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Cause No. 45576

INDIANA MICHIGAN POWER COMPANY

PRE-FILED VERIFIED DIRECT TESTIMONY

OF

AARON L. HILL

Content

DIRECT TESTIMONY OF AARON L. HILL
ON BEHALF OF
INDIANA MICHIGAN POWER COMPANY

I. Introduction

Q1. Please state your name and business address.

My name is Aaron L. Hill. My business address is One Riverside Plaza, Columbus, Ohio 43215.

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

I am the Director of Trusts and Investments for American Electric Power Service Corporation (AEPSC).

Q3. What are your responsibilities as Director of Trusts and Investments for AEPSC?

I act in a fiduciary capacity to manage investment funds for pension, post-retirement benefits and 401(k) programs, as well as Nuclear Decommissioning, Spent Nuclear Fuel Trusts and other investments.

Q4. Please briefly describe your educational background and professional experience.

I received a Master's of Business Administration in Finance from the Ohio State University in 2009, where I was named a Weidler Scholar. I received a Bachelor of Science Degree in Civil Engineering from the United States Military Academy at West Point in 2001. I hold the Chartered Financial Analyst (CFA) designation.

Prior to joining AEP, I served approximately six years as a U.S. Army Officer in various combat engineering and project management positions. I began my

career with AEP in 2009 as an Associate in AEP's Commercial Operations business unit. In 2011, I was hired into AEP's Strategic Initiatives group. Our department supported strategic projects and provided financial expertise to support business development and transaction efforts on a company-wide basis. In April 2016 I was named to my current position in Trusts and Investments.

Q5. Have you previously testified before any regulatory commissions?

Yes, I have testified before the Indiana Utility Regulatory Commission (the Commission) on Indiana Michigan Power Company's nuclear decommissioning expense and prepaid pension asset in Cause No. 45235.

I have also testified before the Michigan Public Service Commission, on the aforementioned matters, in Cause No. U-20359.

II. Purpose of Testimony

Q6. What is the purpose of your testimony in this proceeding?

The purpose of my testimony is to make a recommendation on the annual provision for nuclear decommissioning expense and support the forecasted prepaid pension asset.

In this testimony, I show that the current level for decommissioning funding of $2.0 million for the Indiana jurisdiction is adequate for expected decommissioning costs. I recommend maintaining the current level of decommissioning funding in the revenue requirement in this case.

I discuss the estimation of future decommissioning costs, the rules and guidelines for determining adequate funding levels, and a methodology for determining an appropriate funding level. I recommend that there is no current

need to resume funding for the Pre-April 7, 1983 spent nuclear fuel disposal fund.

Finally, I discuss and support I&M's forecasted prepaid pension asset and prepaid OPEB asset.

Q7. Are you sponsoring any attachments in this proceeding?

I sponsor Attachment ALH-1: Summary of Decommissioning Liability.

Q8. Are you sponsoring any workpapers in this proceeding?

I am submitting the following workpapers:

WP-ALH-1	Nuclear Decommissioning Cost Escalation Rates, Fuel and Energy Escalation
WP-ALH-2	Nuclear Decommissioning Cost Escalation Rates, Labor Escalation
WP-ALH-3	Nuclear Decommissioning Cost Escalation Rates, Barnwell South Carolina Disposal Site, Historical Burial Cost for Radioactive Wastes
WP-ALH-4	Expected Return on Assets
WP-ALH-5	Historical Annual Investment Returns
WP-ALH-6	Nuclear Decommissioning Trust Beginning Balances As Of December 31, 2020
WP-ALH-7	Pre-April 7, 1983 Spent Nuclear Fuel Disposal Market Value of Trust Assets
WP-ALH-8	Pre-April 7, 1983 Spent Nuclear Fuel Disposal, Indiana Spent Fuel Asset Growth

WP-ALH-9 Pre-April 7, 1983 Spent Nuclear Fuel Disposal, Indiana Spent Fuel Liability Amount

Q9. Were the attachments and workpapers that you are supporting prepared by you or under your direction?

Yes.

III. Nuclear Decommissioning Trust

Q10. What is the purpose of the decommissioning trust?

The purpose of the external decommissioning trust is to ensure that adequate funds are available to pay for the safe dismantlement of the Cook Plant and related facilities, disposal of the radioactive portions of the plant, storage of spent nuclear fuel as needed, and restoration of the plant site.

The external decommissioning trust is also needed to comply with certain State and Nuclear Regulatory Commission ("NRC") requirements.

Q11. What is the purpose of annual funding of the decommissioning trust?

Making regular, periodic contributions to fund the decommissioning trust helps provide funds for the future cost of decommissioning the Cook Nuclear Plant. The inclusion of the decommissioning expense in retail rates seeks to align the cost of decommissioning the Cook Plant with the benefits of its electric power generation during the plant's useful life.

Failure to make sufficient contributions to the trust may cause the trust to violate Nuclear Regulatory Commission requirements. A lack of sufficient contributions could also result in a need to reflect decommissioning costs for the plant in rates

charged to future generations who may not receive electric power or other benefits from the plant.

