I&M Exhibit: _____

INDIANA MICHIGAN POWER COMPANY

PRE-FILED VERIFIED DIRECT TESTIMONY

OF

KELLY J. FERNEAU

Cause No. 45933

Content

DIRECT TESTIMONY OF KELLY J. FERNEAU
ON BEHALF OF
INDIANA MICHIGAN POWER COMPANY

I. Introduction of Witness

Q1. Please state your name and business address.

My name is Kelly J. Ferneau and my business address is One Cook Place, Bridgman, MI 49106.

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

I am employed by Indiana Michigan Power Company (I&M or Company) as the Site Vice President at Donald. C. Cook Nuclear Plant (Cook or Cook Plant or the Plant). I&M is a wholly owned subsidiary of American Electric Power Company, Inc. (AEP).

Q3. Briefly describe your educational background and professional experience.

I received a Bachelor of Science Degree in Mechanical Engineering from Trine University.

I began my career with Constellation Energy Corporation in June of 1990 as a System Engineer at Byron Generating Station. In 1994, I joined the Operations Department and in 1996 I obtained my Senior Reactor Operator's license. After serving in the Byron Control Room as a Unit Supervisor and Shift Manager, I held the positions of Operations Work Control Manager and Maintenance Manager. In 2009, I transitioned to Entergy Nuclear at the Palisades Nuclear Generating Station as the Assistant Outage Manager. In 2013, I began my career with I&M at Cook Plant as an Operations Manager. Since that time I served as the Operations Director and Plant Manager prior to assuming my

current position as Site Vice President in July of 2022. In this position, I report directly to the Chief Nuclear Officer of Cook.

Q4. What are your responsibilities as the Site Vice President of Cook?

I am responsible for providing overall management and oversight of Operations, Radiation Protection, Chemistry, Maintenance, Work Control, Outage Management, Environmental, Safety and Human Performance, Regulatory Affairs, Training, Continuous Improvement, Security, Projects, Emergency Preparedness, and Materials Management.

II. Purpose of Testimony

Q5. What is the purpose of your testimony?

The purpose of my testimony is to:

1) provide an overview of I&M's nuclear generating asset, the Cook Plant;
2) support Cook's operation and maintenance (O&M) expenses during the twelve-month, forward-looking test period ending December 31, 2024 (the Test Year);
3) support an adjustment to the Test Year level of O&M expenses to reflect an increase to outage amortization expense and plant activities identified after the Company's forecast was complete (O&M-11);_
4) support the projected capital expenditures at Cook from January 1, 2023 through December 31, 2024 (the Capital Forecast Period);
5) provide an update on the status of the Dry Cask Storage Project;
6) provide a status update on Cook's Life Cycle Management Project (LCM); and

7) provide an overview of Cook's Subsequent License Renewal effort.

Q6. Are you sponsoring any attachments?

Yes. I am sponsoring the following attachment:

- Attachment KJF-1: Cook Plant Systems Diagram

Q7. Are you sponsoring any workpapers?

Yes. I sponsoring WP-A-O&M-11, which is an adjustment to the Cook Plant's forecasted O&M for the Test Year.

Q8. Were the attachment and workpaper that you sponsor prepared or assembled by you or under your direction?

Yes.

Q9. Please summarize your testimony.

My testimony provides an overview of the Cook Plant operations and performance.

In addition, my testimony supports that Cook's operation and maintenance (O&M) expenses during the Test Year have been developed using a robust planning and review process and are reasonable and necessary to maintain the safe and reliable operation of the facility. Additionally, I describe the projected capital expenditures at Cook during the Capital Forecast Period and the process used to ensure the portfolio of projects the Company is proposing in this case are necessary for the continued operations of the Cook plant.

I describe the status of the settlement agreement with the United States Department of Energy (DOE) as a mechanism for submitting and recovering costs associated with Dry Cask Storage.

Finally, I explain that Cook's LCM Project, completed as of December 31, 2022, has allowed Cook to provide safe and reliable power through its initial license extension period and has also better prepared Cook for a potential Subsequent License Renewal (SLR). The SLR process is a complex undertaking that includes development of a Subsequent License Renewal Application (SLRA), inspections of the plant, environmental reviews, Nuclear Regulatory Commission (NRC) reviews, and public participation.

