

I&M Exhibit: _____

INDIANA MICHIGAN POWER COMPANY

PRE-FILED VERIFIED DIRECT TESTIMONY

OF

JOE BRENNER

Cause No. 45933

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**DIRECT TESTIMONY OF JOE BRENNER
ON BEHALF OF
INDIANA MICHIGAN POWER COMPANY**

I. Introduction of Witness

1 **Q1. Please state your name and business address.**

2 My name is Joe Brenner and my business address is 1 Riverside Plaza,
3 Columbus, Ohio, 43215.

4 **Q2. By whom are you employed and in what capacity?**

5 I am employed by American Electric Power Service Corporation (AEPSC) as the
6 Vice President, Business Solutions.

7 **Q3. Briefly describe your educational background and professional
8 experience.**

9 I received a Bachelor of Science degree in Aerospace Engineering from the
10 University of Notre Dame, South Bend Indiana in 1990.

11 Before joining AEPSC, I spent three and a half years as Group Vice President,
12 Chief Information Officer at Sally Beauty, two years as Executive Vice President,
13 Chief Information Officer at Signet Jewelers, 11 years as Director and then Vice
14 President of Technology at Target Corporation, three years as Director of
15 Technology and Security at Best Buy, and 10 years serving as an Aviation
16 officer in the United States Army.

17 I have held my current leadership role since joining American Electric Power
18 Company, Inc. (AEP) in 2020. In this role, I am responsible for a wide range of
19 Technology and Security areas including business applications, infrastructure,
20 operations, support, digital transformation, and innovation for Indiana Michigan
21 Power Company (I&M or Company) and all other AEP Operating Companies.

1 **Q4. Have you previously testified before any regulatory commissions?**

2 Yes. I provided written testimony in Docket No. 54608 – Application of Electric
3 Transmission Texas, LLC for authority to change rates before the Public Utility
4 Commission of Texas.

II. Purpose of Testimony

5 **Q5. What is the purpose of your testimony in this proceeding?**

6 My testimony provides an overview of AEP's Technology and Security
7 organization and supports the forward-looking (2024) Test Year operations and
8 maintenance (O&M) expenses and capital expenditures in the Capital Forecast
9 Period (2023 and 2024) for Technology and Security projects. I also provide an
10 overview of the project costs, timeline, and project management processes
11 associated with three of the strategic technology investments in this case: Field
12 Mobility, the Customer Information System (CIS), and the Advanced Distribution
13 Management System (ADMS) and Distributed Energy Resource Management
14 System (DERMS).

15 I also support two Adjustments to the Test Year: RB/O&M-2 to increase
16 customer billing system costs to implement the PowerPay program, and
17 RB/O&M-3 to address increases IT capital and O&M over the amounts including
18 in the forecast used in this case.

19 **Q6. Are you sponsoring any workpapers?**

20 Yes. I support the following workpapers:

- 21 • WP-JB-1 – O&M
- 22 • WP-A-RB/O&M-2
- 23 • WP-A-RB/O&M-3

1 **Q7. Were the attachments or workpapers you sponsor prepared or assembled**
2 **by you or under your direction and supervision?**

3 Yes.

4 **Q8. Please summarize your testimony**

5 Technology is critical to I&M's operations, and I&M is making the investments
6 necessary to meet current and future operational needs and expectations. My
7 testimony summarizes the capital and O&M-related technology investments
8 identified by I&M to provide safe and reliable power to customers, better protect
9 customer's data from cybersecurity threats, meet our customer's evolving
10 expectations, and take advantage of new technologies to increase the efficiency
11 of our operations.

12 More specifically, my testimony describes and supports three significant IT
13 projects that will harness modern technology to improve I&M's operations and
14 customer service. The first project is I&M's Field Mobility program that will
15 provide the Company's distribution organization with a more connected,
16 proactive, and transparent system to perform their tasks. The second project
17 reflects modernizing I&M's CIS which is used to manage customer account and
18 premise information, including billing and metering. The legacy CIS is over 30
19 years old (albeit with additions over time); the new CIS will provide an integrated
20 platform with enhanced billing, messaging, and meter data management
21 capabilities while preserving and fortifying existing cybersecurity protections.
22 The third project I discuss is the ADMS and DERMS, which will unify I&M's
23 Outage Management and Distribution Management systems into a single
24 platform that will provide advanced functionality necessary to manage and
25 operate I&M's electric distribution grid.

III. Organization of Technology and Security

1 **Q9. How does the Company manage the Technology and Security functions of**
2 **its business?**

3 The Company works with AEPSC's Technology and Security organization to
4 manage the Technology and Security functions of the business. This approach
5 provides the Company with access to experts in the areas of technology
6 development; cyber security policies, trends, and technologies; technology
7 infrastructure and support; and forward-looking strategies regarding technology
8 trends. AEPSC Technology and Security leadership provides regular updates to
9 Company leadership reinforcing the partnership between technology
10 development and business unit implementation.

11 **Q10. What support does the AEPSC Technology and Security organization**
12 **provide to the Company?**

13 Business Solutions: responsible for maintaining collaborative relationships with
14 the operational business units leading to the development and/or
15 implementation of technology solutions to meet their needs.

16 Infrastructure, Operations, and Support: responsible for deploying and
17 maintaining stable and secure infrastructure allowing I&M's technology solutions
18 to be readily available and operational; for providing application, infrastructure,
19 and network monitoring and support; and for internal customer facing support
20 including PC deployment and support, service desk, and collaboration
21 technology services.

22 Planning & Governance: responsible for driving standard project, supplier,
23 training, and financial practices and ensuring standard technology architecture
24 and tools across the Technology and Security organization.

25 Security: responsible for providing integrated management and monitoring of
26 physical and cyber security.

1 **Q11. Are the services provided by Technology and Security necessary to**
 2 **provide reliable utility service?**

3 Yes. Technology and Security provides essential support for the systems that
 4 allow I&M to effectively serve customers and provide accurate customer billing,
 5 facilitate the coordination of outage response and repair, perform system
 6 operations, manage system construction and maintenance, maintain systems to
 7 detect and protect against cyber security threats, and account for its costs.

