatic restoration, and
35 restoration confirmation.

³ As discussed on pages 10-11 of my Direct Testimony, HAN implementation will be consistent with any forthcoming Commission decision(s) in Proceeding No. 21A-0279E, and the Company will make any corresponding adjustments to the revenue requirements in this case as necessary.

1 Building on these capabilities, new products and services in the Near Term
2 are expected to include additional proactive and real-time customer
3 communications, such as energy usage alerts and personalized notifications
4 based on specific customer preferences. Related to safety and reliability
5 enhancements, the Company contemplates providing power quality analyses for
6 customers as well as safety and emergency management notifications and
7 communications. These offerings will be enabled by DI applications that will
8 provide significantly more granular and real-time information, as well as enhanced
9 analytics and communications capabilities, that can empower customers with tools
10 to help them meet their energy usage goals. In addition, pending the resolution of
11 the Amended AGIS filing, HAN capabilities will be deployed when the Commission
12 releases the hold on that functionality.

13 **Q. HOW DO THE COMPANY'S EV CUSTOMER PROGRAMS AND TEP**
14 **CONTRIBUTE TO ENHANCING THE CUSTOMER EXPERIENCE?**

15 A. Electric vehicle support and advancement is already in development at the
16 Company, and the Company's TEP has been approved by the Commission.⁴ The
17 TEP provides customer programs and rates, including vehicle and EV charging
18 infrastructure rebates for multiple classes of customers and types of chargers, fleet
19 development support, outreach and education, equity programs, as well as
20 stakeholder evaluation and program identification processes. The CXT program
21 focuses on the customer connection and customer service platforms that enable

⁴ See Proceeding No. 20A-0204E.

1 these EV programs, and smart meters will help facilitate customer charging in a
2 manner that benefits the electric grid and supports integration of renewables
3 through off-peak charging options. In order to assure excellence in customer
4 experience and delivery of EV programs, I discuss the forecasted adjustment to
5 the 2022 FTY budget for the increased headcount to necessary to implement and
6 manage the Company's growing EV programs. Other TEP costs have been
7 addressed in a separate proceeding⁵ and are not part of this rate request.

8 **Q. HOW DOES THE COMPANY'S PROPOSED RESILIENCY SERVICE**
9 **OFFERING RELATE TO THE COMPANY'S EFFORTS TO ENHANCE THE**
10 **CUSTOMER EXPERIENCE?**

11 A. As discussed earlier in Section II, the Company's research indicated that C&I
12 customers are seeking help with respect to reliability assessments and planning
13 and interested in resiliency solutions as well as financing solutions to support
14 implementation. Based on these key findings and the Company's prior experience
15 with resiliency assets, the Company designed a Resiliency Service program to
16 help customers mitigate reliability risk for critical operations and support the
17 deployment of resiliency service assets.

18 This optional service is designed to support those customers that have a
19 need for higher than standard service reliability through use of battery energy
20 storage or on-site generation assets. As we have engaged with customers, we
21 are aware of their interest in this service and have designed a program to help

1 customers mitigate reliability risk for critical operations. Generally, a customer
2 electing to install assets to improve reliability would be responsible for the entire
3 capital investment upfront. Under the Company's proposed tariff, a participating
4 customer will pay for all of the project's costs, including the costs of the specific
5 Resiliency Service assets for that customer, through a dedicated customer charge
6 over the project term. In this way, the Company believes the tariff will lower upfront
7 costs for participants and provide a positive customer experience with no net cost
8 increase to the system or the Company's other customers. I discuss the
9 Company's proposed Resiliency Service Tariff in Section V.

10 **Q. WHAT PRODUCTS AND SERVICES IS THE COMPANY PLANNING THAT**
11 **ALIGN WITH THE COMPANY'S STRATEGIC PRIORITY TO LEAD THE CLEAN**
12 **ENERGY TRANSITION?**

13 A. The Company is planning additional offerings aligned with leading the clean energy
14 transition. These offerings enabled through implementation of AMI, with the
15 enhanced visibility and control of the distribution system. Currently, the Company
16 is implementing its TEP which provides new electric vehicle customer programs
17 and rates, including vehicle and EV charging infrastructure rebates. Empowering
18 customers with information, tools, EV programs, and charging options increases
19 access to electricity as a transportation fuel, which will support improved air quality
20 and decreased carbon emissions, benefitting both EV and non-EV customers
21 alike. Additionally, the off-peak EV charging rates support efficient use of the
22 power grid and investment in renewable energy by making use of the grid when

1 low-cost renewable energy is most available. In addition, the future capabilities
2 enabled by DI applications will allow the Company to take these offerings to the
3 next level.

4 **Q. WHAT PRODUCTS AND SERVICES IS THE COMPANY CONTEMPLATING**
5 **THAT ALIGN WITH THE COMPANY'S STRATEGIC PRIORITY TO KEEP**
6 **CUSTOMER BILLS LOW?**

7 A. Products and services aligned with the keeping customer bills low focus on new
8 energy savings programs and new rate options. First, as a Day 1 offering once an
9 advanced meters is installed, the Company will be able provide virtual energy
10 audits, providing an on-demand or periodic assessment of the energy
11 usage/efficiency of a premise based on actual performance versus expected
12 performance based on various parameters (such as size, age, build, occupancy,
13 devices). With disaggregation and other analytics capabilities made possible by
14 AMI, and enhanced with DI applications, these audit results will improve over time
15 to provide more accurate and relevant information.

16 In addition, the Company is currently implementing time-of-use ("TOU")
17 rates for residential customers⁶ and has proposed TOU rates for Small
18 Commercial and C&I customers.⁷ These time varying rate offerings are made
19 possible with the more granular consumption data and more sophisticated meters,
20 where rate schedules can be created to better reflect the actual costs on the

⁶ Initially approved in Proceeding No. 19AL-0687E; modifications pending in Proceeding No. 20AL-0432E.

⁷ Proposals currently pending in Proceeding No. 20AL-0432E.

1 system at specific times of day. Customers can take advantage of these price
2 signals to manage their energy costs. In addition, the Company will provide tools
3 through a multi-channel approach to educate customers and proactively offer ways
4 to optimize energy usage and cost under existing and new rate options.

5 **Q. DOES THE COMPANY'S ROADMAP CONTEMPLATE FUTURE PRODUCTS**
6 **AND SERVICES TO BE ROLLED OUT TO CUSTOMERS OVER THE LONGER**
7 **TERM?**

8 A. Yes. Over time, the Company will be able to use the advanced grid capabilities to
9 better align programs and use the DI platform to provide new, seamless customer
10 interactions. Better alignment and new ways of engaging customers can keep
11 customers more involved in their energy usage and give them more control in
12 ways, such as with mobile devices, that are increasingly prioritized.

13 Even with uncertainty around the future customer experience and specific
14 products to be offered, the Company remains committed to understanding
15 customers' preferences and considerations regarding the value of new offerings
16 as technologies evolve and new technologies become available over time. The
17 Company's investments in understanding and working with customers, combined
18 with the foundational investments in the AGIS and CXT, will provide the resources
19 necessary to adapt quickly to changes in technology and customer expectations.

1 **Q. CAN YOU SUMMARIZE THE COMPANY'S OVERALL EFFORTS TO ENHANCE**
2 **THE CUSTOMER EXPERIENCE?**

3 A. Customer satisfaction in providing services is at the core of what Public Service
4 does. With evolving technological capabilities, the Company has an opportunity
5 to enhance relationships with customers, provide them new options, create value
6 they can measure, and empower their decision-making. The Company is currently
7 engaged in implementing several multi-year initiatives designed to work in concert
8 to enhance the customer experience by facilitating customer choice, expanding
9 customer conservation opportunities, and providing an enhanced overall customer
10 experience.