A SLR feasibility study (Feasibility Study) prepared for Cook Units 1 and 2 indicated that no obstacles exist that would prevent Cook from operating another 20 years beyond its current renewed license. As a result, the Company is proposing a multi-year SLR Project, a large undertaking by multiple engineering groups to determine if a renewal of Cook's license for the continued operation of Units 1 and 2 through 2054 and 2057, respectively, is appropriate. The SLR Project will also provide the necessary inputs into the SLRA. To obtain the information necessary to maintain the timelines associated with the SLRA process it is reasonable and necessary to commence this work now. Taking these steps is also consistent with the Short-Term Action Plan in the Company's Integrated Resource Plan (IRP).

III. Cook Nuclear Plant Overview

Q10. Please describe the design of the Cook Plant.

The Cook Plant is a two-unit nuclear power plant located along the eastern shore of Lake Michigan in Bridgman, Michigan. Both units are pressurized water reactors with four-loop Westinghouse nuclear steam supply systems. The combined nominally rated net electrical output for both units is 2278 megawatts. A diagram of the Cook Plant Systems is provided as Attachment KJF-1.

Unit 1 received its operating license from the NRC in 1974 and began commercial operation in 1975. Unit 2 received its operating license in 1977 and began commercial operation in 1978. The NRC initially granted 40-year licenses to each unit and granted 20-year license extensions in 2005. Unit 1 is currently licensed to operate until 2034, and Unit 2 until 2037.

The Cook Plant provides safe, low-cost, and carbon-free generation to I&M's customers while maintaining the highest standards of regulatory compliance. I&M employs a rigorous process to identify projects that are necessary to meet regulatory requirements and support continued safe and reliable operations. The O&M and capital project costs discussed herein are the result of that process and are reasonable and necessary for the continued operation of the Cook Plant for the benefit of I&M's customers.

Q11. Please describe the Cook Plant's organization.

The Cook Plant is operated by I&M's Nuclear Generation Group (NGG), which consists of approximately 990 full time I&M employees. Cook also employs approximately 100-200 contract workers on a long-term basis and 600-1000 temporary contract workers for refueling outages. The NGG is organized to ensure that all activities required to operate and maintain the Cook Plant are accomplished in a safe, reliable, and efficient manner.

Q12. Please describe the NRC's regulation of the Cook Plant.

The NRC provides specific technical requirements through regulations, regarding the components that must be incorporated into the design of the systems, to ensure the protection of public health and safety. The NRC defines compliance with these regulations during facility operation, in part, by incorporating certain Technical Specifications into the facilities' Operating License.

These Technical Specifications include Limiting Conditions for Operation (LCO), for use during abnormal, temporary operational circumstances. In order for the Plant to continue operating during this time, the LCO must be continuously met, and the temporary operational circumstance remedied within a specified time. If an LCO is not met within the specified timeframe, the plant must be shut down until the temporary circumstance is remedied. These NRC regulations drive certain investments at the Cook Plant as described further below.

Q13. Please describe the Cook Plant's overall performance.

Cook's overall performance remains excellent. The station continues to receive the highest industry performance rating for nuclear power plants, and it also remains in the highest achievable performance category of the NRC's Revised Reactor Oversight Process. These performance levels are being sustained due, in large part, to the type of expenditures and investments supported in this testimony.

Q14. What factors underly Cook's performance?

Cook is a continuous learning organization, which is steadily strengthened through the application of internal lessons learned, operating experience, benchmarking, and industry best practices to all facets of the plant's design, maintenance, and operation. These practices have directly contributed to the cost-effective, efficient, safe, and reliable operation of the Cook Plant.

Q15. Please describe the planning and management practices of the Cook Plant.

Cook engages in planning and resource allocation through a Nuclear Asset Management (NAM) Process and a strategic Long Range Plan (LRP), which

identify critical components and the projects necessary to ensure nuclear safety and reliability.

The NAM Process is used for making operational, resource allocation, and risk management decisions to maximize the asset while maintaining the safety of the plant and meeting regulatory requirements. NAM helps to ensure only necessary capital improvements are made.

The LRP is an element of the NAM Process and is used to identify necessary work years in advance of actual implementation. Plant needs are evaluated and refined by key plant personnel and undergo multiple internal reviews. Cook also works collaboratively with I&M and the American Electric Power Service Corporation (AEPSC)[1] to evaluate the Plant's needs.

As part of the NAM Process and LRP, Cook identifies projects that are necessary to meet regulatory requirements and support safe and reliable operations. Cook applies industry best practices to identify optimum refurbishment and replacement schedules for critical plant components. Projects are prioritized and strategically scheduled in the LRP. The goal is to ensure that components continue to operate consistent with our NRC operating license so as to maintain safe and reliable operations at the Cook Plant.

