BEFORE THE

PUBLIC UTILITIES COMMISSION OF OHIO

THE DAYTON POWER AND LIGHT COMPANY

CASE NO. 18-1875-EL-GRD
18-1876-EL-WVR
18-1877-EL-AAM

Distribution Modernization Plan

DIRECT TESTIMONY OF ANTONIO NARVAEZ

- □ MANAGEMENT POLICIES, PRACTICES, AND ORGANIZATION
- □ OPERATING INCOME
- □ RATE BASE
- □ ALLOCATIONS
- □ RATE OF RETURN
- □ RATES AND TARIFFS
- ■ OTHER

ON BEHALF OF
THE DAYTON POWER AND LIGHT COMPANY

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I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Antonio Narvaez. My business address is One Monument Circle, Indianapolis, IN, 26204.

Q. What is your position and professional relationship with The Dayton Power and Light Company ("DP&L" or "Company")?

A. I am the Chief Information Officer ("CIO") for the AES United States Strategic Business Unit, and in that capacity, I oversee the Information Technology ("IT") requirements DP&L.

Q. How long have you been in your present position?

A. I have been in my present position since May 2018.

Q. What are your responsibilities in your current position and to whom do you report?

A. I Lead the Digital Transformation and Information Technology, providing in these matters direction and support to the company. Digital and Technology disciplines include but are not limited to: Infrastructure / Cloud Computing, Networking and Telecommunication, Application Management, Analytics, Artificial Intelligence, Machine Learning, Collaboration Platform and User Support. This position report to the Global AES Chief Information and Digital Officer ("CIDO") and matrix report to the AES US SBU President and DP&L COO.

Q. Will you describe briefly your education and business background?

A. I have a bachelor degree in Administration with emphasis in Information technology and Master Business Administration (MBA) degree in Strategic Management in Information Technology. I have over 30 years of international experience in the electrical sector (generation and distribution) in Latin America (Venezuela, Colombia and Brazil) and US, leading Business and Information technology Programs and among these programs several CIS implementation projects.

Q. What are the purposes of this testimony?

A. The primary purpose of this testimony is to describe the Customer Information System ("CIS") that the Company plans to deploy as part of the Distribution Modernization Plan ("DMP" or "Plan"). I will explain the reasons that DP&L needs a new CIS, the customer benefits the CIS will enable through integration with other distribution modernization systems, and how the CIS is a foundational component of the DMP. In particular, I will describe how a new CIS will drive a customer-centric transformation that will provide the foundation for new services and an expanded set of offerings to our customers. This testimony further describes the Company's approach to System Integration ("SI") and System Testing, which are foundational for full implementation of the CIS.

Q. What do you mean when you use the term "customer information system" or "CIS"?

A. The CIS is a core application fundamental to the utility meter to cash process that delivers comprehensive customer information and streamlined transactions, as well as

multi-channeled engagement between DP&L and its customers. The feature set of a CIS includes:

- Key systems that support processes such as metering, billing, credit and collections, service orders, and revenue reporting;
- Advanced billing and complex rate structures; and
- Applications for data analytics, which will provide analysis of data for decision making.

The proposed CIS will integrate with other critical operational systems that either currently exist or that the Company plans to upgrade as part of the DMP. Some of these systems include the Customer Relationship Management ("CRM") system, Advanced Distribution Management System ("ADMS"), Advanced Metering Infrastructure ("AMI"), Meter Data Management System ("MDMS"), Outage Management System ("OMS"), customer web portal, and mobile applications. DP&L's plans to install those other systems are described by Witnesses Gebele, Storm, and Tatham.