1 interactions. These characteristics are consistent with those of experiences
2 customers increasingly receive from service providers in virtually every aspect of
3 their lives. For example, customers are now used to the immediate information
4 and seamless customer interactions and services provided via web and mobile
5 applications related to e-commerce (Amazon), transportation (Uber and Lyft),
6 lodging (Airbnb), and restaurants and food delivery (GrubHub and DoorDash). DI
7 enables interactions with the utility provider to be on par with those experiences.

8 **Q. IS DI BEING ADDRESSED IN OTHER PROCEEDINGS BEFORE THE**
9 **COMMISSION?**

10 A. Yes. As noted above, on June 15, 2021, the Company filed an Application to
11 amend its existing AGIS CPCN in Proceeding No. 21A-0279E. Specifically, the
12 Company requested that the AGIS CPCN be amended to allow for the deployment
13 and utilization of the DI capabilities that are embedded within the advanced meters
14 that are being installed pursuant to the initial AGIS CPCN. While the Company
15 currently expects a Commission decision in the Amended CPCN proceeding in
16 sufficient time to implement DI applications as described in this section, the
17 development of DI applications discussed in this section will necessarily depend
18 on the timing and direction established by the Commission in its decision. To the
19 extent a decision is delayed or results in changes to the Company's deployment
20 proposals, inclusion of DI costs in the established AGIS tracker would
21 appropriately account for any changes to DI costs not contemplated in this case.
22 Company witness Ms. Trammell also addresses the relationship between the DI

1 portion of this electric rate case and the Company's separate proceeding
2 addressing DI in the context of the Amended CPCN.

3 **Q. IS THE COMPANY CURRENTLY DEVELOPING PLANS TO IMPLEMENT DI**
4 **APPLICATIONS?**

5 A. Yes. The Company is currently planning for the design, development, and
6 implementation of new meter applications that its utility customers will manage and
7 interact with through MyAccount and mobile phone apps. As expanded upon
8 below, the Company has developed a roadmap for the development of DI
9 applications, which aligns closely with the overall experience, products, and
10 services roadmap discussed earlier. Current work is focusing on the development
11 of some of the foundational aspects and initial use cases of the DI value proposition
12 for both grid-facing and customer-facing enhanced services. On the grid-facing
13 front, the Company's meter vendor (Itron) has developed several applications that
14 can be enabled on the meter to enhance safety and reliability on the grid. For
15 customer-facing applications, a Request for Proposal ("RFP") was recently issued
16 to gain expertise and development capabilities from third parties for the selected
17 initial development of DI applications, which is further elaborated upon below.
18 Once these initial capabilities are established, the Company expects to actively
19 partner with additional third parties through a competitive process to develop future
20 applications and offer new and innovative ways to provide valuable services to the
21 grid and to customers. I discuss these activities further in this section.

1 **Q. CAN YOU ELABORATE ON THE COMPANY’S APPROACH TO ITS DI**
2 **DEVELOPMENT STRATEGY?**

3 A. Yes. The Company developed its overall DI strategy using a four-step approach.
4 The Company has completed the first three steps of the process: (1) taking
5 inventory of DI capabilities and considering use cases; (2) prioritizing use cases
6 based on value and complexity; and (3) identifying what it considers core,
7 foundational capabilities to be deployed. The Company is currently engaged in
8 Step 4 of the process, which is to develop a blueprint for bringing the identified DI
9 products to customers.

10 **Q. CAN YOU PROVIDE ADDITIONAL DETAILS ABOUT STEP 1 OF THE DI**
11 **STRATEGY DEVELOPMENT PROCESS?**

12 A. Yes. Step 1 was conducted between 2019 and Summer 2020. During this period,
13 the Company took inventory of the data that would be available as a result of DI
14 capabilities and identified over 60 potential use cases that could be pursued. The
15 potential use cases fell into seven general benefit categories:

- 16 • energy insights;
- 17 • electric vehicles and beneficial electrification;
- 18 • safety and protection;
- 19 • Distributed Energy Resource (“DER”) management;
- 20 • grid optimization;
- 21 • advanced transactions; and
- 22 • other customer offerings.

1 **Q. WHAT DID THE COMPANY ACCOMPLISH DURING STEP 2 OF THE**
2 **PROCESS?**

3 A. Step 2, conducted between Spring and Fall of 2020, involved prioritization of the
4 use cases identified in Step 1 based on assessment of both value and complexity.
5 The Company conducted the analysis by category, looking at all potential use
6 cases in the category and identifying the value and complexity of delivering each
7 one. Key value drivers included consideration of customer and operational
8 benefits, and the complexity considerations included such things as data
9 granularity, analytic complexity, customer engagement, and device
10 interoperability. This assessment resulted in prioritization of use cases within
11 categories and identified the interrelationships between use cases.

12 **Q. HOW DID THE COMPANY DEVELOP THE DI ROADMAP IN STEP 3?**

13 A. Step 3 was conducted during Winter 2020-2021. Once use cases were prioritized
14 in Step 2, the Company considered other factors that would influence the
15 development and deployment of DI products and services. These additional
16 considerations included: (1) alignment with long-term Xcel Energy strategic
17 priorities; (2) external market and economic factors influencing deployment; (3)
18 current and future regulatory priorities to maximize value of deployment across
19 jurisdictions; and (4) technological capabilities of the Company or potential
20 partners that may impact deployment. This resulted in what the Company
21 considers foundational use cases for DI deployment, which are the subject of costs
22 detailed in my Direct Testimony.

1 **Q. WHAT WORK IS THE COMPANY CURRENTLY ENGAGED IN DURING STEP**
2 **4 OF THE PROCESS?**

3 A. With mass meter deployment expected between 2021 and 2024, the Company is
4 currently working with our meter vendor partner as well as several third-party
5 partners to develop the DI platform for both customer-facing and grid-facing
6 solutions.

7 **Q. PLEASE DESCRIBE THE WORK THE COMPANY HAS UNDERTAKEN WITH**
8 **THIRD-PARTY DEVELOPERS WITH RESPECT TO DI.**

9 A. The Company has engaged with third parties in the development of foundational
10 architecture, which is required to deliver all potential DI applications, including the
11 initial DI service of the HAN. Additionally, in December of 2020, the Company
12 issued an RFP to develop several of the initial foundational and customer-facing
13 initial DI applications, and the Company is currently in the process of evaluating
14 the RFP responses. The Company expects to complete the evaluation and
15 selection process and execute final contracts in sufficient time to implement DI
16 applications as described in this section. The Company expects to issue further
17 RFPs to engage additional third parties to provide support across all of the key
18 aspects of foundational and use-case-specific DI application development.

19 **Q. HOW DO THESE EFFORTS INTERACT WITH PRIOR AND CURRENT**
20 **PROCEEDINGS BEFORE THE COMMISSION?**

21 A. As described in the Amended CPCN proceeding, HAN was initially considered a
22 “base service” that would be delivered to customers in its initial form concurrent

1 with smart meter deployment this Summer.⁸ However, with respect to any
2 additional application development, per the Commission's decision, no
3 unapproved DI solutions (including HAN) will be deployed to customers until
4 resolution of the open proceeding.

5 **Q. CAN YOU SUMMARIZE THE COMPANY'S PLANS FOR BRINGING DI**
6 **APPLICATIONS FORWARD FOR CUSTOMERS?**

7 A. Yes. Many of the DI enabled customer-facing solutions will be complementary to
8 the Company's existing demand-side management and customer choice
9 programs, and they are expected to provide customers with more information
10 about their energy usage through services such as personalized insights into
11 relevant program and services, disaggregation of energy usage and cost by
12 appliance, virtual energy audits, or real-time monitoring. While the Company is
13 currently formulating plans for bringing these DI enabled solutions to customers,
14 this will be an iterative process, based on potentially shifting priorities, regulatory
15 requirements, or technological considerations. The interaction between potential
16 DI Applications and the Company's other systems is a crucial aspect of the
17 development process as is the relationship between the DI enabled solutions and
18 the relevant programs and services.