Q16. Please describe Cook's refueling outages.

Refueling outages occur approximately every 18 months at each unit. The cost of these outages is amortized over a period of 18 months consistent with past practices and concurrent with the timing of the outages. Typically, every year at least one unit is refueled (in either the Spring or Fall), and every third year both units are refueled (one each in the Spring and Fall). Refueling outages are also the time when other capital improvements and operation and maintenance

[1] AEPSC supplies engineering, financing, accounting, planning, advisory, and other services to the subsidiaries of the AEP system, one of which is I&M.

activities are completed which require the unit to be out of service to complete. This increases the scope and risk of refueling outages and makes each refueling outage unique.

Most recently, Cook has had dual unit outages in 2022 and will again in 2025. The work scope included in each outage is thoroughly reviewed and managed to minimize duration while ensuring the safety of employees, the plant, and the public. Minimizing the duration of refueling outages allows the plant to maximize the reliability and low-cost generation Cook provides to I&M's customers.

Q17. Does the Cook Plant benefit customers?

Yes. Nuclear power is an important resource in I&M's energy portfolio. Cook provides safe, reliable, low-cost, and environmentally sustainable generation to I&M's customers. Annually, the Cook Plant generates enough electricity to supply approximately 1.5 million homes. Additionally, Cook has a long-standing commitment to nuclear education, community outreach, and non-profit agency support.

IV. Cook Plant Operation and Maintenance Expense

Q18. Please summarize the Cook Plant's O&M expenses.

O&M expenses include base operating expenditures and non-outage equipment reliability expenditures. Included in the base operating expenditures are refueling outage amortizations, which can have a significant impact on O&M expenditures in any given year depending on the refueling outage cycle. The majority of Cook O&M expenses can be described as: 1) labor, including straight time and over time; 2) planned outages; 3) plant maintenance activities; and 4) operating expenses.

Operating and maintaining the Cook Plant involves managing technically complex systems and components. Practically all of Cook's O&M activities are subject to comprehensive regulation and continuous inspection by the NRC.

Q19. What is the Cook Plant doing to maintain a reasonable level of O&M expense?

As described above, Cook is a continuous learning organization, and that behavior is evident in our consistent focus on O&M expenses to ensure they are reasonable.

We take actions to shorten outages by reviewing planned work, benchmarking our peer nuclear plants, and incorporating operating experience and efficiencies. Cook continues to review preventative maintenance schedules and activities to eliminate unnecessary work. Cook continually looks for ways to keep O&M expenses low without compromising the safe and reliable operation of its Units.

Q20. How did you develop the forecast Test Year O&M expenses for the Cook Plant?

The NGG is constantly evaluating the future needs of Cook to ensure it continues to operate safely, reliably, efficiently, and in compliance with all regulatory requirements. Cook employees continually assess the condition of plant equipment and plan not only for the modification or replacement of equipment when it reaches the end of its useful life, but also for unforeseen failures.

Q21. The NGG and Cook management review the Plant's current and future needs along with historical O&M expenses to develop forecasts, and then reassess those forecasts prior to approval. Forecasts are then refined annually in a collaborative process that involves Cook Plant management,

I&M management, and AEPSC management. These reviews ensure that work is performed at a reasonable cost. What is the forecasted Cook O&M expense for the Test Year ending December 31, 2024?

The unadjusted Cook O&M expense for the 12-month Test Year ending December 31, 2024 is approximately $254 million.

Q22. Please describe the major areas of O&M expense.

Figure KJF-1 identifies Cook's four major O&M expense categories.

Figure KJF-1. Cook O&M Forecast Period O&M Expense ($000)

Category	Unadjusted 2024 O&M Forecasted Expense
Labor	$129,946
Planned Outages	$59,868
Operating Expenses	$46,163
Plant Maintenance	$18,304
Total	**$254,281**

The largest portion of the Cook O&M expense is the labor category. Labor includes the expenses associated with employing the workforce that is necessary to operate the facility and to perform the necessary maintenance to sustain safe and reliable operations.

Planned Outages are the second largest O&M expense category. As required by the fuel cycle, each unit must be shut down every 18 months so that the nuclear fuel can be replenished. While the unit is shutdown, maintenance and testing activities that can only be performed while the unit is offline, are performed. Outage cost can vary based upon the work scope that is being completed.