IV. Operation and Maintenance Expense

8 **Q12. Please provide the historical and Test Year levels for Technology and**
 9 **Security O&M costs.**

10 *Figure JB-1* provides the historical, Test Year, and Adjusted Test Year
 11 Technology and Security operations and maintenance O&M expense, by
 12 category:

Figure JB-1. Historical Test Year and Adjusted Test Year O&M in Millions

	2022	Test Year	Adjusted Test Year
Technology and Security O&M	\$21.27	\$21.92	\$27.97

13 **Q13. Are you proposing any adjustments to Technology and Security O&M**
 14 **expense in the 2024 Test Year?**

15 Yes. I support two Adjustments to the Test Year: RB/O&M-2, to increase
 16 customer billing system costs to implement the PowerPay program; and
 17 RB/O&M-3, to increase IT O&M.

1 **Q14. Please explain Adjustment RB/O&M-2.**

2 Adjustment RB/O&M-2 increases the Customer Billing System Costs by
3 \$650,000 to implement the PowerPay program. This program and its benefits
4 are further described and supported by Company witness Davis. The
5 adjustment includes modifications to AEP's Marketing Accounting and Customer
6 Services System (MACSS) that are required to facilitate the program's
7 transactions, along with the labor expense required to configure and deploy the
8 software updates. Of this \$650,000, \$520,000 will be a capital expense for the
9 upgrades themselves, and the remaining \$130,000 is slated for O&M and the
10 expenses required for implementation.

11 **Q15. Please explain Adjustment RB/O&M-3.**

12 Adjustment RB/O&M-3 is an increase in IT spend over the Test Year forecast for
13 O&M and capital by approximately \$7.41 million. Of the \$7.41 million, \$1.482
14 million is capital and the remaining \$5.928 million is O&M. This adjustment is
15 necessary to address aging technology and security infrastructure. In particular,
16 the O&M expenses reflect an increased focus on stability and security issues,
17 including a shift to cloud-based technologies. With this shift, I&M anticipates
18 increased expenses for subscription services versus historical capital
19 investments. While cloud technologies optimize overall capital and expense
20 efficiency in the long run, the short-term impact is an increase in O&M
21 expenses. Lastly, costs for software, hardware, and labor services related to
22 technology and security are showing significant year-over-year increases.
23 Adjustment RB/O&M-3 is reasonable and necessary to account for these
24 increases.

25 **Q16. Please explain the difference in Technology and Security O&M expenses**
26 **between 2022 and the Adjusted Test Year?**

27 The cost of providing Technology and Security services has grown and is
28 anticipated to grow in the future, corresponding to growth in the demand for

1 Technology and Security services, which are increasingly critical to all aspects
2 of operations. More specifically, ongoing drivers of the variance include
3 increasing demand for technology services to meet internal efficiency and
4 customer needs, the escalating external costs of software and hardware
5 products/services globally, the escalating cost of technology and security labor
6 in the general market (impacting both internal and external labor), and
7 investments made in support of maintaining stable, secure, and resilient
8 technology platforms. Technology and Security seeks to partially offset these
9 increases by using lower cost external labor partners at scale, rationalizing the
10 use of technology and security toolsets, conducting competitive bids for
11 technology where applicable, and automating processes where applicable.

12 **Q17. What is the Capital Forecast Period considered in this filing?**

13 The Capital Forecast Period is the period from January 1, 2023 through
14 December 31, 2024.

15 The investment outlined in this testimony relates to the work plans developed to
16 manage I&M's system. This level of capital is included in the Capital Forecast
17 presented by Company witness Sloan.

18 **Q18. What is the amount of capital forecasted for Technology and Security**
19 **during the Capital Forecast Period?**

20 *Figure JB-2* establishes that I&M has Technology and Security capital
21 expenditures during the Capital Forecast Period of approximately \$109.6 million.
22 This figure does not include the aforementioned adjustments listed above.

Figure JB-2. Technology and Security Capital Expenditures (\$000, excluding AFUDC)

<u>Category</u>	<u>2023</u>	<u>2024</u>	<u>Total</u>
Major Projects	\$41,310	\$57,411	\$98,720
Other Capital Investments	\$7,982	\$2,897	\$10,880
Total	\$49,292	\$60,308	\$109,600

1 **Q19. Please explain the variability of Capital Expenditures for 2023 to 2024.**

2 Unlike O&M that is more routine in nature, capital investments are dependent on
3 the needs and projects at a specific point in time. In 2024, the Company has
4 multiple large projects that are necessary to replace obsolete systems and take
5 advantage of new technologies. I discuss these large projects in greater detail
6 later in my testimony.

7 **Q20. Please summarize the type of capital expenditures forecasted for the**
8 **Technology and Security during the Capital Forecast Period.**

9 In the major projects category, I have included all Technology and Security
10 capital projects with capital expenditures exceeding \$5 million during the Capital
11 Forecast Period. I describe these in detail below.

12 The Other Capital Investment category includes capital expenditures associated
13 with multiple smaller projects. Each project is included in the Project Life File
14 (Capital Forecast by Project), included as WP-SAS-9 to Company witness
15 Sloan's testimony. These planned projects are reasonable and are
16 representative of typical projects in a typical year.

17 **Q21. Please identify the Technology and Security projects with capital**
18 **expenditures greater than \$5 million during the Capital Forecast Period.**

19 *Figure JB-3* shows Technology and Security projects that will involve capital
20 expenditures greater than \$5 million during the Capital Forecast Period. It
21 excludes capital expenditures greater than \$5 million during the Capital Forecast

1 Period that will be placed in service after the Test Year. These costs exclude
 2 AFUDC and present I&M's ownership share of the investment.

Figure JB-3. Technology Major Project Capital Expenditures (\$000, excluding AFUDC)

<u>Project Title</u>	<u>2023-2024</u>
1- IMPCo Capital Software	\$36,238
2- CIS Project	\$25,116
3- Security Blanket	\$17,322
4- ADMS & DERMS Implementation	\$8,362
5- HR Human Capital Management Modernization	\$6,403
6- Field Mobility Program	\$5,277

3 **Q22. Please summarize the projects identified in Figure JB-3.**

4 The following projects have been or will be placed in service during the Capital
 5 Forecast Period:

- 6 • *Project 1 – IMPCo Capital Software Development.* This project is
 7 comprised of blanket work orders used commonly for capital projects that
 8 are smaller in scope and cost, usually high-volume, and have the same
 9 depreciable life and plant accounting category. Blanket work orders are a
 10 standard property accounting and industry solution that efficiently govern
 11 and account for these ongoing capital items, such as maintenance and
 12 development of software applications. For example, it would be
 13 impractical to separately track and depreciate each instance of a
 14 programmer modifying a program.
- 15 • *Project 2 - CIS Project.* This project represents the next step in a multi-
 16 year initiative by AEP to improve customer interactions with the utility.