19 **Q. WHAT APPLICATIONS ARE INCLUDED IN THE COMPANY'S DI ROADMAP?**

20 A. The Company's DI roadmap outlines the development and deployment of
21 foundational DI enabled solutions. Initial development will occur starting with basic

⁸ See Footnote 3.

1 functionality, with complexity and analytic capabilities increasing in the future. In
2 general, these use cases would build the foundational capabilities of advanced
3 meters enabled through load disaggregation, system analytics and HAN devices.
4 In the future, use cases would extend more granular data and analytics-driven
5 insights to customers and potentially enable customer control and automation in
6 their home or business. Prioritization of these future use cases will be based on
7 insights and knowledge gained from deployment of the foundational solutions.

8 There are two sets of foundational use cases that currently are expected to
9 be deployed upon the conclusion of this proceeding (2022): foundational customer-
10 facing solutions and foundational grid-facing solutions. Foundational customer-
11 facing solutions include customer energy analytics and insights, HAN, and EV
12 detection to support existing vehicle programs. Foundational grid-facing solutions
13 include enhanced system modelling, power theft detection, power quality analysis
14 and secondary equipment assurance. A summary of examples is provided in
15 Table ERR-D-2 below.

1

TABLE ERR-D-2: Initial Use Cases for DI

| Category | Illustrative initial use cases |
|--|---|
| Energy Insights | Detailed disaggregation of customer devices and presentment within customer portal |
| Electric Vehicles | Detection of electric vehicles in premise and introduction to approved Company EV programs |
| Safety and Protection (Grid-facing) | Detection and real-time alert to system operators and systems of voltage anomalies |
| Home Area Network | Connectivity between the advanced meter and the customer's HAN |
| Grid Operational efficiency (Grid-facing) | Power theft detection and secondary equipment protection; enhanced system visualization and modelling |

2 **Q. WHAT WORK DOES THE COMPANY EXPECT TO COMPLETE DURING 2021**
3 **WITH RESPECT TO DI?**

4 A. In 2021, the Company expects to complete foundational capability development to
5 enable the initial solutions described above. Namely, creating the infrastructure
6 and architecture to operate DI, testing and development of the initial HAN
7 connectivity capability, testing available grid-facing solutions, along with an
8 associated real-time energy usage mobile application, and initiating the
9 development, and in test environments, exploring load disaggregation capability
10 via both on-meter and back-office analytics. These capabilities create the basis
11 for foundational capabilities to be deployed in 2022 for both the grid and to
12 customers, as discussed below.

13 **Q. WHAT WORK IS PLANNED FOR 2022 TO ADVANCE THE DI PROGRAM?**

14 A. In 2022, the Company will begin deployment of capabilities focused on enabling
15 foundational customer and grid functionalities already described above.

1 **Q. WHEN DOES THE COMPANY EXPECT TO BEGIN OFFERING DI**
2 **APPLICATION OPTIONS TO CUSTOMERS?**

3 A. Pending the outcome of the concurrent Amended CPCN proceeding, the Company
4 currently contemplates the potential to offer DI application-enabled solutions to
5 customers during the second or third quarter of 2022.

6 **Q. DOES THE COMPANY ANTICIPATE ANY REVENUES ASSOCIATED WITH DI**
7 **CAPABILITIES IN THE FUTURE?**

8 A. Yes. While the initial applications will likely not generate direct revenues due to
9 their foundational nature, it is anticipated that future applications may generate
10 revenues. The Company has not calculated any revenue estimates at this time.
11 However, the potential for customers to benefit from DI revenues is one reason the
12 Company believes it would be appropriate to defer both DI revenues and DI
13 expenses in the established AGIS tracker.

14 **Q. AT A HIGH LEVEL, WHAT ARE THE COMPANY'S PLANS FOR DI BEYOND**
15 **2022?**

16 A. As discussed above, the Company's DI strategy envisions the deployment of initial
17 DI foundational capabilities in 2022, with future roll-out of DI customer products in
18 services building on those capabilities. Future applications that would build on the
19 foundational DI platform may be dependent on the results of initial deployment,
20 customer interest in products and services, technology changes, and in some
21 cases, external market factors would need to materialize before they would
22 become viable. Implementation of applications beyond the initial deployment

1 discussed in my Direct Testimony will require additional capital and O&M related
2 to those new applications. Further discussion of capital and O&M costs follows
3 later in this section of my Direct Testimony.

4 **Q. CAN YOU FURTHER EXPLAIN THE COMPANY'S PROPOSAL FOR COST**
5 **RECOVERY RELATED TO DI IN THIS RATE CASE?**

6 A. Yes. The Company is proposing to include the DI forecasted capital additions
7 through 2022 and the O&M expenses forecasted for 2022 in the FTY cost of
8 service presented by Ms. Blair. The Company proposes to use the 2022 capital
9 and O&M level as the baseline, and proposes to defer future DI capital and O&M
10 costs, as well as any revenues related to DI applications, through inclusion in the
11 AGIS tracker that was established in the initial AGIS CPCN proceeding. The
12 Company would include these DI costs and revenues in the annual AGIS reporting
13 to keep the Commission informed about future DI developments and costs. While
14 my Direct Testimony supports the need for the DI tracker going forward, Mr.
15 Berman discusses the deferral mechanics in his Direct Testimony.

16 **B. Customer Solutions' DI Capital Additions**

17 **Q. WAS CUSTOMER SOLUTIONS PRIMARILY RESPONSIBLE FOR**
18 **DEVELOPING THE DI CAPITAL FORECAST FOR DI?**

19 A. Yes, Customer Solutions is responsible for the DI budgets including Architecture,
20 Infrastructure, Use Case Development, Solution Operations, and Ongoing Solution
21 Maintenance. Therefore, I describe the forecast development process for the DI

1 work undertaken by Customer Solutions. Mr. Nickell provides support for the AMI
2 costs, which encompass the meter hardware portion of costs for DI.

3 **Q. WHAT ARE THE CUSTOMER SOLUTIONS DI CAPITAL ADDITIONS**
4 **RELEVANT TO THIS RATE CASE?**

5 A. There are no Customer Solutions capital additions for DI for years prior to 2022
6 given that no plant will be in service until 2022. Public Service then anticipates
7 capital additions of \$31.0 million in 2022, with assets expected to be in-service
8 during the third quarter of 2022. These capital additions are reflected in
9 Attachment LJW-5, on line 1118, of Company witness Ms. Laurie J. Wold's Direct
10 Testimony.

11 **Q. WHAT ARE THE PRIMARY COMPONENTS OF DI CAPITAL COSTS FOR THE**
12 **FTY?**

13 A. The capital costs of deploying DI solutions primarily consist of foundational
14 architecture development, infrastructure development, and use case development.
15 These use case development budgets are each based on expected development
16 of three customer-facing use cases, as well as three grid-facing use cases of
17 similar complexity for deployment in 2022. Table ERR-D-3 below provides the
18 capital additions breakdown by category.

TABLE ERR-D-3
DI Capital Additions by Category
(Public Service Electric)

| Cost Category <i>(\$ in millions)</i> | 2022 |
|---|-------------|
| Software Architecture | 6.5 |
| Infrastructure/Hardware | 4.1 |
| Use Case Development - Grid Facing | 10.2 |
| Use Case Development - Customer Facing | 10.2 |
| Total | 31.0 |

Q. HOW DID CUSTOMER SOLUTIONS DERIVE THE ARCHITECTURE DEVELOPMENT PORTION OF THE DI CUSTOMER SOLUTIONS FORECAST?

A. The architecture development work includes the creation of the software to effectively, reliably, and securely run the distributed intelligence platform in Xcel Energy's back office systems. This includes integration with existing meter data and customer information systems, as well as development of the core load analytics capability which unlocks much of the potential for future applications. These costs were derived through coordinated efforts between the Company and third-party consultants who have experience rolling out technology integration.