A rigorous scoping process is utilized to ensure that the approved work scope is limited to those items that are necessary to ensure safe and reliable operation during the next operating period. Once the work scope has been determined, great effort is taken to optimize the outage schedule so as to minimize the outage duration. Scope control and outage scheduling combined with disciplined execution, ensure that refueling outages are completed in the most cost-effective manner.

Operating Expenses represent the third largest O&M category. These expenses are further broken down into the sub-categories of outside services, staff augmentation, materials, and other. Outside services includes a broad collection of services ranging from radioactive waste disposal; trash and water bills; and state and NRC fees. Staff augmentation significantly represents the facilities cleaning, building, and grounds services. Materials includes costs incurred due to part repair and return, as well as personal protective equipment. Finally, other includes items such as benchmarking and fees. All of these expenses are necessary to ensure the various departments operate in a manner that supports plant operation.

The final O&M category is Plant Maintenance. These expenses include the outside services, materials, and supplies necessary to perform the required preventive and corrective maintenance activities while the units are online so as to support safety and reliability. Various management committees, such as Plant Health Committee and the Preventive Maintenance Oversight Group, provide oversight of the preventive and corrective maintenance activities to ensure that only necessary work is performed.

Also included in this category are expenses that are incurred to maintain compliance with regulatory requirements. Specifically, these activities include accident analysis revisions, regulatory required programs, and the resolution of NRC inspection findings.

Q23. Did the Company have to make any adjustments to its forecasted Test Year O&M expense for the Cook Plant.

Yes. Adjustment O&M-11 increases the Test Year amount of O&M expense for the Cook Plant for an identified increase to outage amortization and plant maintenance expense. The increase in outage amortization expense is related to ice condenser scope, updated vendor proposals and cost escalations since the Test Year forecast was complete. Specifically, labor rates for radiation protection technicians and decontamination technicians have increased due to a shortage of the skill set in the industry. Cook has also seen an increase in rates for welders, tensioning technicians, and overall craft labor. The plant maintenance increase is related to projects such as the Isophase Bus Duct work for Unit 2 and work on Cook's Risk Informed Engineering Program that was pushed out to later years due to funding constraints.

Q24. Is Adjustment O&M-11 reasonable and necessary to provide service to I&M customers?

Yes. This level of O&M represents a reasonable level of spending needed to meet regulatory requirements, provide reliable power to the grid, and reduce the amount of time Cook is single point vulnerable to an equipment issue. In turn this will ensure the safe and reliable operation of the Cook Plant, providing low cost, safe, environmentally compliant, reliable electric generation for I&M's customers.

Q25. What was the Cook O&M expense for the Historical Period ending December 31, 2022?

The Cook O&M expense for the 12-month Historical Period ending December 31, 2022 was approximately $243 million.

Q26. What are the primary reasons for the difference between the Historical Period and the Test Year O&M expense?

The main drivers for the difference of approximately $11 million between the Historical Period and Test Year O&M expense are outage amortization and inflation related to services and material costs. As many industries have seen over the last few years, the prices of goods and services have increased due to shortages in supply-chain, reduction in material production, and labor resource constraints. The result for Cook, as with many companies, is higher prices. In addition, as mentioned above, outage amortization can have a significant impact on O&M expense.

Q27. Is the adjusted Test Year O&M expense representative of I&M's expected activities and expenses necessary to provide ongoing safe and reliable generation to its customers?

Yes. I&M has a long history of operating the Cook Plant, thereby allowing I&M to understand the ongoing O&M needs. The Test Year O&M expenses represent a reasonable level going forward. These O&M expenses have been scrutinized at the plant, operating company, and corporate levels, and are representative of the necessary Cook Plant O&M expenses.

V. Cook Plant Capital Expenditures

Q28. Please summarize the type of capital expenditures forecast for the Cook Plant during the Capital Forecast Period of January 1, 2023 through the Test Year ending December 31, 2024.

Capital expenditures can be categorized into four types: Major Projects, Regulatory Related Investments, Preventative/Corrective Maintenance and Other. The expenditures during the Capital Forecast Period through the Test

Year in each category are described in more detail below and is reflected in the Project Life File sponsored by Company witness Sloan as WP SAS-9.

Q29. What is the amount of capital expenditures forecast for the Cook Plant during the Capital Forecast Period?