1 The CIS project will replace and modernize the system the Company
2 uses for billing, customer records, and to maintain all approved rates and
3 tariffs. The CIS project is discussed in greater detail later in my
4 testimony.

- 5 • *Project 3 – Security Blanket.* Similar to Project 1 above, this project is
6 comprised of blanket work orders for smaller projects to manage the
7 security of the Company’s systems.
- 8 • *Project 4 – ADMS and DERMS Implementation.* The Distribution Outage
9 Management System (OMS), Distribution Management System (DMS),
10 and Supervisory Control and Data Acquisition (SCADA) systems are
11 critical to real-time operations but are at end of life. Situational
12 awareness of the distribution grid requires an ADMS and a DERMS. The
13 ADMS program is discussed in greater detail later in my testimony; the
14 ADMS and DERMS project is also described by Company witness
15 Isaacson.
- 16 • *Project 5 – HR Human Capital Management Modernization.* I&M’s
17 current HR/Payroll system is over 20-years old and is costly to maintain.
18 This project will replace the existing system with a modern solution that
19 will support continuous business improvement, deliver customer-driven
20 self-service options, and provide real-time decision making and business
21 intelligence. The new HR/Payroll system will also allow for regular
22 application and security/technology updates.
- 23 • *Project 6 – Field Mobility Program.* The Field Mobility program will
24 provide distribution operations personnel across AEP with new
25 capabilities, mobile devices, and connectivity to improve operational
26 efficiency, reduce costs, and enhance both worker and customer safety.
27 The program will deploy new iPads using public cellular to eliminate the
28 need for mobile data computers. The Field Mobility project is discussed
29 in greater detail later in my testimony and benefits of this project are also
30 discussed by Company witness Isaacson.

V. Capital and O&M Cost Control

1 **Q23. How are the Technology and Security capital costs recorded and tracked?**

2 Capital charges are recorded by Technology and Security to work orders by
3 project. These work orders are set up to bill to appropriate benefiting locations
4 using allocation factors that reflect cost causation principles.

5 **Q24. What processes does the Company and AEPSC's Technology and**
6 **Security Organization have in place to ensure that the costs of these**
7 **projects are reasonable?**

8 Internal planning, budgeting, approval, and quality control processes combine to
9 control the costs of Technology and Security O&M. These same processes
10 equally apply to Technology and Security capital project costs. The proposal for
11 each project identifies the high-level requirements and goals for the project.
12 Project estimates are prepared after an analysis phase that includes
13 collaboration of business partners, system analysts, and application developers.
14 Estimates are reviewed and refined through a series of increasingly narrower
15 thresholds to the final approval. The estimates are reviewed by Technology and
16 Security management and approved on a weekly basis. In addition, each major
17 project is approved by management from Technology and Security
18 management, the Company, and the Business Unit depending on what
19 employees and processes are impacted by the project. Once a proposal is
20 approved, it is actively monitored to ensure that the requirements are met and
21 the project is within budget.

Budgeting Controls

22 **Q25. What type of budgeting process is employed with regard to Technology**
23 **and Security O&M?**

24 Budgets are developed annually for each organization by the Technology and
25 Security group. The current year budget is compared to actual spend on a

1 monthly basis and year-end projections are revised as appropriate. The budget
2 and forecast are created and updated by considering financial and business
3 requirements.

4 **Q26. Once budgets are in place, what further cost monitoring occurs?**

5 The Company is kept abreast of Technology and Security budgets and any
6 requested changes to the budgets throughout the course of the year. Within
7 Technology and Security, leaders at every level are responsible for monitoring
8 and controlling budgets that are assigned to their respective teams or projects.
9 Actual costs are monitored against project and program budgets on a regular
10 basis and any changes or deviations from the budget are discussed with the
11 appropriate level of leadership from the Technology and Security organization.
12 For major projects, project status discussions are held periodically with the
13 Technology and Security leadership team to discuss cost and schedule
14 performance, as well as any changes to the overall project plan.

VI. Field Mobility

15 **Q27. What is Field Mobility and why is it critical for the Company's operations?**

16 Field Mobility is a set of applications and hardware that I&M uses to
17 communicate, organize, and complete distribution work. Field Mobility includes
18 the processes and technology that distribution employees use to complete their
19 respective operational objectives and includes:

- 20 ■ Mobile computing
- 21 ■ Data connectivity in trucks
- 22 ■ Daily resource tracking
- 23 ■ Work packets to view AEP assets and work assignments.
- 24 ■ Resources for storm assistance

1 Examples of these objectives include anything from construction, restoration,
2 and additional workflows. These objectives are critical to daily workflow, as it
3 establishes the standards for efficiency and communication in a distribution
4 company's operating procedure.

5 **Q28. What are the solutions provided by a new Field Mobility system?**

6 The Company aims to deploy new technologies across the enterprise, offering
7 crews more convenient and practical ways to complete their daily tasks. The
8 new system aims to put all these benefits together into one cohesive package.
9 This package will deliver an improved employee experience and an enhanced
10 customer focused solution.

11 To deliver on this, the Company is using its existing software vendor, ARCOS,
12 to expand I&M's on-field potential. The Company will make use of key software
13 applications (called Crew Manager, Resource Assist, and Mobile Workbench),
14 through an enhanced communication network. Benefits include enhanced
15 capabilities regarding the digitization of work, assessment improvements, and
16 enhancements to Damage Outside Party (DOP) forms.

17 **Q29. How will these new systems impact I&M current work management
18 processes?**

19 Crew Manager is a tool that allows for the creation of crew profiles, including
20 employees and the tools and vehicles they have access to. Additionally, it
21 outlines the area of duty of which these crews and materials are located,
22 offering greater visibility to the work groups that manage them. In storm
23 situations, it will also allow for a transfer of responsibility. For example, if I&M
24 experiences a large weather event, Crew Manager can be used to reassign an
25 Ohio crew to the Indiana area. This will then offer work schedulers in Indiana
26 the ability to manage that crew's specific responsibility. Additionally, this
27 benefits the Distribution Dispatch Centers as it will dynamically allow for
28 dispatch to assign crews work orders outside of their home jurisdiction.