Q. HOW DID CUSTOMER SOLUTIONS DERIVE THE INFRASTRUCTURE DEVELOPMENT PORTION OF THE DI CUSTOMER SOLUTIONS FORECAST?

A. Infrastructure Development consists of the additional hardware costs for DI as well as development of data center infrastructure (including servers, storage, computers, and network) to support DI implementation. The advanced meters themselves contain DI capabilities, but additional hardware is necessary to store data and host those processes that interact with the meters. These costs were

1 budgeted based on estimated storage and processing capability required to fully
2 enable DI solutions as well as known or benchmark costs for data center
3 equipment.

4 **Q. WHAT IS USE CASE DEVELOPMENT AND HOW DID THE COMPANY**
5 **FORECAST ITS USE CASE DEVELOPMENT COSTS?**

6 A. Use case development includes incremental software development costs for use
7 cases, system integration, and one-time licensing costs. These costs, in essence,
8 represent the incremental costs above the underlying system architecture for each
9 solution or service the Company is developing. The Company forecasted these
10 costs based upon previous experience of the labor required to develop software
11 as well as known or benchmark values for one-time licensing costs. These costs
12 will vary based upon the complexity and degree of integration required per use
13 case.

14 **Q. FROM AN OPERATIONAL STANDPOINT, WHY DOES THE COMPANY**
15 **PROPOSE INCLUDING FUTURE DI CAPITAL COSTS IN THE AGIS**
16 **TRACKER?**

17 A. First, the capital additions proposed to be included in the 2022 FTY are related to
18 the implementation of the initial DI enabled solutions. There will be incremental
19 capital investment needed to implement any future DI enabled solutions the
20 Company is contemplating as described earlier in this section. As I have also
21 discussed above, beyond the 2022 test year, the roll-out of DI enabled solutions
22 will be dependent on what the Company learns from implementation of the initial

1 DI enabled solutions, any technology changes, and what we learn from customers
2 and the market that will inform decision about priorities for additional DI enabled
3 offerings. Further, once the initial capabilities are established in 2022, the
4 Company expects to partner with additional third parties through a competitive
5 process to develop future DI Applications and associated solutions. We believe
6 including these future costs in the AGIS tracker rather than in a future rate case,
7 where the timing is uncertain, will allow the Company to further develop DI in a
8 timely manner and offer new and innovative ways to provide valuable services to
9 the grid and to customers.

10 **C. Customer Solutions' DI O&M Costs**

11 **Q. WHAT ARE THE CUSTOMER SOLUTIONS DI O&M COSTS RELEVANT TO**
12 **THIS RATE CASE?**

13 **A.** Table ERR-D-4 below provides Customer Solutions' currently estimated DI O&M
14 costs for 2020 through the 2022 FTY.

15 **TABLE ERR-D-4**
16 **DI Customer Solutions – O&M Expenses**
17 **(Public Service – Electric)**

| Program <i>(\$ in millions)</i> | 2020 Actual | 2021 Forecast | 2022 Forecast |
|---|------------------------------|--------------------------------|--------------------------------|
| DI | \$0.3 | \$0.3 | \$4.8 |

18 The only incremental DI O&M costs in 2020 were related to third-party
19 consulting services; all other internal DI planning work in 2020 was conducted
20 under the existing Customer Solutions budget.

1 **Q. WHAT ARE THE PRIMARY COMPONENTS OF CUSTOMER SOLUTIONS' DI**
 2 **O&M COSTS?**

3 A. As DI capital additions are developed, the Company expects associated O&M
 4 costs in the following categories: (1) Governance and Change Management, (2)
 5 Product Development (3) Sales and Marketing, (4) Customer Service, (5) Third
 6 Party Consulting, (6) Architecture Run Costs, and (7) Use Case Run Costs. Table
 7 ERR-D-5 below provides the current estimate of Customer Solutions' DI O&M
 8 costs for 2021 and 2022.

9 **TABLE ERR-D-5**
 10 **DI O&M Expenses by Category**
 11 **(Public Service Electric)**

| Cost Category <i>(\$ in millions)</i> | 2021 | 2022 |
|--|-------------|-------------|
| Governance and Change Management | 0 | 0.01 |
| Product Development | 0 | 0.12 |
| Sales & Marketing | 0 | 0.03 |
| Customer Service | 0 | 0.05 |
| Third Party Consulting | 0 | 0.80 |
| Architecture Run Cost | 0.25 | 0.74 |
| Use Case Run Cost | 0 | 3.08 |
| Total | 0.25 | 4.82 |
| <i>Any differences between sum of individual category amounts and Total are due to rounding.</i> | | |

12 **Q. HOW DID CUSTOMER SOLUTIONS FORECAST THE O&M BUDGET FOR THE**
 13 **GOVERNANCE AND CHANGE MANAGEMENT CATEGORY?**

14 A. Governance and change management costs represent the labor involved in
 15 overseeing the selection, prioritization, and implementation of DI enabled solutions
 16 across and within the Company. Due to the degree of impact that DI may have on
 17 existing operations, these resources and activities are critical to ensuring full value

1 of DI are realized. The costs are based on a bottom up analysis of the existing
2 and some incremental labor resources that would be required, as well as an
3 assumed percentage of time dedicated to DI which is based on the number and
4 complexity of use cases deployed. There is also an assumed split of internal
5 Company resources and third-party resources to fulfill these functions.

6 **Q. HOW DID CUSTOMER SOLUTIONS DERIVE THE O&M BUDGET FOR THE**
7 **PRODUCT DEVELOPMENT CATEGORY?**

8 A. Product development costs represent labor involved in the development of new
9 use cases, including data science, product management, and technical field
10 resources. Customer Solutions developed this portion of the budget based on
11 previous experience in developing and managing programs in areas such as
12 Demand-Side Management and reflect the complexity and degree of relation to
13 existing solutions or services that may already exist. There is also an assumed
14 split of internal Company resources and third-party resources to fulfill these
15 functions.

16 **Q. HOW DID CUSTOMER SOLUTIONS DERIVE THE O&M BUDGET FOR THE**
17 **SALES AND MARKETING COSTS?**

18 A. Sales and marketing costs represent labor involved in raising customer awareness
19 of DI enabled solutions, which are more technical in nature than many existing
20 programs. Customer Solutions developed this portion of the budget based on
21 previous experience in marketing of services in more technical areas such as
22 Demand Response and Electric Vehicles and reflect the complexity and degree of

1 relation to existing solutions or services that may already exist. There is also an
2 assumed split of internal Company resources and third-party resources to fulfill
3 these functions.

4 **Q. HOW DID CUSTOMER SOLUTIONS DERIVE THE O&M BUDGET FOR THE**
5 **CUSTOMER SERVICE COSTS?**

6 A. Customer service costs represent labor involved in supporting customers requiring
7 assistance as they engage in these new services, which are more technical in
8 nature than many existing programs. Customer Solutions developed this portion
9 of the budget based on previous experience in customer service delivery in more
10 technical areas such as Demand Response and Electric Vehicles and reflect the
11 complexity and degree of relation to existing solutions or services that may already
12 exist. The customer service O&M costs are prorated for 2022 to reflect that the
13 Company expects to offer DI applications and associated solutions to customers
14 during the third quarter of 2022. The full annualized customer service costs for the
15 initial DI enabled solutions would be incurred in 2023.

16 **Q. HOW DID CUSTOMER SOLUTIONS DERIVE THE O&M BUDGET FOR THE**
17 **THIRD-PARTY CONSULTING COSTS?**

18 A. Third party consulting costs consist of labor associated with bringing in outside
19 expertise to further develop and refine the business case, technology architecture,
20 internal governance, and product and change management associated with DI.
21 These costs are based on previous experience with large technology and business

1 change projects like CXT and are reflective of costs obtained through competitive
2 RFP processes.