Q12. How will the decommissioning trust be used?

At the end of the plant's life, the contributions and investment earnings built up in the trust will be used to pay for the expense of safely dismantling the plant, disposing of the irradiated portions of the plant and restoring the plant site to its original condition. In addition, any taxes due on the trust fund's investments will be paid.

Q13. How did the Company determine the appropriate amount of contributions to the decommissioning trust fund be determined?

Unit 1 of the Cook Nuclear Plant is scheduled to be retired in 2034, and Unit 2 of the plant is scheduled to be retired in 2037. Given that the plant is expected to run for another sixteen years, and that the decommissioning process will last many more years after the plant is retired, determining the amount of current contributions needed to fully provide for decommissioning requires several assumptions.

My testimony and work papers detail the assumptions I have made and the techniques used to reasonably estimate the necessary contributions. The steps can be briefly summarized as estimating the current cost for decommissioning the plant, projecting those costs to the time of the plant's retirement, projecting the after-tax value of the decommissioning trust fund, and evaluating the probability of whether or not the contributions were sufficient to fully fund decommissioning costs.

Q14. What amount was recognized in the cost of service in I&M's last rate case for the funding of the Cook Plant's decommissioning costs?

The Commission most recently reviewed the Cook Plant's decommissioning costs in a comprehensive rate proceeding in Cause No. 45235. In the March 11, 2020 Order in that Cause (p. 68), the Commission approved decommissioning costs of $2.0 million per year in the cost of service (divided evenly between Units 1 and 2 of the plant). As will be shown in this testimony, the $2.0 million amount approved in Cause No. 45235 is adequate for the revenue requirements for this case.

Q15. What is the basis for your conclusion regarding the level of the nuclear decommissioning costs to be included in the Company's cost of service?

I began with the decommissioning cost estimates from the January 2019 TLG decommissioning study ("TLG Study"), that was performed by an unaffiliated third party, TLG, and is included in Company witness Knight's testimony as Attachment RWK-2.

Detailed decommissioning cost studies can take over seven months to complete and are generally conducted every three years. The TLG Study is the Company's most recent detailed decommissioning cost study. The results of that study were presented in Cause No. 45235 and are presented in this Cause by Company witness Knight. The study assumed the use of the most current available technology to dismantle the plant and safely dispose of the irradiated portions of the plant waste. As explained by Company witness Knight, it is reasonable to rely on the results of the TLG Study in this proceeding.

I projected the costs in the TLG Study using escalation rates I developed from authoritative data sources identified later in this testimony and in my work papers. Next, I used a Monte Carlo simulation technique to determine the

probability of whether the current contribution rates would provide sufficient funds to decommission the plant.

The results show that the current level of $2.0 million for the annual decommissioning trust contribution in the Indiana jurisdiction is adequate for satisfying the expected future decommissioning obligation. The details of my analysis will be discussed later in this testimony.

Q16. Are there specific guidelines for the establishment and funding of decommissioning trusts related to nuclear power plants such as the Cook Plant?

Yes, the NRC has established guidelines to ensure the adequacy of funds for the safe dismantlement, decontamination and disposal of generating units at the end of their useful lives. These guidelines apply to both the amounts of fund contributions and the methods for funding the ultimate decommissioning of the units.

Q17. What are the guidelines from the NRC regarding funding of nuclear decommissioning trusts?

The NRC requirements are detailed in 10 Code of Federal Regulations (CFR) §50.75. The requirements are intended to provide reasonable assurance that adequate funds will be available for the decommissioning process.

To accomplish this, the NRC regulations require that the decommissioning fund assets should be held in an account segregated from the company, that the account must be outside the administrative control of the company owning the trust fund, and licensees inform the NRC of any material changes to the trust agreement.

Further, the regulations specify a minimum amount to be accumulated in the fund for the radiological portion of the decommissioning. The regulations also

require that each licensee of a nuclear power plant must prepare a biennial certification of assurance demonstrating that the licensee has accumulated at least a minimum amount of decommissioning funds.

The regulations lay out the minimum amounts required for radiological decommissioning of reactors of different sizes and types in 1986 dollars. The regulations also specify how the decommissioning costs should be escalated.

Q18. What is the estimated decommissioning cost for the Cook Plant from the TLG Study?

The NRC License Termination, Spent Fuel Management and Site Restoration costs for the plant were estimated to total $2.0 billion in 2018 dollars, or $2.2 billion when escalated to 2022 dollars, as shown in Attachment ALH-1.

The decommissioning expenditures for Unit 1 are scheduled to begin in 2034 and the decommissioning expenditures for Unit 2 are scheduled to begin in 2037, which are the end of the NRC operating license lives.

Complete decommissioning of the plant is expected to take many years. In addition, ongoing costs for spent nuclear fuel storage are expected to continue indefinitely.

Q19. How did you use the costs from the decommissioning study to develop the proposed funding levels?

The costs from the Cook Plant Decommissioning Cost Study are expressed in 2018 dollars. I then project the costs to the time of decommissioning, in order to assess the sufficiency of the level of decommissioning contributions. The decommissioning expenditures were escalated from their 2018 base level using the formula prescribed by the NRC for development of escalation rates for nuclear decommissioning costs.