Excluding AFUDC, the capital expenditures for the Cook Plant during the Capital Forecast Period are approximately $139 million, as shown in *Figure KJF-2*. This amount of capital spending is included in the forecast presented by Company witness Sloan.[2]

Figure KJF-2. Cook Capital Expenditures, excluding AFUDC ($000)

	2023	2024	Total
Major projects	$29,876	$18,102	$47,977
Regulatory Related Investments	$4,531	$12,530	$17,061
Preventative/Corrective Maintenance	$18,101	$21,090	$39,191
Other	$18,348	$16,254	$34,603
Total	$70,856	$67,976	$138,832

As shown in *Figure KJF-3*, I&M forecasts approximately $134 million of capital investment related to Cook to be placed in service (Electric Plant in Service or EPIS) in 2023 and 2024.[3]

[2] Figure SAS-3 of Company witness Sloan's direct testimony shows the AFUDC amounts added to capital expenditures.

[3] Figure SAS-2 of Company witness Sloan's direct testimony shows how nuclear additions to EPIS are used to forecast total Company Plant in Service activity during the Capital Forecast Period.

Figure KJF-3. Cook additions to EPIS in 2023-2024, including AFUDC ($000)

Major Projects	$60,575
Regulatory Related Investments	$570
Preventative/Corrective Maintenance	$41,051
Other	$31,771
Total	$133,967

Q30. How are capital expenditures forecast?

Similar to O&M expenses, proposed capital expenditures undergo an extensive development and refinement process. As discussed above, the LRP identifies necessary expenditures years in advance of implementation, and the Cook Plant's needs are evaluated and refined through multiple levels of review involving Cook Plant personnel, I&M and AEPSC management.

Decisions regarding if and when capital investments are made are based on a combination of factors, including whether the investment is needed to fulfill regulatory or safety requirements, the urgency of the need, and economic benefit. All of these factors are evaluated by the management teams responsible for approving capital projects.

Q31. Please describe the Capital Forecast Period capital expenditures in the Major Projects category.

Capital Forecast Period expenditures in the Major Projects category are those projects valued at $3 million or greater and can be found in the Project Life File sponsored by Company witness Sloan.

These projects are approved utilizing the previously defined review and approval process through both Cook and I&M management. For the Capital Forecast Period, examples of Major Projects include:

- Cook local area network expansion project which will create a wireless infrastructure backbone that will support wireless gauge readers, mobile applications, an electronic Work Management System, and wireless remote monitoring and predictive technologies allowing Cook to move from time-based preventative maintenance to condition-based preventative maintenance. The wireless infrastructure backbone will be installed throughout Cook's Auxiliary, Turbine and Screenhouse Buildings and will include the installation of new cabinets, network switches, Wi-Fi access points, and wireless controllers. Additionally, new Radiation Protection (RP) equipment will be integrated into the wireless backbone to ensure compliance with station configuration management processes, and to address fire protection loading;
- Makeup Plant Chemical Container Upgrade which will replace chemical containers and injection equipment components to maintain reliability, eliminate industrial safety concerns, and reduce equipment failures; and
- Replacement of systems and equipment that has reached the end of its useful life such as the auxiliary building passenger elevator replacement and the auxiliary building freight elevator replacement.

Q32. Please describe the Capital Forecast Period expenditures in the Regulatory Related Investments category.

The Capital Forecast Period expenditures in the Regulatory Related Investments category reflect plant modifications required by the NRC and mainly consists of costs related to Cook's SLR Project which is described in more detail below.

Additional capital investments in this category relate to required improvements to replace obsolete equipment for the Protected Area perimeter intrusion detection system microwaves and lasers.

Q33. Please describe the Capital Forecast Period expenditures in the Preventative/Corrective Maintenance category.

Capital expenditures in the Preventative/Corrective Maintenance category relate to capital expenditures necessary for maintaining and pre-emptively replacing plant components prior to failure.

These expenditures include fire protection piping replacements, steam generator Leading Edge Flow Meter replacements, Cook's routine capital blanket Nuclear Minor Improvement Blanket, Unit 1 and Unit 2 Circulating Water Pump replacements, and RCP Motor replacement.

Q34. Please describe the Capital Forecast Period expenditures in the Other category.

Capital Forecast Period expenditures in the Other category relate to capital projects that are not captured in the categories discussed above. Such expenditures include:

- Owner Controlled Area diesel generator upgrade as it has reached the end of its useful life;
- Replace refueling cameras which are degraded and obsolete;
- Compressed air dryer control replacement because the current equipment is degraded and obsolete; and
- Other general Cook Plant improvements.

All these projects are necessary for the Cook Plant to operate to the end of its current approved license.

Q35. Is the forecast level of capital expenditures reasonable and necessary?