1 Resource Assist is an application that allows the Company to procure
2 assistance from off-system work groups more effectively. The Company uses
3 this as a callout of sorts, which attempts to obtain support from contract groups
4 and other electric utilities across the nation. Once those resources answer and
5 move themselves to Indiana, dispatch and work schedulers can access their
6 workflow just as if they were an on-system employee.

7 Mobile Workbench is a solution that allows for more efficient daily operations, as
8 documentation such as work orders, construction packets, and DOP reports are
9 all presented, submitted, and processed in an electronic fashion. This not only
10 removes lag-time but offers a degree of additional visibility and enhanced
11 resource utilization. Obtaining these enhancements can reduce outage
12 durations, improve the Company's capture rate for DOP dollars, and increase
13 capital deployment, ultimately reducing O&M. The Company will also use
14 Mobile Workbench to visually overlay various pieces of information on GIS
15 maps. This will allow crews to see each other on a map and easily
16 communicate outage areas, pictures of damage, and other important restoration
17 details.

18 In order to run all these applications, there must also be improvements to the
19 communication infrastructure. The current Field Mobility system is field-
20 connected through an 800mhz radio system. Public cellular networks are
21 exponentially faster than what the radio infrastructure can offer, ensuring that
22 these advanced applications can be used practically in the field when away from
23 a wired connection. With the throughput of public cellular networks, field
24 employees will be able to instantly send data such as pictures and video
25 whenever there is a demand. Moving from mobile computers to iPads will allow
26 crews to remain connected while walking around the worksite. Each of these
27 aspects supports real-time data transfer that enables the high-bandwidth and
28 common visibility of customer restoration information.

1 **Q30. How was the vendor selected for the Field Mobility System?**

2 When the Company started its search for the new Field Mobility host, a
3 measurable part of that review was factored upon I&M's relationship between in-
4 service software and current communications infrastructure.

5 ARCOS as a software suite has been used at AEP starting with crew callout 12
6 years ago. Since that time, AEP has evolved to using ARCOS for various other
7 tasks like schedule making and crew roster management. Throughout the past
8 12 years, ARCOS had proven to be a reliable resource that aided in managing
9 efficient field processes. Crew callout has become such an integral part of
10 current field mobility processes, so AEP finds value in continuing to work with
11 ARCOS to further expand company field management abilities. Another key
12 benefit to having this software suite host the Field Mobility upgrades, is the
13 relative usability and efficiencies from using one consistent source. Having too
14 many places to enter and view information can be a detriment to the Company's
15 productivity and efficiency. Keeping this solution in one familiar space will
16 encourage a more streamlined implementation and allows for the Company to
17 bring this solution to market faster.

18 **Q31. What is the estimated cost for the Field Mobility improvement applicable to**
19 **I&M customers?**

20 The Company's allocated capital expenditures for the Field Mobility rollout totals
21 approximately \$5.277 Million, all of which is included in 2023.

Figure JB-4. Field Mobility Capital and O&M Costs (excluding AFUDC)

2023-2024 I&M CapEx	2024 I&M O&M Costs
\$5.3M	\$0.00M

1 **Q32. What processes does Technology and Security have in place to ensure**
2 **that the Field Mobility costs are reasonable?**

3 The Company will work closely with the AEPSC team responsible for
4 implementing the AEP wide implementation of the Field Mobility solution to
5 monitor the costs and timeline of the project. Further enforcing this concern is
6 constant oversight from the Technology and Security leadership team and
7 project sponsors. A scope change, if proposed, will also be vetted by project
8 sponsors to ensure that the Field Mobility program remains on track.

9 **Q33. Please describe the I&M timeline for the new Field Mobility**
10 **Implementation.**

11 I&M is using a two-phase approach with a final, total project completion date set
12 for the end of 2023. The first phase of the project started in Q1 of 2022 when
13 crews started to get their hands on the new Field Mobility software applications.
14 For distribution field employees, they have started to employ the use of Crew
15 Manager, Resource Assist, and Mobile Workbench in order to perform their daily
16 job duties. Additionally, these same crews will receive the ability to have
17 enhanced capabilities for equipment assessment, reports for DOP, and digital
18 work packet publication. The second phase of this process will focus on full-
19 scale deployments of all the new Field Mobility software and work processes.
20 Once all the processes are complete and use of the Field Mobility software suite
21 is saturated, this will allow the Company to phase out the old products. Overall,
22 a full distribution level implementation is set for a Q4 2023 rollout, wherein all
23 Field Mobility software rollouts are completed.

VII. Customer Information System (CIS) System

1 **Q34. What do you mean when you use the term “Customer Information System”**
2 **and what does it do?**

3 A Customer Information System is a technology platform and central repository
4 for all customer information. It manages the billing, accounts receivable, and
5 rates for the Company. In addition, it links the consumption and metering
6 process to third-party service providers, payment options for customers,
7 collection activities, and other downstream processes.

8 A CIS manages customer premises information to provide a holistic view of the
9 customer, and enables customer capabilities, such as complex billing and
10 behind the meter assets, as the industry and grid continue to evolve. In
11 addition, as customers may have various devices at their premises, such as
12 solar panels or plug-in vehicle chargers, modern CIS systems provide the
13 capabilities to manage these devices on the customer’s account and offer
14 flexibility in how customer programs and tariffs are supported.

15 **Q35. What is the status of the Company’s current CIS System?**

16 AEP currently uses a “Customer-One” legacy CIS system that supports billing,
17 revenue reporting, account and receivables management, online transactions,
18 customer, and premises data management. AEP utilizes one system across all
19 seven distribution operating companies. The technology is over 30 years old
20 and, over the course of that time, prudent investments in auxiliary systems and
21 integrations have been made to improve functionality or increase capabilities.
22 Some of these auxiliary systems include large power billing, Advanced Metering
23 Infrastructure (AMI) meter data management, bill output, and customer
24 programs, to name a few.

1 **Q36. Can the existing CIS System effectively fulfill evolving customer needs**
2 **going forward?**

3 No. To extend the useful life of the current CIS, the Company has made prudent
4 investments in peripheral systems to support new functionality, including smart
5 meters. However, CIS limitations to what can be billed and the speed at which
6 new tariffs can be implemented are barriers to meeting customer and regulator
7 expectations in an evolving grid with more complex pricing signals.

8 AEP's legacy CIS was designed for a time when utilities sent one bill per billing
9 cycle to the customer; only the largest of customers had a generation resource
10 or interval metered usage data; and complex tariffs leveraging that interval data
11 for variable time rates were limited to manually billed industrial customers.