Q. Which workpapers are you supporting?

A. I am supporting the following workpapers:

WP_1.3 – Customer Information System (CIS) Replacement

WP_7.3 – Systems Integration (SI) Capital Costs

WP_7.4 – Systems Testing Capital Costs

II. THE NECESSITY OF A NEW CIS

Q. Please describe the Company's existing billing system.

A. The Company deployed the existing customer billing system approximately 22 years ago. The teams supporting, managing, and operating that aging, complex and fragmented billing system have worked diligently to derive as much value as possible from it through a series of enhancements, customizations, and adaptations over the course of two decades. For the most part, this approach has provided the required functionality. However, the current billing system is built on a platform that cannot accommodate the incremental volume and complexity of customer interactions that a modern distribution grid requires. The existing billing system was designed, built, and deployed using technology comprised of mainframe computers and relational database technologies. The underlying computer code was written in the COBOL language. Business logic was custom-programmed using Customer/1 concepts, Install/1 architecture, and the Design/1 toolset and there is no source code to change or update them. Because of the advanced age of the current billing system, the Install/1 and Design/1 vendor has ended its support for these underlying technologies, and the limited services that are available come at increasingly higher costs and operational risks. The current billing system is unable to offer an expanded set of rate structures and customer-centric programs absent manual intervention or additional programming. Any type of complex billing currently offered by the Company requires manual tracking and system work-arounds that are inefficient and susceptible to human error. As a result, the Company is not able to cost-effectively scale these manual processes.

Q. Can the existing billing system satisfy evolving customer needs?

A. No. The existing billing system cannot adapt to the unprecedented pace of technology changes nor meet the evolving needs of our customers. More comprehensive and cost-effective CIS applications are now available in the market. These applications are designed for the "digital age" to serve as the fully-functional and centralized repository for all customer interactions.

Q. Does DP&L propose to replace the existing billing system?

A. Yes. A new CIS, built utilizing advanced technologies, will serve as a modern foundational Information Technology ("IT") layer that will allow DP&L to fully realize the benefits and features of other related grid modernization and business IT computer applications. Further, a new CIS will position DP&L to respond more quickly and cost effectively to evolving business requirements and customer expectations over the next 20 years. Changing the existing billing system to try to provide newer capabilities is very expensive, creates more complexity for support, and is not always feasible.

Q. Can you describe the different IT/OT features that will be required to realize the benefits of the DMP?

A. Listed below are a set of IT/OT features and integrations that will be required to fully enable the DMP:

i. Enable TOU billing;

ii. Enable Prepay billing;

iii. Changes and integration with existing Mobile Order Management ("MOM") system prior to Workforce Management System ("WFMS") integration;

iv. Integration with a Meter Asset Management System ("MAMS");

v. Enabling remote connect / disconnect;

vi. Theft detection, meter tampering and other meter-to-cash analytics; and

vii. Integration with an ADMS.

The new CIS will support these features with base system functionality; however, certain of these features will need to be enabled prior to the go-live of the new CIS. As a result, enhancements to the existing billing system will be made to enable this functionality prior to the activation of the new CIS. Some of these retrofits to the legacy billing system may require significant manual processes until the new CIS is prepared for activation.

Q. Will the deployment of a modernized CIS meet evolving customer needs?

A. Yes. The CIS, combined with other DMP investments, will position DP&L to provide a level of service that meets customers' evolving needs and will have the flexibility to address future needs. Specifically, the CIS will address customer needs by:

- Providing scalable services that are flexible and adaptable to all customers, whether customers want to choose their bill date, prefer a monthly mailed bill, or want to receive text or email notifications regarding their energy usage patterns;
- Enabling the ability to offer customers new rate structures and expanded self-service options;

- Expanding customer communication channels that will provide customers with a dynamic and personalized experience; and
- Enabling the delivery of multi-language support through bill presentment as well as online self-service channels, such as the web or mobile applications.

Q. Please elaborate on the ability of the proposed CIS to enable the offering of new rate structures to customers.

A. When combined with data collected from smart meters, the CIS provides the technology and applications required to enable the offering and billing of new rate structures or to effectively expand current rate structures. Possible rate structures include additional time varying rate offerings and additional rate structures for energy provided from renewable resources. Witness Tatham will provide more details around specific new pricing program options, including TOU and Prepay.

Q. Please elaborate on how self-service options will be enabled by the proposed CIS.

A. With the new CIS, customers will be able to select their communications preferences, choose their bill date with the option to prepay their bill, and view information about their energy consumption analysis online. Customers will be able to evaluate rate comparisons and enroll or unenroll in additional customer programs through a centralized web-based platform. With the proposed CIS, the Company will also be able to offer usage and billing alerts, as well as outage notification and restoration communications, to an expanded number of customers. The new CIS will also allow future additional self-service options to be deployed more quickly and cost effectively.

Q. Please elaborate on how customer communication channels will be expanded by the proposed CIS.

A. As part of the proposed DMP, a CRM system, customer portal, online bill calculator, bill alerts, and mobile application will also be developed and deployed, in conjunction with the new CIS, to enhance the customer experience. These systems will have the ability to directly communicate with customers based on their specific set of preferences. Additional information regarding these systems is provided by Witness Tatham.