Yes. As the systems, structures, and components reach their end of useful life or become obsolete, they must be replaced. Additionally, capital expenditures must be made to ensure compliance with evolving regulatory requirements.

The level of capital investments to be made during the Capital Forecast Period represents a reasonable level of spending needed to ensure the safe and reliable operation of the Cook Plant which in turn provides low cost, safe, environmentally compliant, reliable electric generation for I&M's customers.

VI. Dry Cask Storage

Q36. Please describe the breach of contract by the United States Department of Energy (DOE) as it pertains to the Dry Cask Storage Project?

I&M is the "Purchaser" under a Standard Contract with the DOE for the acceptance of spent nuclear fuel (SNF) and high-level radioactive waste (HLW) under the Nuclear Waste Policy Act. *See* 10 CFR 961.11. Under the Standard Contract, DOE agreed to begin accepting SNF and HLW from Cook "not later than January 31, 1998."

However, the DOE has neither accepted this material from any facility nor issued an acceptance schedule as required. This has resulted in a partial breach of contract. Because the DOE has failed to fulfill its contractual obligation to accept Cook's SNF and HLW, Cook has been required to construct Dry Cask Storage to store this material on site. The purpose of the Dry Cask Storage Project is to provide spent nuclear fuel dry storage capacity at the Cook Plant at an Independent Spent Fuel Storage Installation pad.

This project consists of loading SNF assemblies into stainless steel canisters which are then transferred into dry concrete casks. To date, Cook Plant has

loaded 57 casks with 1,824 fuel assemblies. The next loading campaign is scheduled to occur in 2024.

Q37. Does I&M have a settlement agreement with the DOE as a mechanism for submitting and recovering costs associated with Dry Cask Storage?

Yes. I&M has had a Settlement Agreement (Agreement) with the DOE since October 2011. Claims are submitted on an annual basis according to terms laid out within the Agreement. The Agreement has recovered costs incurred through December 31, 2022. At this time, I&M has received a Settlement extension with the DOE through December 31, 2025. As of December 31, 2022, I&M has submitted thirteen claims and has recovered $209.2 million from the DOE. This equates to a recovery rate of approximately 97%. Company witness Seger-Lawson discusses I&M's request for deferral accounting authority related to this Settlement Agreement claims process.

VII. Cook Subsequent License Renewal Project

Q38. What is the Cook Subsequent License Renewal (SLR) Project?

The SLR Project includes the activities, and associated costs necessary to evaluate, prepare and submit an application to the Nuclear Regulatory Commission (NRC) seeking to extend the operation of Cook Units 1 and 2 through 2054 and 2057. This project will involve several steps that will take place through the 2027 calendar year including engineering reviews, site inspections, scope definition, capital investment and maintenance requirements, and cost estimates. These efforts will provide the needed information to assemble a SLRA.

Q39. What is the current status of the Cook Plant's license?

Cook was initially granted a license to operate each unit for 40 years. In 2005, Cook was granted a renewed license allowing each unit to operate an additional 20 years (Unit 1 until 2034 and Unit 2 until 2037). This additional 20 years is known as the period of extended operation (PEO). The NRC and the nuclear industry are currently focusing on subsequent license renewals which authorize plants to operate through a second PEO for a total of 80 years. Subsequent license renewals are also for a 20-year period.

Q40. Does the SLR Project build on the recently concluded Life Cycle Management Project?

Yes. The recently completed LCM Project has better prepared Cook for a SLR. Plant equipment that otherwise would require replacement or refurbishment has now been resolved. In addition, the project management experience gained from such a large and complex project provides Cook personnel valued experience in the areas of project management, staffing, scheduling, and cost tracking in preparation for the SLR Project.

Q41. Has any work been done on the Cook SLR Project?

Yes. Cook contracted with Enercon Services Inc., an outside engineering firm experienced in the development, defense, and implementation of license renewals, to perform a Feasibility Study. The Feasibility Study was performed as a preliminary step to identify any technical issues or circuit breakers that would prevent Cook from moving forward with the SLR Project. The Feasibility Study also assessed challenges with continuing plant operation for an additional 20 years. The Feasibility Study included a proposed milestone timeline and budgetary estimate for the Cook SLRA.

Q42. Please summarize the results of the Feasibility Study.