12 Today, I&M customers can have a generation resource on their property or have
13 more granular usage interval data from a smart meter, which can allow for new
14 tariffs to be offered. However, with the Company's current legacy CIS, the time
15 that is required to implement a new tariff or customer program can vary
16 depending on the complexity of a new program or tariff rate design. The more
17 complex the tariff or program, the more coding and development that is
18 required.

19 In addition, AEP's current CIS cannot process interval usage data. Currently, it
20 must be processed outside the system to calculate billing determinants. Efforts
21 like this must be performed manually through spreadsheets or other analytics
22 tools, leading to a more inefficient process

23 Although investments have been made to improve the current system, the
24 Company recognizes the need to move forward with planning a CIS
25 replacement due to the continued proliferation of distributed generation,
26 advancing AMI functionality needs, evolving customer expectations, more
27 complex pricing signals, and growing risks related to an antiquated technology
28 platform.

1 **Q37. Does the Company's current CIS provide a safe and reliable avenue for**
2 **customer billing?**

3 The Company's CIS platform has always been and will continue to be a safe
4 platform to process customer data, information, and payments. This is a
5 standard that will remain unchanged through the implementation of a new CIS.
6 Additionally, once the new CIS is in place, the same expectation of a safe and
7 accurate platform will continue to be upheld. The foundational issue here is that
8 given the recent changes in the advancement of interval data, new customer
9 programs and tariffs, and the expected increase in distributed energy resources,
10 now is the appropriate time for the Company to implement a new, modernized
11 CIS that will position the Company to efficiently meet the expectations of its
12 customers and the Commission in the years to come.

13 **Q38. How will a modern CIS improve from AEP's current CIS?**

14 At the core of transformation between the Company's CIS and modern CIS
15 systems is the underlying data structure. The Company's legacy CIS system
16 data structure is built around a customer's premises and a rate that is applied to
17 create a bill for that site using non-interval data. Modern CIS system data
18 structures are based upon the customer participation in programs, the devices
19 installed at their home or business, and how the customers use the grid. While
20 the Company's current systems may have databases used to bill the customer,
21 a database for customer programs like alerts, and a database for interval data, a
22 modern CIS system would utilize one common database that minimizes
23 integrations between systems. In addition, unlike the Company's current CIS
24 system where rate changes are hard coded, modern CIS systems are more
25 configurable, shortening the timeframe and cost associated with implementing
26 new customer programs.

1 **Q39. Are there other IT technologies that would need to be updated related to**
2 **the CIS System?**

3 Yes. The Company expects that the Special Billing and Messaging System,
4 primary billing system including MACSS, AMI Integrations with meter systems,
5 and the MV90 integrations should be replaced. All of these are within the scope
6 of this project and core to meter-to-cash processing. In addition, there are
7 integrations with over 150 edge systems that will be updated, such as customer
8 web account access, customer usage portals and payment processing vendors.

9 **Q40. Which potential vendors have been engaged for the CIS system**
10 **replacement?**

11 There are two vendors that currently provide CIS software for multijurisdictional
12 Tier 1 utilities such as AEP: Oracle and Systems Applications and Products
13 (SAP). Given that AEP already uses Oracle software for the Customer
14 Relationship Management System (CRM), meter data management system, and
15 the HR/financial systems (PeopleSoft), it made sense to engage Oracle as AEP
16 would not have to replace a full suite of ancillary software to integrate the new
17 CIS.

18 **Q41. What is the Company's overall plan to replace the current CIS?**

19 To manage risk associated with this enterprise-wide project, the Company plans
20 to deliver some functionality early prior to a full deployment. Automation of
21 manually intensive industrial customer spreadsheet billing onto the new
22 technology platform is a valuable initiative, delivering new capabilities
23 earlier. These large industrial accounts have complex billing structures that the
24 current CIS cannot calculate, so processing is currently done outside of the
25 system manually. In addition to this delivered automation, the team will finalize
26 plans around Meter Data Management system needs related to the new CIS, as
27 well as overall architecture planning for the program. Merging these two values

1 together will deliver value earlier and inform the overall deployment plan as a
2 means forward to a successful CIS implementation.

3 **Q42. Are there risks associated with replacing a CIS?**

4 Yes. However, the phased approach the Company is taking mitigates risks by
5 proving out the usability of the technology prior to deploying it to the first
6 operating company to understand common and unique requirements.

7 AEP has also deployed an industry best-practice in utilizing a third-party quality
8 assurance / quality control consultant (QA/QC) for the program. A QA/QC
9 consultant's role is to provide unbiased review of program processes and
10 procedures to assure risks are mitigated and reports directly to the program
11 leadership team monthly. AEP's approach also uses a third-party system
12 integrator that specializes in large scale CIS implementations, providing an
13 additional level of expertise the Company can leverage.

14 **Q43. What is the estimated cost and timeline for the CIS improvement
15 applicable to I&M customers?**

16 The current capital cost estimate for I&M's share of a new CIS and market
17 supporting tools is approximately \$132 million. These costs are based on the
18 best information available at the time my testimony was prepared. There are
19 multiple components to this complex project that are at various stages of project
20 scoping and cost estimation. The team managing this project is using project
21 management best practices to progressively elaborate the project scope and
22 refine the cost estimates as final contract negotiations and phase gate approvals
23 are completed. Since these are estimates, actual costs will vary from the
24 current total and complete projected rollout estimates, however these costs are
25 representative of the costs the Company expects for the project and provide the
26 Commission a reasonable basis to evaluate the CIS project. All actual costs will
27 be audited and will be presented in future filings for commission review and
28 approval. Regarding an applicable upgrade to I&M's customers in Indiana, we

1 will be implementing a specialized billing automation process for commercial
 2 and industrial customers. This new platform will provide for improvements on
 3 what was formally a manually intensive process outside of our current billing
 4 system, to turn into a centralized, automated, and more efficient process. This
 5 new billing process will have a near immediate benefit on I&M customers as this
 6 portion of the project is set to go live in September of 2023. Lastly, this CIS
 7 implementation is one that will be an improvement across the entirety of the
 8 AEP enterprise. Included, to visualize the impact of I&M's portion of the project
 9 versus the rest of AEP's footprint, is a listing regarding the total cost to AEP as a
 10 whole. A breakdown of the estimated capital and O&M costs of deployment is in
 11 Figure JB-5 below.