3 **Q. HOW DID CUSTOMER SOLUTIONS DERIVE THE O&M BUDGET FOR THE**
4 **ARCHITECTURE RUN COSTS?**

5 A. The ongoing architecture run cost represents the costs of maintaining and
6 operating the architecture. This value was estimated as 20 percent of the total
7 investment cost for the architecture, based on previous experience with software
8 technology deployment and work with third-party consultants who have experience
9 rolling out technology integration. The 20 percent was assumed to cover software
10 licenses and other fees that would typically be considered O&M.

11 **Q. HOW DID CUSTOMER SOLUTIONS DERIVE THE O&M BUDGET FOR THE**
12 **USE CASE RUN COSTS?**

13 A. The ongoing use case run cost represents the costs of maintaining and operating
14 the individual use cases. This value was estimated as 20 percent of the total
15 investment cost for each DI enabled solution, based on previous experience with
16 software technology deployment and work with third-party consultants who have
17 experience rolling out technology integration. The 20 percent was assumed to
18 cover software licenses and other fees that would typically be considered O&M.

19 **Q. OVERALL, WHAT CUSTOMER BENEFITS OF DI DOES THE COMPANY**
20 **ANTICIPATE PROVIDING DURING THE 2022 TEST YEAR?**

21 A. Based on the outcome of the Amended CPCN proceeding, the Company expects
22 to begin deploying DI enabled solutions in the Summer of 2022. Benefits

1 associated with the initial roll-out of these applications are expected to fall into the
2 categories of participant customer bill reductions, peak demand savings, and
3 energy efficiency savings. The magnitude of these benefits is highly dependent
4 on the timing and direction established by the Commission as part of the active
5 Amended CPCN proceeding.

6 **Q. FROM AN OPERATIONAL STANDPOINT, WHY DOES THE COMPANY**
7 **PROPOSE INCLUDING FUTURE DI O&M COSTS IN THE AGIS TRACKER?**

8 A. First, the DI O&M included in the 2022 FTY is related to implementation of the
9 initial DI enabled solutions. These costs are necessary for ongoing O&M, program
10 management, and governance of the initial DI enabled solutions. At the same time,
11 as described above, the customer service O&M costs are prorated for 2022 to
12 reflect that the Company expects to offer DI enabled solutions to customers during
13 the third quarter of 2022. The full annualized customer service costs for initial DI
14 enabled solutions would be incurred in 2023; thus, use of the tracker would
15 account for this known cost increase in the year immediately following the rate
16 case test year. As also described above, there will be incremental capital
17 investment needed to implement any future solutions, and there will also be
18 incremental O&M costs associated with those future DI enabled solutions as well.
19 For the same reasons described above, the roll-out of DI enabled solutions beyond
20 the 2022 test year will be dependent on what the Company learns from the initial
21 implementation, any technology changes, what we learn from customers and the

1 market, and future partnerships with third-parties to develop future DI applications
2 and associated solutions.

3 The Company believes including the O&M costs related to future DI enabled
4 solutions in the AGIS tracker rather than in a future rate case, where the timing is
5 uncertain, will allow the Company to further develop DI in a timely manner and
6 offer new and innovative ways to provide valuable services to the grid and to
7 customers. Additionally, tracker treatment will allow the Company to immediately
8 account for any future revenues from customers or third parties related to DI
9 enabled solutions.

1 **IV. TRANSPORTATION ELECTRIFICATION ADJUSTMENT**

2 **Q. ARE YOU SPONSORING AN ADJUSTMENT TO THE COMPANY'S COST OF**
3 **SERVICE RELATED TO THE ELECTRIC TRANSPORTATION GROUP?**

4 A. Yes. I support the Company's proposed forecasted adjustment to the FTY labor
5 expense related to additional headcount in Xcel Energy's Electric Transportation
6 group. While it is my understanding that most FTY O&M is based on 2020 O&M
7 levels, I support including additional headcount for the Electric Transportation
8 group at the 2022 level.

9 **Q. WHAT IS THE ELECTRIC TRANSPORTATION GROUP?**

10 A. The Electric Transportation department, or "EV Team," manages the
11 implementation and execution of all of Xcel Energy's EV programs throughout Xcel
12 Energy's service areas. Right now, this includes Colorado, Minnesota, Wisconsin,
13 and New Mexico (forthcoming). The EV Team is part of the Strategic Partnerships
14 and Ventures business unit.

15 **Q. HAS THIS GROUP GROWN SINCE THE TEST YEAR DETERMINED IN THE**
16 **COMPANY'S LAST BASE RATE CASE?**

17 A. Yes. The EV Team has operated with only several individuals for the past few
18 years as EV programs were a small but growing focus for the Company and our
19 customers. However, with the approval of the Company's 2021-2023 TEP, Xcel
20 Energy's bold commitment to serve 1.5 million EVs by 2030 across all of the states

1 where we provide service, the State of Colorado's goals for advancing EVs,⁹ and
2 the growing focus on electric transportation among our residential and commercial
3 customers, the Company has recognized the importance of adding new resources
4 to the EV Team to support this vital work.

5 **Q. WHAT ARE THE POSITIONS BEING ADDED TO THE EV TEAM AND**
6 **STRATEGIC PARTNERSHIPS AND VENTURES BUSINESS UNIT?**

7 A. The EV Team is adding positions at multiple levels, including new directors to
8 oversee and work on various parts of the Company's EV programs and new
9 program managers and other support staff. As part of the rate case, the Company
10 is incorporating an adjustment for six new positions, as described below. All of
11 these positions are within the Strategic Partnerships and Ventures business unit.

- 12 • *Director – Infrastructure Management, Performance, and Business*
13 *Operations.* This position will oversee the Company's work on EV
14 infrastructure projects regardless of customer segment, as well as any
15 Company owned charging. Examples include many of the multi-family
16 housing and commercial EV programs approved in the TEP and the
17 residential charger installation program. In addition, the position
18 oversees internal business operations.
- 19 • *Director – Residential Management and Performance.* This position will
20 oversee the Company's work on all residential EV programs (excluding
21 the actual infrastructure installation and lifecycle management, which is
22 housed in the Infrastructure position above). The scope primary
23 includes education/advisory services, rebates, and system and rate
24 optimization programs for the residential segment.
- 25 • *Director – Fleet Solutions and Commercial & Industrial Advisory.* This
26 position is the C&I equivalent role to the Residential role described
27 above, and will direct all efforts related to the Company's engagement
28 with fleet and C&I customers interested in transportation electrification
29 (excluding the actual infrastructure installation and lifecycle

⁹ Executive Order B 2019 002, Supporting a Transition to Zero Emissions Vehicles, January 17, 2019.

1 management, which is housed in the Infrastructure position above),
2 including advisory services aimed at helping fleets and other non-
3 residential customers evaluate and plan for a transition to EVs. The
4 scope primary includes education/advisory services, rebates, and
5 system and rate optimization programs for the C&I segment.

6 • *Director – Policy and Planning.* This position will lead and manage the
7 Company’s regulatory strategy on EVs to inform current program
8 improvements and future program offerings. This position will also
9 regularly work with stakeholders to advance collective goals on
10 transportation electrification.

11 • *Director – Partnership Solutions & Market Intelligence.* This position will
12 manage the Company’s engagement with existing and new potential
13 partners to help the Company achieve its strategic objectives of leading
14 the clean energy transition, enhancing the customer experience, and
15 keeping bills low for customers. This work will include partnerships for
16 electric transportation, in addition to work on other technologies and
17 industries. This position is within the Strategic Partnerships and
18 Ventures business unit and supports electric transportation but does not
19 exclusively support the EV team.

20 • *Administrative Assistant.* This position will support the Area Vice
21 President overseeing the Company’s EV programs and partnership
22 work. This role is within the Strategic Partnerships and Ventures
23 business unit and supports electric transportation but does not
24 exclusively support the EV team.