Q. Will call center representatives still be available for customers to call?

A. Yes. In fact, the proposed CIS will enhance the call center representatives' ability to assist customers. Today, call center representatives frequently need to access several systems and use offline tracking tools to respond to a customer questions, and in some cases may need to refer the customer to a separate department or work group. This process is inefficient, inconvenient to the customer and susceptible to human error due to the manual steps involved. This process also leads to an incomplete view of the customer's account for those employees who interact with the customers directly. The proposed CIS will enable a seamless and integrated set of digital tools that the call center representative can use to quickly and accurately access all the details of the customer's account. Equipped with improved tools, transparency, and information through a single source for all customer interactions, call center representatives will be able to resolve customer inquiries more efficiently. When a customer calls DP&L today, the call center representative has no information regarding the customer's recent contact history. In the future, the call center representative will have an integrated view of previous customer

interactions with DP&L, regardless of the communication channel. With this additional information, call center representatives can provide a more consistent message and more efficiently address the customer's needs.

Q. Will the proposed CIS facilitate integration of distributed energy resources?

A. Yes. Like the distribution grid, DP&L's current billing system was designed to accommodate one meter read per month based on the traditional, one-way flow of electricity and related customer information. More advanced and integrated Distributed Energy Resources ("DER"), such as solar panels, wind turbines, and energy storage, are being introduced to the grid by customers. As explained by Witness Hall, DERs create a more complex, two-way flow of both electricity and data, and this will drive more complex billing requirements. Given the advanced age and limited capabilities of the existing billing system, the Company is not adequately equipped to support these new and more complex offerings in a broad, efficient, and cost-effective manner. The proposed deployment of a new CIS addresses these barriers and, in parallel with other DMP programs, will position the Company to enable ongoing adoption of DERs and allow for future optionality and flexibility as the energy landscape and customer demands continue to evolve.

III. SYSTEM INTEGRATION AND SYSTEM TESTING

Q. Please describe the current state of DP&L's IT and Operational Technology ("OT") systems.

A. DP&L has several key legacy and home-grown technology systems in place to maintain daily operations. The current OMS and Service Order Processing System were designed and developed independently of each other and, over time, have been integrated with each other as needed. Although they are currently meeting DP&L's operational requirements, the deployment of the smart grid technologies will require a more flexible set of IT systems and specific configurations to meet the needs of the new AMI empowered customer base. DP&L currently utilizes the MV-90 system as the data repository, data verification and editing tool for the interval meter data collected. The system does not have the capability to support a fully implemented AMI system and will be replaced with the implementation of the MDMS in this DMP.

Q. How does DP&L plan to update and integrate disparate IT and OT systems?

A. Effective implementation of the DMP will require new and upgraded information and operational software technologies across the distribution infrastructure and operations groups. The advanced AMI technology requires installation of a MDMS and the modification and/or purchase of supporting technology systems which will make it possible for DP&L to manage the enhanced operational environment and take advantage of the new data that is captured by the AMI system. The technical integration of these systems will be implemented to ensure a smooth transition to the new operating model. Additionally,

there will be new OT systems that will be installed to support the real-time operation of the various devices installed on the distribution system.

The Company will also implement other core IT systems including an Enterprise Service Bus ("ESB") for application integrations. An ESB enables less complex automation, data capture and real-time measurement of high-value DP&L business processes such as end-to-end demand-side program management. High-value processes that DP&L automates with the ESB will make them easier to control, more visible and more measurable. DP&L and third parties will be able to view processes as well as structure and format data in real-time regardless of the applications, systems and organizations they span. Once DP&L's ESB capability is mature, process modifications and new systems integrations can be done more quickly and with less cost because the work to modify the supporting technology systems is reduced through the native functionality of the ESB. The ESB features include:

i. Communications via a standardized point-to-point connection between systems through industry accepted open standards;

ii. An integration system topology which allows a network of disparate computer systems to interact as one unified enterprise integrated platform by agnostically integrating the underlying system hardware, software and networks regardless of location and provide the centralized connection to channel messages between applications and systems, service security, transform data and provide intelligent routing and monitoring of data;

iii. An Orchestration Engine / Business Process Management, which allows automated integration of separate services to create integrated enterprise-level business processes;

iv. Business Activity Monitoring, which provides end-to-end process performance monitoring and real-time insight and control of DP&L's business; and

v. A Service Registry (and/or Repository), which provides a centralized Service Directory and Management Capabilities that support development-time and deployment-time activities (Publish/Discover) and run-time service look-up capabilities.