Figure JB-5. CIS Capital and O&M Costs (excluding AFUDC)

2023-2024 I&M CapEx	Forecasted I&M CapEx	Total Forecasted Enterprise CapEx
\$25.1M	\$131.7M	\$1,028.1M
2022 I&M O&M Costs		2024 I&M O&M Costs
\$0.00M		\$0.6M

12 **Q44. How were the projected Capital and O&M expenses for the Company**
 13 **developed?**

14 The cost estimates were developed by evaluating existing functionality and
 15 capabilities for AEP's operating environment and identifying required
 16 integrations with edge systems that interface with CIS. Taking those capability
 17 and integration requirements and applying average expected resource needs to
 18 convert customers to the new systems and integrate with AEP systems, and
 19 based upon prior experiences with similar sized utilities, AEP was able to derive
 20 an initial planning estimate. As the project continues the progress through the
 21 project management phases for project scoping, contracting, schedule
 22 development, and resource identification, the project cost estimate is further
 23 refined. In order to develop an estimated designation of the total estimated

1 costs between capital expenditures and O&M costs, the Company, along with a
2 trusted systems integrator, evaluated various potential contractual structures
3 that may be used to acquire the vendor supported CIS system in context of the
4 relevant generally accepted accounting principles in the United States (U.S.
5 GAAP), as well the Company's accounting policies for their application.

6 **Q45. Is the Company proposing to recover any of the cost of the CIS**
7 **replacement in this proceeding?**

8 As discussed further by Company witness Seger-Lawson, and as proposed in
9 these proceedings, actual capital expenditures included in the test year would
10 be recovered through base rates. Additionally, as described further by
11 Company witnesses Ross and Seger-Lawson, the Company is also requesting
12 deferral authority of post-test year costs incurred related to CIS deployment.

13 **Q46. What processes does Technology and Security have in place to ensure**
14 **that the CIS costs are reasonable?**

15 A formal process has been implemented with Key Performance Indicator metrics
16 that are tracked as a part of the project. This includes monthly financial
17 checkpoints with the project team and reports to senior leadership. Any
18 substantive changes to scope, deliverables, and costs, are scrutinized and
19 approved by project leadership.

20 The Key Performance Indicators include indexes for the following:

- 21 • Cost performance
- 22 • Schedule performance
- 23 • Risk/issues
- 24 • Quality of solution
- 25 • Resource turnover
- 26 • SOW scope changes

- 1 • Potentially shippable products
- 2 • Training
- 3 • End user adoption

VIII. ADMS and DERMS

4 **Q47. What are I&M's current distribution operations system platforms?**

5 I&M currently uses an Outage Management System (OMS) and Distribution
6 Management System (DMS or SCADA) to manage and operate the electric
7 distribution grid.

8 **Q48. How does I&M utilize OMS?**

9 OMS is a software engine used to identify and locate outages within the electric
10 distribution network and manage the restoration process. It is critical in helping
11 I&M identify and locate outages in its service territory where real-time
12 telemetry/SCADA communication is not deployed.

13 **Q49. How does I&M utilize DMS?**

14 DMS is used for real-time monitoring and control of Distribution SCADA-
15 connected equipment located in the field. This includes monitoring and control
16 of isolation equipment (breakers, reclosers), voltage control equipment (voltage
17 regulators), reactive control (capacitors), and enabling/disabling and making
18 other adjustments to third-party Distribution Automation Circuit Reconfiguration
19 (DACR) and Volt-Var Optimization (VVO) control systems deployed during grid
20 modernization efforts.

21 **Q50. What is ADMS and DERMS and what are their benefits?**

22 ADMS is a modular software platform that is used to visualize, manage, and

1 optimize a complex electric distribution network. It offers fully integrated OMS
2 and DMS capabilities that are utilized through one network model and one user
3 interface.

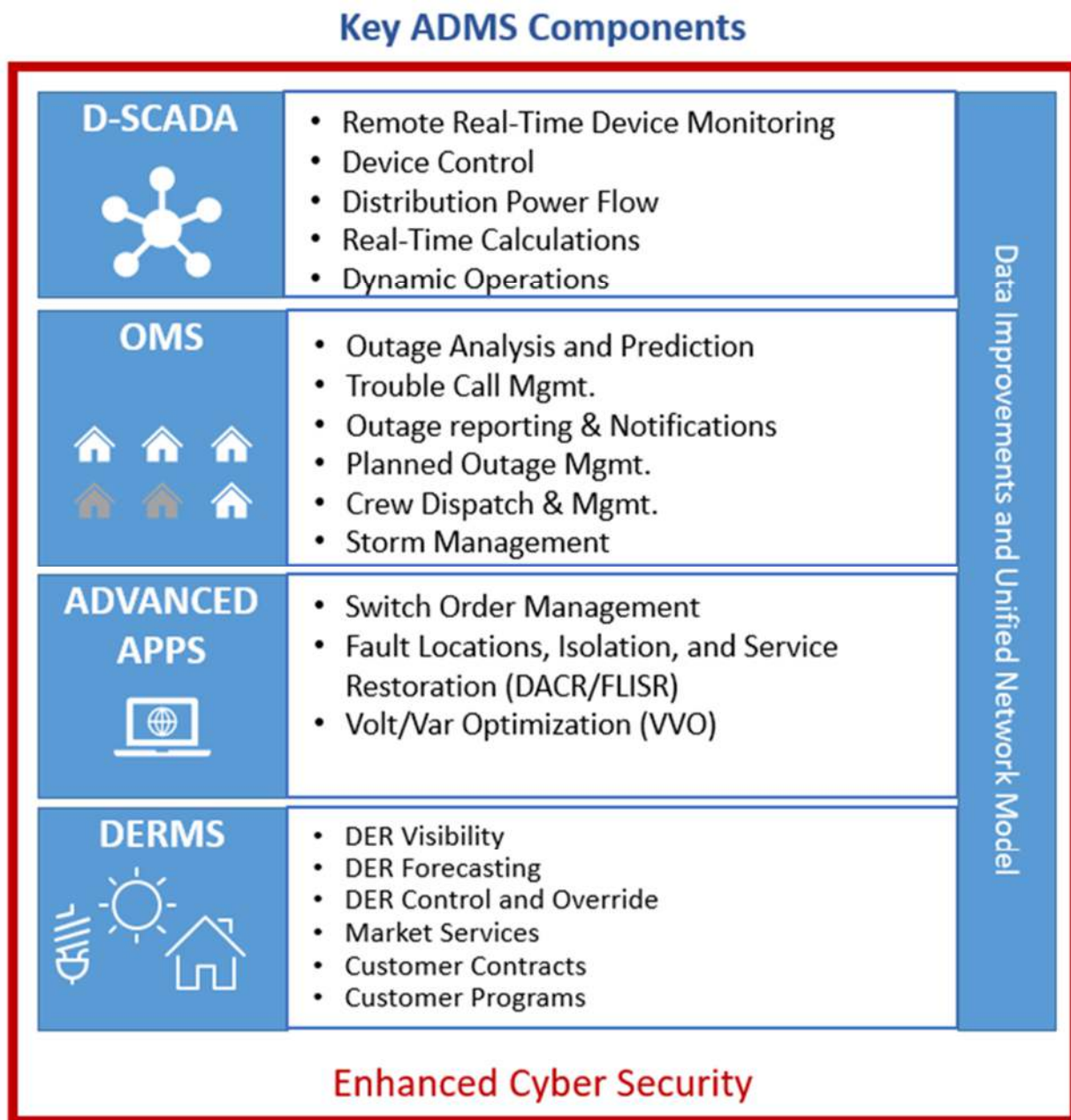
4 The ADMS also offers fully integrated operational DERMS capabilities that will
5 be used to manage the complexities associated with Distributed Energy
6 Resources (DERs). DERMS capabilities include, but are not limited to:

- 7 • Administration: Establish DER records and maintain data on
8 customer/location, nameplate, initial device settings, metering
9 configuration, market/customer program status, interconnection
10 application records and status
- 11 • Visualization: Visualization of DERs in the ADMS network model and
12 aggregation simplification; and
- 13 • Operations: DER integration with load flow/power analysis studies and
14 advanced applications, operational forecasting, override capability,
15 flexible and secure data exchanges and architecture.

16 Company witness Isaacson discusses the operational benefits of ADMS and
17 DERMS.

18 See *Figure JB-6* for a visual of ADMS's key components.

Figure JB-6.



1 **Q51. Has the Company identified a need to upgrade its existing systems to**
 2 **manage and operate an increasingly complex distribution network?**
 3 Yes. First and foremost, the Company’s current OMS vendor has indicated its
 4 OMS platform is nearing end of life and began to sunset the application in 2022

1 as it transitions existing and new OMS capabilities to its new ADMS platform
2 over the coming years. During that time, upgrades and enhancements to the
3 current OMS product will be very limited, with changes focused on critical
4 patching required to keep the system functioning properly.

5 Additionally, the current OMS and DMS platforms lack a unified network model.
6 A unified model with integrated power flow capabilities is essential for the
7 advanced functionality/capabilities and increased situational awareness that will
8 be necessary to manage and operate the increasingly complex grid going
9 forward.

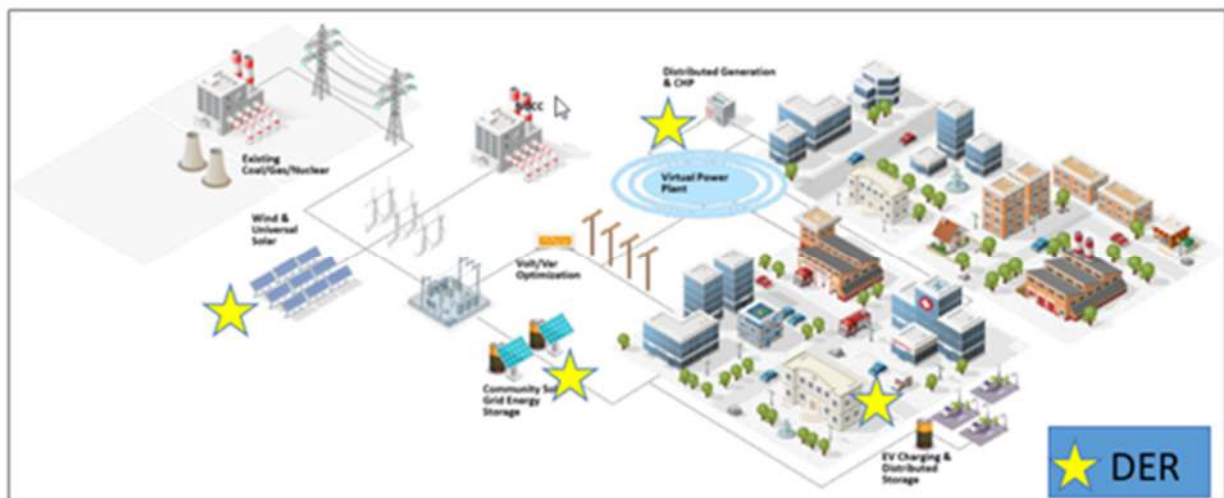
10 **Q52. Please describe the foundational capabilities that will be needed to**
11 **manage and operate the grid of the future.**

12 As demonstrated in *Figure JB-7* and below, there are numerous capabilities
13 required to address evolving needs on the Company's electric distribution
14 network that are currently not fully supported by the Company's OMS and DMS
15 systems:

16 The Distribution network of the future will require advanced technology to
17 manage the growing scale (control points) and complexity (DERs).

- 18 • DERs are creating multisource power flows on the electric distribution
19 network that was designed to operate with one source, in one direction.
- 20 • The electric distribution network will become a critical part of the overall
21 generation/load balancing equation. DER generation will need to be
22 moved appropriately to maintain the overall balance between generation
23 and customer loads across transmission and distribution.

Figure JB-7.



1 **Additional Requirements**

2 Foundational capabilities necessary to operate an integrated grid of the future:

- 3 • ADMS solution fully integrated with operational DERMS
- 4 • A single distribution network model with robust power flow analysis
- 5 • Full integration of DER into network model, including operational
- 6 forecasting
- 7 • Dynamic DACR and VVO grid controls
- 8 • Hardened Distribution Real Time OT Infrastructure and operating
- 9 environments with robust cyber, physical, and access controls
- 10 • Real-time data exchanges across G, T & D control platforms
- 11 • Highly secure data exchanges for enhanced situational awareness

12 **Q53. Without the proposed upgrade to ADMS, will I&M be able to provide**

13 **customers with the level of service expected in the future?**

14 No. While the current OMS/DMS systems have been adequate for managing

15 and operating the grid so far, the complexity of grid operations is quickly rising to

1 a level that will be difficult to manage without greater situational awareness and
2 dynamic control capabilities. Without ADMS, operators will be required to
3 manually perform complex studies and investigations, which will result in slower
4 response times, and result in a negative customer experience and longer
5 outages.