The Feasibility Study for Cook Units 1 and 2 indicated that no obstacles exist that would prevent Cook from operating another 20 years beyond its current renewed license. The Feasibility Study also indicated:

- obtaining a second renewed license would involve a four-to-seven-year process, assuming specialty vendor activities are contracted early;
- no environmental issues existed that would prevent an SLR; and
- Cook's aging analyses demonstrates a proactive approach to aging management

Q43. Are other nuclear power plants submitting SLRAs?

Yes. To date, there are sixteen units at eight nuclear power sites that have submitted SLRAs. Eight of these are Westinghouse Pressurized Water Reactors (PWR) that are similar to Cook's four-loop Westinghouse PWR design. In addition, there are eight units at four nuclear sites that have submitted formal letters of intent to the NRC to apply for a SLR. One of these units is a PWR that is similar to Cook's PWR design. I&M has been able to leverage this industry experience and shared knowledge in its SLR Project and will continue to do so as the SLR Project continues.

Q44. Why is the Company engaging in this project now?

The SLR Project process is a complex undertaking that includes development of a SLRA, which involves extensive inspections of the plant, environmental reviews, NRC reviews, and public participation. If a licensee submits a renewal application at least five years before expiration of the existing license, the plant can continue to operate until the application is approved by the NRC. Moving forward with the additional SLRA work now allows I&M the needed time to make an informed decision and, if NRC approval of a SLRA is received and SLR is pursued, adequately plan for the additional inspections of components that are

required to be performed before entering a subsequent PEO at the end of our current license.

Q45. How does the SLR Process align with the Company's integrated resource planning (IRP) needs?

The Company's most recent IRP submitted to the Commission on January 31, 2022 included efforts to evaluate Cook's relicensing in the IRP's Short Term Action Plan. The Company was very intentional and thoughtful to structure the near-term IRP plans in a manner that maintains optionality regarding the future decisions at the Cook Plant. This approach recognizes that significant analysis is necessary to assess the potential extension of the operating life of the Cook Plant. The SLR work reflects the Company's effort to implement this aspect of its Short-Term Action Plan. Company witness Baker further discusses the importance of the SLR Project for I&M's customers.

Q46. Does the Company have a target date for filing a SLRA?

Yes, the target date for submitting a SLRA is on or before November 2027. This timeframe is critical as the NRC has indicated an approximate 22-to-24-month timeframe for its review and approval of an application for SLR. Once NRC approval is received, testing and inspections will be performed during refueling outages through 2034 prior to the end of our current license for Unit 1 and 2037 for Unit 2.

Q47. Please elaborate on the SLR Project work and milestones necessary to meet the SLRA November 2027 target filing date.

The development of the SLRA includes multiple integrated steps that must be completed to determine if the SLR is an appropriate course of action, the physical modifications that would be required if the Company were to proceed

with a SLRA, and to be prepared to support the approval process through multiple regulatory processes.

The following is a high-level scope of work necessary to complete the SLRA:

- Engage with an Engineering Consultant to complete the following tasks:
  - Scoping of approximately 240,000 plant components to determine what will be considered as part of the SLR rule;
  - Screening from the defined scope of components to determine requirements for Aging Management Review;
  - Creation or revision of approximately 50 Aging Management Program documents; and
  - Summarization and review of approximate 900+ page SLRA
- Specialty vendor to perform analyses on the extended life of the reactor vessel and surrounding components
- Specialty vendor to develop and review an Environment Report as input into the SLRA
- Cook staff to provide ongoing support of the project and provide operational data to support studies and analyses
- NRC and Legal fees to support onsite NRC audits, Advisory Committee on Reactor Safeguards meetings, and SLRA preparation

In addition to the scope of work to complete the SLRA, the Company will also be undertaking the necessary steps with the Commission and the Michigan Public Service Commission (MPSC) to complete analysis and seek appropriate approvals.

The first significant milestone is determining the inclusion of the Cook SLR in the Company's Preferred Portfolio during the next IRP cycle. The Company has committed to engaging stakeholders around the assumptions associated with

the SLR and including the SLR in the Company's next IRP process. This milestone serves as an "off ramp" for the SLR project if the Cook SLR is not included in the Preferred Portfolio. If that were to occur, the Company would stop the efforts necessary to pursue the SLR and would only experience the costs incurred up to the point of that decision.

If the SLR is included in the Company's Preferred Portfolio a project schedule and execution plan will be formulated. Assuming the approval of the Company's proposal in this filing to begin the SLR process, our Company forecast indicates that work will begin in 2024 to ensure the SLRA will be submitted to the NRC before November 2027. It is expected that the NRC will take between 22 and 24 months to review and approve the SLRA. This would then allow the necessary time to perform the substantial number of inspections required prior to Unit 1's license expiration. Based on the timeline, the NRC would be notified of our intent to submit an SLRA during the summer of 2024 to allow the NRC to plan and allocate resources for the SLRA review.