25 Importantly, these positions will support EV programs in Colorado in addition to
26 those in other states. As a result, the labor expenses stemming from these
27 positions will be appropriately shared across the operating companies in proportion
28 to the relative sizes of the operating companies. This is consistent with the
29 allocation methodology for similar staff positions. Company witness Mr. Ross L.
30 Baumgarten provides details related to cost allocations in his Direct Testimony.

1 **Q. WHEN WILL THE COMPANY BEGIN INCURRING THESE ADDITIONAL O&M**
2 **COSTS?**

3 A. The Company expects to complete hiring for these six positions in 2021; thus, the
4 total cost will be fully incurred in 2022.

5 **Q. HAS MS. BLAIR INCORPORATED THIS ADJUSTMENT INTO THE**
6 **COMPANY'S PROPOSED REVENUE REQUIREMENT?**

7 A. Yes. Ms. Blair has incorporated an adjustment of \$0.4 million into the 2022 FTY
8 labor expense.

9 **Q. ARE THESE COSTS REASONABLE?**

10 A. Yes. These positions are necessary in order to effectively implement and deliver
11 excellent EV programs for customers as approved in the TEP and to work
12 collaboratively with our partners in Colorado to advance the state's EV policy
13 objectives. This work involves administering dozens of new EV programs and
14 finding ever-more effective ways to support widespread transportation
15 electrification, including for income-qualified customers and communities. The
16 costs included in this labor adjustment represent the Company's proportionate
17 share of the mid-point salaries of these positions, including benefit expenses, and
18 are consistent with how other labor adjustments are made in the cost of service.
19 This labor adjustment for the EV Team includes costs that are incremental to the
20 Company's labor expense currently in base rates.

1 **V. PROPOSED RESILIENCY SERVICE TARIFF**

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

3 A. In this section, I provide support for the Company's request for approval of a
4 Resiliency Service Tariff. This optional service is designed to support those
5 customers that have a need for higher than standard service reliability through use
6 of battery energy storage or on-site generation assets. The Company believes this
7 program will lower upfront costs for participants and provide a positive customer
8 experience with no net cost increase or impacts to the system or non-participating
9 customers.

10 Given that the Company does not anticipate net cost increases to
11 customers as a result of this program, the Company requests approval of the
12 Resiliency Service program design, as well as the Resiliency Service Tariff
13 presented in the Direct Testimony of Mr. Berman. The proposed Resiliency
14 Service Tariff is provided as an attachment to Mr. Berman's Direct Testimony.

15 **A. Resiliency Service Overview**

16 **Q. WHAT IS A RESILIENCY SERVICE PROGRAM?**

17 A. "Resiliency Service" is a product offering designed to support microgrids and other
18 resiliency projects for large C&I customers that require additional protections
19 against potential power interruptions to operate their businesses. The objective of
20 this program is to give customers additional choices to achieve their resiliency,
21 sustainability, or other energy related goals.

1 Xcel Energy will provide this support through company ownership,
2 installation, operation, and maintenance of resiliency assets such as battery
3 energy storage systems and back-up generators. The program is designed to be
4 technology agnostic and will allow for customers to choose resiliency options to
5 best meet their needs. Under the program, customers will work with Xcel Energy
6 and its vendors to design, construct and interconnect their system.

7 **Q. WHY IS THE COMPANY PROPOSING THE RESILIENCY SERVICE TARIFF?**

8 A. The concept of resiliency in the electric system is becoming more relevant as,
9 across the country, customers seek to navigate the risks of weather events or other
10 significant disruptions. Resiliency strategies are designed to address anticipated
11 severe electric disruptions to day-to-day life or a customer's operations by
12 investing in critical infrastructure and systems to sustain the customer during
13 electric disruption, and to hasten recovery. These programs likewise support
14 customers' move toward renewable, but often intermittent, power supplies, such
15 as battery storage or diesel generation as a back-up to facilitate greater reliance
16 on intermittent wind and solar resources on their property. Because new tariffs are
17 necessary to implement this service, the Company seeks approval of the program
18 and associated tariff in this rate case.

19 **Q. DOES PUBLIC SERVICE HAVE INFORMATION INDICATING CUSTOMER**
20 **INTEREST IN THE TYPE OF SERVICE PROPOSED?**

21 A. Yes. As discussed earlier in Section II, the Company conducted research that
22 indicated C&I customers are seeking help with respect to reliability assessments

1 and planning and interested in resiliency solutions as well as financing solutions to
2 support implementation.

3 **Q. DOES PUBLIC SERVICE OR ANOTHER XCEL ENERGY UTILITY OPERATING**
4 **COMPANY HAVE EXPERIENCE OFFERING CUSTOMER RESILIENCY**
5 **SERVICES?**

6 A. Yes. Through the Innovative Clean Technology (“ICT”) program, Proceeding No.
7 15A-0847E, Public Service built the Panasonic Battery Storage Microgrid
8 demonstration project (the “Panasonic project”). This system has been operating
9 successfully since its completion in 2017. The Panasonic project, located near the
10 Denver International Airport, combined a 1.6 MWdc solar photovoltaic (“PV”)
11 resource, a 1 MW-2 MWh battery storage resource, islanding switch and microgrid
12 controls to demonstrate how a battery energy storage system (“BESS”) can be
13 used to provide benefit to the electric grid and resilience services to individual
14 customers. In the event of a grid outage the BESS and customer facility are
15 isolated, or “islanded”, from the rest of the electric grid. The BESS then goes into
16 “grid forming” mode, restoring power to the customer’s facility within eight seconds.
17 Through the Panasonic project this functionality has been successfully
18 demonstrated through testing as well as responding to multiple real life power
19 disruptions due to storm-related outages on the feeder.

20 As described in our “Final and Comprehensive Report to the Colorado
21 Public Utilities Commission Regarding the Panasonic and Stapleton Pilot Projects”
22 The Panasonic project demonstrated several grid and customer benefits, including

1 grid integration of high-penetration solar PV, system peak demand reduction,
2 energy arbitrage, frequency regulation, and back-up service to an end-use
3 customer in case of grid outage. The battery has also demonstrated the ability to
4 respond to sudden changes in production of the on-site solar PV resource. Many
5 of the lessons learned in the design, construction, and operation of the Panasonic
6 project have been integrated into subsequent resiliency service projects, including
7 the proposals for seven additional projects in Colorado as part of Public Service's
8 proposed Community Resiliency Initiative that was recently approved by this
9 Commission.¹⁰

10 In addition, Xcel Energy has filed a similar tariff in Wisconsin service
11 territory. The program has received approval, with a formal launch planned for
12 later this summer. The Company has engaged with numerous customers in that
13 state with plans to begin design and construction of resiliency assets this year.

14 **Q. WHAT ARE THE KEY COMPONENTS OF THE PROPOSED RESILIENCY**
15 **SERVICE TARIFF?**

16 A. The Resiliency Service Tariff will be available to C&I customers and supports
17 customer resiliency through Company ownership, installation, operation, and
18 maintenance of Resiliency Service Assets, which may include combinations of
19 BESS, microgrid control equipment such as islanding switches and Generation
20 Assets including but not limited to Back-Up Generation ("BUG") and Solar PV when

¹⁰ See Public Service's Community Resiliency Initiative, Proceeding No. 19A-0225E. Six of these projects are currently in development with the seventh having been cancelled when the site host backed out of the project.

1 paired with a BESS. Under the Company's proposal, Resiliency Service Assets
2 will be located on or near a customer's premise(s), serving load located behind a
3 single customer meter. Customers taking service under the Resiliency Service
4 Tariff will pay for all program costs through dedicated customer charges and would
5 receive all benefits of the assets. Customers will pay for their requested Resiliency
6 Service Assets over the contract term through a unique on-bill charge that recovers
7 the revenue requirement of the assets requested by each customer. Because
8 program costs are recovered through dedicated customer charges, non-
9 participating customers will not pay any of the program costs.