6 **Q54. Please summarize the benefits associated with the Company's proposed**
7 **ADMS upgrade.**

8 A unified network model, single user interface, centralized, dynamic DACR,
9 VVO, fault location capabilities, and overall real-time grid awareness are
10 expected to result in a positive impact to the outage lifecycle and achieve
11 greater utilization of existing DACR/VVO investments. Additionally, the DERMS
12 module in ADMS will enable and support the widespread customer use of DERs
13 and electric vehicles while minimizing impact to the operation of the electric
14 distribution network. This will allow AEP to better manage the impact from these
15 technologies.

16 Together, the capabilities of ADMS are expected to equip operators with the
17 tools required to operate the complex distribution network of the future safely
18 and effectively, while allowing customers to continue to utilize DERs, electric
19 vehicles, and other grid-connected technologies.

ADMS Platform Evaluation

20 **Q55. Please describe the procurement process AEP undertook to select an**
21 **ADMS vendor.**

22 An ADMS evaluation effort was kicked off in early 2021 with a Request for
23 Information (RFI), administered by AEP Procurement and a leading industry
24 consultant. The RFI was sent to six of the industry-leading ADMS vendors. RFI
25 responses were analyzed, and AEP selected the top three vendor products to
26 advance in the Request for Proposal process.

1 **Q56. What were the results of the Company's evaluation?**

2 AEP used its internal Procurement and IT organizations, along with a third-party
3 consultant to administer a comprehensive, formal RFP process that included
4 multiple leading ADMS vendors. While all the vendors evaluated had desirable
5 capabilities, AEP selected a vendor that offered a solution that best meets its
6 collective needs regarding system architecture, scalability, usability, advanced
7 functionality/capability, and future product roadmap.

8 Along with technical and strategic considerations, costs were evaluated against
9 the costs of similar size and scope ADMS deployments at North American
10 utilities and were deemed comparable to those costs of ADMS deployments for
11 similarly sized companies.

12 **Q57. Please describe the I&M implementation and timeline for ADMS.**

13 AEP executed a contract and statement of work with the selected vendor and
14 system integrator in September 2022 for an enterprise-wide ADMS solution.
15 Immediately following, AEP kicked off the project, and began the
16 implementation/build with the vendor and a system integrator, establishing
17 project and resource plans, and making decisions related to system
18 architecture, graphic/displays, SCADA, etc. The implementation and build
19 phase is expected to conclude at the end of 2024 including production
20 readiness. Once the core ADMS software is deployed to production, the teams
21 will continue to setup and deploy the dynamic circuit reconfiguration and volt/var
22 capabilities offered in ADMS. The deployment schedule for those capabilities
23 will be determined at a later date.

24 **Q58. As new technology is incorporated into I&M's grid, can ADMS advance
25 with the technology?**

26 Yes. The ADMS platform is modular in nature, allowing AEP and I&M to add
27 additional capabilities as technology, complexity, and customer needs continue
28 to evolve in the utility industry.

1 **Q59. What additional work is needed in support of the ADMS implementation?**

2 In support of the ADMS software implementation and included in the ADMS
 3 program, AEP and I&M will also work to improve source data and cyber security.
 4 Some examples of source data improvements needed to support the unified
 5 network model in ADMS include addressing data inaccuracies, missing data,
 6 and digitization of workflows. AEP will establish a Distribution System Network,
 7 which consists of cyber security hardware and software, which will ensure the
 8 ADMS has the proper isolation, access control and data exchanges in place.

ADMS and DERMS Project Cost

9 **Q60. What is the project cost for the ADMS and DERMS?**

10 Estimated expenditures for capital costs and ongoing O&M for the I&M portion
 11 of the enterprise ADMS implementation are shown in *Figure JB-8* below. The
 12 capital costs include software licensing, implementation costs, source data and
 13 cyber security improvements. O&M costs include ongoing vendor software
 14 support, other IT support costs, and internal costs.

Figure JB-8. ADMS Capital and O&M Costs (excluding AFUDC)

2023-2024 I&M CapEx	Forecasted I&M CapEx Total	Forecasted Enterprise CapEx
\$8.4M	\$11.2M	\$102.4M
2022 I&M O&M Costs		2024 I&M O&M Costs
\$0.06M		\$0.4M

15 **Q61. What steps has the Company taken to minimize the costs of the ADMS**
 16 **deployment?**

17 I&M, through AEP, has applied for applicable federal grant opportunities. As
 18 further supported by Company witness Osterholt, AEP is seeking over \$27
 19 million in United States Department of Energy funding in order to support the

1 deployment of ADMS and DERMS. If awarded, I&M would receive a portion of
2 that funding. Company witness Seger-Lawson supports the Company's
3 proposal for rate treatment for federal or state grants.

4 **Q62. What processes does Technology and Security have in place to ensure**
5 **that the ADMS costs are reasonable?**

6 The Technology and Security organization will use a similar project
7 management and monitoring approach as previously described for the Field
8 Mobility and CIS projects. The project team will provide monthly updates on
9 project costs and schedule. Any significant changes from the plan will require
10 the approval of the Project Sponsors and the Technology and Security
11 leadership team. Additionally, the Project Team will provide periodic updates to
12 the Company regarding the cost and implementation timelines specific to I&M.
13 Combining the competitive procurement process to select the vendor and the
14 project management practices that will be used to control the project costs, the
15 Company is confident the costs to complete the project are reasonable and
16 necessary to obtain the technology needed to effectively manage the grid of the
17 future.

18 **Q63. Does this conclude your pre-filed verified testimony?**

19 Yes.

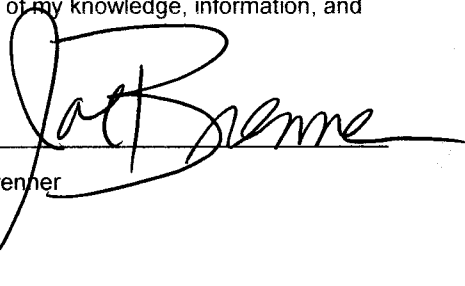
VERIFICATION

I, Joe Brenner, Vice President of Applications and Business Solutions of American Electric Power Service Corporation, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information, and belief.

Date:

Aug 8 2023

Joe Brenner

A handwritten signature in black ink, appearing to read "Joe Brenner", written over a horizontal line. The signature is stylized and cursive.