Concurrent with this process, the Company would also plan to make the appropriate regulatory filings with the Commission and MPSC to obtain approval for the entire SLR scope of work and associated costs once the SLRA work is complete and full scope of work is defined. This would provide the Commission another opportunity to evaluate the prudency and reasonableness of the costs necessary to complete the SLR project and extend the operating life of the Cook facility.

Q48. Why is the SLR Project work necessary?

The development and submittal of a SLRA outlined above is necessary and part of the required process to obtain a second renewed license. In addition, renewing DC Cook's license will provide AEP and its customers with reliable

long term energy security and contribute to the Company's goal of zero carbon emissions by 2045.

Q49. What is the estimated cost of the proposed SLRA work?

Based on initial cost estimates it is expected the full costs of completing the SLRA will be between $40 million to $45 million. This cost estimate will be better defined once the Company fully engages the consultants necessary to complete the work necessary to prepare the SLRA.

Q50. Is it reasonable for the Company to incur an estimated cost of $40 million to $45 million to assess, prepare, and administer the SLRA?

Yes. The cost estimate for the SLRA is reasonable considering the degree of engineering, data gathering, outside vendor support and reviews required for this volume of information. In benchmarking other SLR applicants, the cost estimate provided in the Enercon Feasibility Study is reasonable and within the bounds of other utilities that were contacted.

Q51. Can you provide a high-level breakdown of the primary elements of the costs associated with the preparation of the SLRA?

Yes. The following provides an overview of the primary elements and costs associated with each, for the preparation of the SLRA:

- Primary Architect and Engineering consultant contracted to support the Cook SLRA ($17.5 million);
- Specialty vendor to perform analyses supporting the extended life of the reactor vessel and surrounding components (e.g., neutron embrittlement) ($11.0 million);

- Specialty vendor to develop and review the Environmental Report as input into the SLRA ($2.0 million);
- Cook staff – project team supporting the project (approximately $5.2 million); and
- NRC and Legal Fees (e.g., support three onsite NRC audits and two Advisory Committee on Reactor Safeguards meetings at NRC headquarters) ($7.0M)

Q52. How is/will the Company manage the SLRA process?

As described in Q 15 above, Cook will continue to utilize its NAM and LRP processes to assign key personnel to specific tasks associated with the SLRA process. Tasks will be prioritized and strategically scheduled with the goal of continued safe and reliable operation of the Plant while moving through each of the SLRA responsibilities.

In addition, Cook uses a formal Project Change Request Form system for monitoring, controlling, documenting, and tracking changes in project scope, schedule, budget, or cost. It should be noted that the implementation of formal review processes to manage project funding was installed many years ago and has proven to be a success throughout Cook's recent LCM Project. When projects change phases as their percent complete increases, they are required to go through a Project Review Board. If a project's cost is greater than $1,000,000 it must be reviewed by the Executive Project Review Board which is comprised of Cook Senior Management. Cook Senior Management is also responsible to inform the Company's and AEP's management teams of any material changes in total project costs or schedule and obtain appropriate approvals. Finally, the Cook organization holds weekly and monthly financial reviews of all ongoing projects.

Q53. Please describe the SLR process once a SLRA is submitted.

Once a SLRA has been submitted for approval to the NRC much of the immediate work will involve responding to Requests for Information (RFI's) from the NRC. These consist of technical questions or clarifications by the NRC on the submitted application. RFI's may be received through the entire 22 to 24 months of NRC review for approval timeframe and can be complex documents or require only simple answers. No major work will take place until after the SLRA is approved by the NRC. Upon approval, a substantial number of tests and inspections must be performed for each of Cooks two units. The inspections themselves will be performed during the Spring 2031, Fall 2032 and Spring 2034 refueling outages. The ensuing Unit 2 scope and inspections will be developed and completed on a similar schedule prior to its 2037 license termination.

Q54. Who describes the proposed accounting and ratemaking treatment for the SLRA costs?

Please see the testimony of Company witnesses Ross and Seger-Lawson for accounting and ratemaking treatment of the SLRA costs.

Q55. Does this conclude your pre-filed verified direct testimony?

Yes.

VERIFICATION

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DocuSigned by:

Kelly Fuineau

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Cook Nuclear Plant Pressurized Water Reactor