10 **Q. WHAT ARE THE KEY OBJECTIVES OF THE PROGRAM?**

11 A. The Company proposes to offer this service to facilitate the use of emerging
12 technologies, such as solar and battery storage, because they can play an
13 important role in helping support critical facilities. In the future, projects like those
14 undertaken by the Company and customers under this service may help inform the
15 Company's distribution planning process. The Company believes the program will
16 lower upfront costs for participating customers and provide a positive customer
17 experience through customized combinations of Resiliency Service Assets that
18 meet customers' specific resiliency and reliability needs.

1 **B. Program Design**

2 **Q. PLEASE DESCRIBE CUSTOMER ELIGIBILITY AND PARTICIPATION UNDER**
3 **THE PROPOSED PROGRAM.**

4 A. As described by Mr. Berman, the Resiliency Service Tariff will be available to C&I
5 customers taking service under base rate schedules SG, PG, or TG who take
6 service from a single metering point.¹¹ The standard term of the customer service
7 agreement (“CSA”) under this tariff will be ten years but can be adjusted based on
8 customer needs.

9 **Q. HAS THE COMPANY INCLUDED AN ESTIMATED PROGRAM BUDGET IN**
10 **THIS CASE?**

11 A. No. The Company has not included Resiliency Service cost or revenue estimates
12 in the 2022 FTY. Although the Company is aware of customer interest and
13 potential participation in this program, due to varying customer size and individual
14 service needs, the Company has not included an estimate of the number of
15 participants or estimated costs and revenues in the 2022 FTY in this case. The
16 Company is proposing to report all costs and revenues under the tariff once
17 projects are under contract; thus, all costs and revenues for contracted Resiliency
18 Service projects would be included in subsequent rate cases. Mr. Berman further
19 describes the proposed regulatory treatment and accounting in his Direct
20 Testimony.

¹¹ Customers that have premises that are in close physical proximity but served by more than one meter may be eligible to combine those premises behind a single meter as part of the Resiliency Service Pilot under the Multiple Premises Provision.

1 **Q. HOW WILL SERVICE UNDER THE TARIFF BE GOVERNED?**

2 A. Each resiliency project will be customized to meet the needs of the individual
3 customer and will consider site-specific design considerations. The planning,
4 construction, and operation of the resiliency project will be governed by the
5 detailed program process set forth in Attachment ERR-3 to my Direct Testimony.
6 Resiliency Service Assets will be installed by the Company and owned and
7 maintained by the Company during the contract term, at which point ownership will
8 be transferred to the customer. During the contract term, participants will pay for
9 all program costs through dedicated customer charges to be included on the
10 customer bill. These details will be set forth in the CSA, which will be in effect for
11 the contract term.

12 **Q. AS THESE CUSTOMERS WILL BE PAYING THE COSTS OF THE RESILIENCY**
13 **ASSETS OVER THE CONTRACT TERM, HAS THE COMPANY CONSIDERED**
14 **THE POTENTIAL RISK OF DEFAULT AND PROVISIONS TO PROTECT NON-**
15 **PARTICIPATING CUSTOMERS FROM FINANCIAL RISK?**

16 A. Yes. In developing due diligence and financial security terms and conditions for
17 Resiliency Service contracts, the Company has attempted to draw an appropriate
18 balance between ensuring that non-participating customers are protected from
19 bearing any costs of the program and the Company is protected from undue
20 financial risk, while at the same time offering Resiliency Service program that
21 meets the key objectives to lower upfront costs for participating customers and
22 meet customers' specific resiliency and reliability needs in a practical manner.

1 **Q. WHAT DUE DILIGENCE WILL THE COMPANY CONDUCT PRIOR TO**
2 **ENTERING INTO A SERVICE AGREEMENT WITH A RESILIENCY SERVICE**
3 **CUSTOMER?**

4 A. First, while there may be new customers who enroll in the Resiliency Service tariff,
5 for the most part, customers who enroll will be existing customers with a bill
6 payment credit history with the Company, and all of the Company's current credit
7 and default policies will be applicable to all Resiliency Service customers. In
8 addition to reviewing the general credit history with the Company, during the
9 enrollment assessment process, the Company will require a credit report to be
10 obtained at the prospective Resiliency Service customer's expense. This will
11 provide the Company with the prospective customer's credit rating to help the
12 Company gauge the potential risk of default. Because this is an optional service,
13 the Company is not obligated to provide service under this tariff. As such, if a
14 prospective Resiliency Service customer's credit rating leads the Company to
15 believe there is a substantial risk of customer default, the Company may decide
16 not to move forward with the resiliency project, or the Company may require
17 additional financial security that will be accounted for in the Resiliency Service tariff
18 charges.

19 **Q. WHAT FINANCIAL SECURITY IS THE COMPANY PROPOSING?**

20 A. The Company has conducted an analysis of the risk of default based on credit
21 ratings for C&I customers. First, for customers meeting a minimum credit rating
22 threshold, the tariff and CSA require customers to cover the full cost of project

1 design and engineering costs. However, for customers with a credit rating below
2 the minimum, the Company proposes to require customers to either require a down
3 payment prior to project work beginning or pay for an insurance product sufficient
4 to address the default risk, with amounts on a sliding scale for various credit rating
5 levels. These costs would be incorporated into the bill charges for the customer
6 under the Resiliency Service Tariff.

7 Further, in the event of non-payment, default due to breach of other contract
8 provisions, or a customer terminates the contract early, the Company retains
9 ownership of the resiliency assets. As such, if other cures in the contract
10 provisions are not effective, the Company may ultimately remove the assets from
11 the customer's premise and repurpose for other uses.

12 **Q. DESPITE THE PROTECTIONS YOU DESCRIBE ABOVE, COULD THERE**
13 **STILL BE COSTS UNRECOVERABLE FROM RESILIENCY SERVICE**
14 **CUSTOMERS IN THE CASE OF DEFAULT?**

15 A. Yes. There could potentially be limited instances where a portion of the resiliency
16 assets costs may be unrecoverable from the Resiliency Service customer.
17 However, the Company believes the proposed contract provisions and financial
18 security requirements address the risk of default, and the Company will make
19 business decisions on a case-by-case basis to contractually address these risks
20 as described above.

1 **Q. HOW WILL THE COMPANY COMMUNICATE THE AVAILABILITY OF THIS**
2 **PROGRAM TO CUSTOMERS WHO MAY BE INTERESTED AND ELIGIBLE TO**
3 **PARTICIPATE?**

4 A. The Company will primarily rely on support from its Community Service Managers
5 and Account Managers along with program staff to communicate with customers
6 about opportunities to participate in this program. The Company believes it will be
7 important to have specific conversations with individual customers about how this
8 service may help meet the customer's specific resiliency needs. This
9 individualized approach has functioned well to date as the Company has had
10 preliminary discussions about resiliency projects with a number of customers to
11 gauge customer interest prior to filing this proposal and to solicit feedback from
12 customers when designing this program. The Company may also reach out to
13 customers through channels that customers expect to use when receiving or
14 seeking information regarding any of the products and services offered by the
15 Company such as email, social media, and traditional media.