Examples of high-value processes from which both the customer and DP&L would benefit as a result of implementing an ESB are end-to-end energy efficiency and demand response program management, real-time outage management, and customer experience management.

Q. Will DP&L conduct testing as part of the implementation?

A. Yes. The testing phase includes system testing, system integration testing, and User Acceptance Testing ("UAT"). After UAT, the Company will begin deployment of the new system, which involves converting all customer data from the old databases to the new CIS platform just prior to the go-live date. During deployment, go-live acceptance criteria will be finalized, and specific stage gates will be tested to ensure the new CIS is ready to be activated. After go-live of the new CIS, the system will be monitored to ensure stable operation with issues being resolved in real time as part of post go-live support.

Q. How does DP&L plan to test disparate IT and OT systems?

A. Testing is a key phase of any system implementation and integration program, ensuring the overall quality assurance activities of the program. With so many new systems and upgrades to existing systems, it is imperative that not only new functionality is thoroughly tested, but that an additional, independent systems integration test is executed that includes a complete regression test with all interfacing systems. The individual components of a CIS transformation include unit testing, system testing and integration testing with key systems. A robust, mapped, and methodically driven testing phase will result in a better overall implementation and fewer customer-related issues.

Q. What investments does DP&L anticipate making to implement, integrate, and test the proposed IT and OT systems?

A. **Workpapers WP-7.3** and **WP-7.4** describe the year-by-year breakdown of the overall costs. The capital costs include the hardware, software, and labor required to implement and deliver a new system. O&M costs include the ongoing maintenance of the new system over a 20-year period. DP&L has captured the essential business processes and configuration requirements resulting in an estimate that is appropriate for the level of functionality that will be provided. The costs included in these workpapers cover the expected integration and testing efforts across the entire scope of the DMP. However, a significant portion of the capital expenditures related to the SI and System Testing work streams are driven by the CIS replacement project.

IV. IT/OT IMPLEMENTATION AND INVESTMENT UNDER THE DMP

Q. Will DP&L need to make investments in its existing billing system to enable the DMP?

A. Yes. DP&L plans to replace its existing billing system, but to allow DP&L's customers to get the benefits of the DMP as soon as possible, DP&L plans to make limited changes to its existing billing system upon Commission approval of DP&L's application. These changes will support the deployment of the new AMI meters as well upgrades to some of the ancillary systems currently in use by DP&L and which integrate with the current billing system. System integration work will also need to take place to account for the evolving IT architecture during the first two years of the DMP and prior to the new CIS going live. This integration work will link the new systems, such as the AMI Head End and MDMS, to the current billing system.

Q. Please describe the implementation plan for replacing the existing billing system, including any procurement practices.

A. Replacement of the existing billing system will entail a thorough evaluation and vetting of system vendors and service providers for the implementation and integration of the new CIS. The Company will follow formal proposal evaluation processes in alignment with the Company's procurement guidelines, focusing on cost-effectiveness and best practices. A project team consisting of both internal DP&L employees and external consultants will develop and execute a project plan that will follow the standard system development lifecycle (analyze, design, build, test, deploy) methodology employed by DP&L for large-scale technology projects. Business processes will be created or re-

designed to minimize system customizations and maximize upgradeability and adaptability to future requirements. A project management team will manage cross-project goals, to eliminate conflicts related to time, budget, functionality, and risk. Critical success factors will be established to continually measure the progress of the project and to ensure that it is meeting DP&L's objectives.

Prior to development of each implementation component, the Company will establish integrated project plans for all applications and technologies to be upgraded, replaced, or created. During the latter part of the analysis phase, the Company, in conjunction with selected vendors, will create and refine a project plan that includes the detailed project scope, resource needs, specific milestones, risks and dependencies, governance and oversight tasks. In addition, budgets will be finalized and a financial monitoring process will be established. During the design phase, the Company will document in further detail and prioritize the technical and functional requirements of the CIS. These requirements will lay the foundation for the build phase, which includes the configuration of the CIS, development of custom code for non-standard business processes, and the integration of the CIS with other applications and systems across the Company's IT platform; utilizing the ESB where possible. Also, during the build phase, plans for training and change management will be finalized prior to beginning of end-user training.