16 **C. Benefits**

17 **Q. CAN YOU DESCRIBE THE BENEFITS OF THE PROGRAM FOR**
18 **PARTICIPATING CUSTOMERS?**

19 A. Each customer will receive the benefits of the Resiliency Service Assets deployed
20 for their resiliency project. Given that the costs of Resiliency Service Assets are
21 being borne entirely by the single participating customer, the Company believes
22 that customer is due all benefits that derive from the use of those assets. Benefits

1 will vary depending on the specific customer resiliency needs and resiliency project
2 specifics, and may include the following:

- 3 • Back-up or Alternative Power Service – Resiliency Service Assets will
4 enable customers to disconnect from the Company’s grid and meet their
5 own power needs during emergency periods.
- 6 • Peak Demand Reductions – BESS and BUG Resiliency Service Assets
7 may be utilized to lower demand charges on customer bills through low-
8 cost off-peak charging and discharging during customer peak
9 consumption times during normal grid operations.
- 10 • Energy Arbitrage – BESS Resiliency Service Assets may be utilized to
11 lower energy charges on customer bills through low-cost off-peak
12 charging and high-cost on-peak discharging during normal grid
13 operations.
- 14 • Reduced Energy Purchases – Under the terms of the Tariff, Resiliency
15 Service Assets are eligible for any rates and regulations related to
16 parallel generation. Eligible PV Solar Resiliency Service Assets, and
17 potentially other types of low- or no-fuel-cost Generation Assets, can
18 provide reductions to energy charges on customer bills pursuant to the
19 terms of the Company’s parallel generation tariffs.
- 20 • Frequency or Voltage Regulation – BESS and other technology may be
21 used improve the quality of power as a resiliency service. The Company
22 will continue to explore the use of BESS to meet customer power quality
23 needs.
- 24 • Peak Control Rate Eligibility – Back-Up Generators or BESS Resiliency
25 Service Assets at customer premises may enable customers to
26 participate in one of the Company’s peak control rates, which can result
27 in customer bill savings through reduced demand charges.

28 **Q. WILL PARTICIPATING CUSTOMERS SEE ANY QUANTIFIABLE BENEFITS OF**
29 **THIS PROGRAM?**

30 A. Some benefits discussed above will not be quantifiable in terms of customer bill
31 savings, but other benefits may result in bill reductions. After the implementation
32 of the Resiliency Service Assets, any bill savings for participating customers will

1 be included in the customer's bill in the form of demand reductions, energy
2 reductions, or credits from their participation in the peak control rate. Since these
3 benefits are embedded in the charges on the participating customer's bill, the
4 customer will not be able to directly observe the savings caused by the Resiliency
5 Service Assets. However, the Company plans to provide customers with periodic
6 reporting demonstrating the estimated bill savings associated with the Resiliency
7 Service Assets. Through this reporting, the Company will help the customer
8 understand the difference in what their bills would have been had the customer
9 continued their business as usual versus the bill reductions associated with the
10 Resiliency Service Assets.

11 **Q. ARE THERE ADDITIONAL BENEFITS OF THE PROGRAM BEYOND THOSE**
12 **RELATED TO PARTICIPATING CUSTOMERS?**

13 A. Yes. The Company has identified additional benefits of the program. First,
14 Company ownership and operation of Resiliency Service Assets will provide
15 valuable experience to the Company on the benefits of behind-the-meter
16 technologies that can aid the Company in evaluation of alternatives to traditional
17 utility distribution investments. As proposed, the program is voluntary for
18 customers and exists to meet customer resiliency needs. The Company is not
19 proposing this program as an alternative to traditional distribution investments or
20 planning, and it will not be used to actively pursue non-wire alternatives; however,
21 the data and experience gained from customer participation in this program may
22 be valuable for evaluating non-wire alternatives in the future. In addition,

1 availability of the Resiliency Service Tariff may result in the additional deployment
2 of microgrids and green energy infrastructure, which could help achieve carbon
3 emissions goals for individual customers, communities, and the state of Colorado.
4 Community microgrid projects enabled under the Resiliency Service Tariff may
5 enable communities to provide support to their most vulnerable groups during a
6 disaster.

7 **D. Resiliency Service Conclusion**

8 **Q. CAN YOU SUMMARIZE YOUR REQUEST FOR APPROVAL OF THE**
9 **COMPANY'S PROPOSED RESILIENCY SERVICE TARIFF?**

10 A. Yes. The Company's proposed Resiliency Service Tariff is designed to support
11 those customers that have a need for higher than standard service reliability
12 through use of battery energy storage or on-site generation assets, and is an
13 optional service for C&I customers. The Company believes this program will lower
14 upfront costs for participants and provide a positive customer experience with no
15 net cost increase or impacts to the system or non-participating customers. The
16 Company requests approval of the Resiliency Service program design and
17 operations as described in this section, as well at the Resiliency Service Tariff
18 supported by Mr. Berman.

19 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

20 A. Yes, it does.

Statement of Qualifications

Emmett R. Romine

In my current role as Vice President Customer Solutions and Innovation, I am responsible leading my teams to develop new products and services as well as deliver our demand side management, demand management, renewable choice programs, AGIS and Distributed Intelligence customer programs as well as pursuing economic development opportunities in Xcel Energy's territory. My teams support all customer classes through the products and services we provide. I have been in this current role since July 2020. I joined Xcel Energy in November 2019 as Vice President of Commercial and Industrial Customers. In this role, I oversaw primarily the commercial and industrial (C&I) customer programs for demand side management as well as demand management, renewable choice and C&I product development groups.

Prior to Xcel Energy, I worked from 2003 until 2019 at DTE Energy or DTE Energy affiliates. From 2015 through 2019, I helped to form Powerley, a startup focused on leveraging real-time energy data from automated meters to provide home energy management solutions. I served as a board member for the first year of operations, then joined the company as the Senior Vice President of Business Development, responsible for sales, delivery and regulatory strategy for the company. Powerley is an affiliate within DTE Energy. Prior to Powerley, I held several leadership roles in various parts of DTE. Those roles include General Manager overseeing the DTE Insight platform and demand response and General Manager over Energy Optimization. In these roles, I was tasked with developing and launching DTE Energy's energy efficiency offerings as a result of the

Michigan Legislature's Act 295 of 2008 as well as developing and commercializing DTE Insight, the mobile app platform leveraging DTE's AMI deployment for residential customers.

Additionally while at DTE, I also had roles in operations and other parts of the business including Service Center Manager overseeing warehouse operations for distribution operations, Continuous Improvement manager for distribution operations which included cost optimization and chief of staff duties and Manager Project Management in the enterprise performance management group.

Before DTE Energy, I held several other roles including Director Power Generation Solutions at Enigma, Manager in the Chemicals and Energy Practice at KPMG Consulting and Manufacturing Engineer at Nordyne, Inc.

I hold a Master's in Business Administration from Olin School of Business at Washington University in St. Louis, a Bachelor of Science in Mechanical Engineering from Washington University, and a Bachelor of Arts in Physics from William Jewell College. I am also a certified lean six sigma blackbelt and have executive education from Kellogg School of Management in Organic Growth & Innovation.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

* * * * *

IN THE MATTER OF ADVICE LETTER)
NO. 1857-ELECTRIC OF PUBLIC)
SERVICE COMPANY OF COLORADO)
TO REVISE ITS COLORADO PUC NO.)
8-ELECTRIC TARIFF TO REVISE)
JURISDICTIONAL BASE RATE) PROCEEDING NO. 21AL-____E
REVENUES, IMPLEMENT NEW BASE)
RATES FOR ALL ELECTRIC RATE)
SCHEDULES, AND MAKE OTHER)
PROPOSED TARIFF CHANGES)
EFFECTIVE AUGUST 2, 2021)

AFFIDAVIT OF EMMETT R. ROMINE
ON BEHALF OF
PUBLIC SERVICE COMPANY OF COLORADO

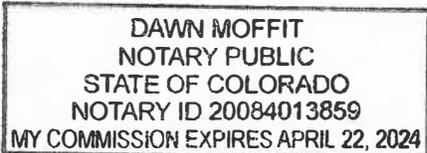
I, Emmett R. Romine, being duly sworn, state that the Direct Testimony and attachments were prepared by me or under my supervision, control, and direction; that the Direct Testimony and attachments are true and correct to the best of my information, knowledge and belief; and that I would give the same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

Dated at Denver, Colorado, this 13th day of July 2021.



Emmett R. Romine
Vice President Customer Solutions and Innovation

Subscribed and sworn to before me this 18th day of July 2021.





Notary Public

My Commission expires 4.22.2024