Q. Please describe the quality assurance and governance measures that the Company intends to employ to ensure the new CIS is implemented prudently.

A. The Company will rely on modern project management processes and techniques in accordance with Project Management Institute ("PMI") standards, establish distinct service level agreements ("SLAs") from vendors and implement active and transparent tracking and management of project performance. Internally, the Company will establish a cross-functional steering committee to provide governance over the project scope, schedule, budget and risk management. A project team with a dedicated project lead will track, manage, and ensure all stage gates are passed before proceeding with the next requisite phase. The project will be divided into the phases, as described above, with the overall implementation proceeding based on approvals from the steering committee as each phase is completed. System testing and thorough system integration testing will be performed and approved by subject matter experts and other stakeholders prior to go-live.

Q. When does DP&L expect work on the new CIS implementation project to begin and to be completed?

A. DP&L expects to begin implementing the new CIS in the first year following the Commission's approval of the DMP, and finish implementation over a period of 27-30 months.

Q. What investments does DP&L anticipate making to implement the CIS replacement?

A. **Workpaper WP-1.3** summarizes capital and O&M expenses required for the replacement of the existing billing system, the integration of MAMS, enabling remote reconnect / disconnect functionality, theft detection, integration with ADMS, as well as changes and integration with the existing MOM system prior to WFMS integration. DP&L projects that implementing the CIS will require $54.3 million of capital expense in nominal dollars and approximately $1.8 million in annual operation and maintenance ("O&M") expenses in nominal dollars, following the implementation of the CIS. The solution implementation's capital cost includes hardware, software, and maintenance labor. The O&M cost includes the ongoing maintenance of the system over a period of 20 years from the start of the DMP to support the operation of the associated infrastructure and systems. DP&L has documented the high-level business processes and configuration requirements that support our resulting CIS estimate. The costs listed in WP-1.3 incorporate the majority of the cost for the CIS replacement project. Additional expenditures related to this project are also included in WP-7.3 and WP-7.4 which were discussed earlier. Finally, Witness Hall describes the Program Management and Change Management costs in WP-7.1 which covers the entire scope of the DMP, which includes the CIS replacement work stream.

Q. How did the Company determine the projected capital and O&M expenditures?

A. For the proposed CIS replacement effort, benchmarking and peer reviews were performed to estimate associated costs for planning, system implementation and

integration, and associated training and resource support. Cost estimates include projected capital and O&M spend associated with labor, training, professional services, hardware, and software.

DP&L's estimate is appropriate for the level of functionality that will be provided. The CIS costs were benchmarked against costs incurred by other utilities across the country and DP&L's cost estimate falls within the range of the benchmarks. Comparable utilities have incurred costs up to approximately $125 million dollars to implement new CISs, including system testing, integration and change management.

Q. Do you believe the CIS expenditures you have identified are reasonable, prudent, and necessary?

A. Yes. The Company has worked diligently to identify the business and customer needs related to the deployment of a modern CIS. Further development of technical, functional, and customer-related requirements will occur during the Analyze and Design phases. The CIS will be implemented in an iterative and flexible manner to ensure the options available align with the identified customer needs. The cost estimates presented in this testimony reflect a modern CIS, designed to meet evolving business and customer needs. The Company will monitor and evaluate costs as the deployment of the proposed CIS progresses.

V. CONCLUSION

Q. Please summarize your testimony.

A. To meet evolving customer demands and expectations, DP&L will deploy a modernized CIS as a key component of its DMP. This integrated foundational application will enable a customer-centric transformation, reinforcing the Company's commitment to providing a positive customer experience. The CIS will enable DP&L to provide scalable services that are flexible and adaptable to all customers; offer an expanded set of rate structures, expanded self-service options, and more customer-centric programs; and expand customer communication channels, which will provide a dynamic and personalized customer experience. The CIS, in conjunction with the deployment of other components of the DMP, will also facilitate the integration of DER as customer adoption continues to proliferate across the service territory. The CIS project will also drive internal improvement efforts that will position customer-facing employees to provide improved service to customers.

Q. Does this conclude your direct testimony?

A. Yes.

Summary: Testimony Direct Testimony of Narvaez, Antonio electronically filed by Mr. Jeffrey S Sharkey on behalf of The Dayton Power and Light Company