The NRC formula breaks the decommissioning costs into three components: labor, energy, and radioactive waste burial. The weight of each component is based on the detailed estimates in the TLG Study. The weighted annual inflation of all components comprises the total cost escalation for decommissioning. The purpose of escalating decommissioning costs is to ensure that cost forecasts account for the rate in which decommissioning costs are expected to increase over the long time horizon between now and the completion of the decommissioning process.

As described in detail later in my testimony, the decommissioning cost escalation for the Cook Plant from 2018 to the expected end of the plant's life was based on historical updates of inflation components from the Bureau of Labor Statistics and recent estimates of waste disposal costs published by the NRC.

IV. Details of I&M's Decommissioning Trust

Q20. Are the decommissioning fund assets held in an account external to the Company as required by the Nuclear Regulatory Commission?

Yes, the assets for I&M's nuclear decommissioning funds are held in a trust fund by The Bank of New York Mellon (BNY Mellon). BNY Mellon maintains separate accounting records for each unit and each jurisdiction of the Cook Plant decommissioning trust.

Q21. Are the trust fund investments maintained outside of the administrative control of I&M?

Yes, the investment decisions for the trust fund are made by an independent investment manager, NISA Investment Advisors, L.L.C. (NISA). NISA, based in St. Louis, Missouri, was selected based on their performance and experience in

managing both equity and fixed income investments in nuclear decommissioning trusts.

Q22. What are the total assets in the Cook Plant nuclear decommissioning trust and how much is jurisdictional to Indiana?

At the end of 2020, the market value of assets in the decommissioning trust totaled $2,982,336,510. Those assets will have taxes due on investment gains when the investments are sold. At the current decommissioning trust tax rate of 20%, my estimate is that the taxes would total $301,803,613, leaving $2,680,532,897 in net assets available to pay decommissioning expenses (known as the liquidation value).

For the Indiana jurisdiction, the total market value at the end of 2020 was $2,144,126,624, and estimated taxes on unrealized gains would be $221,835,090, leaving a liquidation value of $1,922,291,534. To estimate the accumulation of the Indiana jurisdiction's liquidation value through the final date of decommissioning, contributions of $2.0 million and pre-tax investment earnings of 5.3% annually were assumed.

At December 31, 2022, the market value of assets available for the Indiana jurisdictional portion of the liability is projected to be $2,380,980,961, with taxes due of $268,405,958, resulting in a net liquidation value of $2,112,575,003.

Q23. Are the assets in the Cook Plant nuclear decommissioning trust above the minimum amount required by the NRC?

Yes, at the end of 2020, the balance in the I&M decommissioning trust was above the NRC minimum. The NRC has specified that only the portion of the decommissioning trust allocated for radiological decommissioning can be used to fulfill the minimum requirements.

The portion of the Cook decommissioning fund applicable to the NRC minimum is 62% of the fund and this balance allocated to radiological decommissioning meets the NRC minimum requirements.

The NRC minimum requirements are a base level of funding necessary just to assure the safe dismantlement and disposal of the irradiated components of the plant, but not the dismantlement of the plant buildings and non-radioactive portions of the plant. I&M has a commitment to restore the plant site to a greenfield condition; i.e. the plant site should be restored to a condition comparable to that prior to the construction of the plant.

Other NRC requirements in 10 CFR 50.54(bb) cover the storage cost for spent nuclear fuel. Those costs will be required until the Department of Energy (DOE) takes possession of spent fuel and are in addition to the amounts needed to meet the NRC minimum for radiological decommissioning.

V. Details of Decommissioning Expense Modeling

Q24. Is a comparison of the current estimate of decommissioning cost to the current balances in the decommissioning trust fund a valid method to evaluate the need for continued contributions to the trust fund?

No, it is not. Comparing current decommissioning cost estimates with current asset balances would be valid only if the plant were to be decommissioned immediately. In the case of the Cook plant, the decommissioning will not begin for nearly thirteen years. To evaluate the prospects for adequately providing for decommissioning the plant, both the expected cost of decommissioning the plant and the value of the funds that will be used to pay for it need to be extended through the entire decommissioning process.

The expected costs of decommissioning the plant have grown steadily and are expected to grow continuously in the future. In the modeling process I describe

below, an analytical process was used to estimate the expected future costs of decommissioning. The process then uses the cost component escalation rates to escalate costs over the time horizon needed to safely decommission the plant.

The decommissioning trust fund assets will grow erratically, and, at times, may have periods of negative growth. The investment markets have a considerable amount of volatility. That volatility adds uncertainty to the amount of assets that will be accumulated over time, and makes forecasting the adequacy of funding the decommissioning trust complicated. Continued contributions at an adequate level helps assure the sufficiency of the amount of assets that will ultimately be available for decommissioning, and reduces the probability of a funding failure.

For these reasons, it is clear that a static comparison of the current assets in the trust, to the currently estimated decommissioning cost is an overly simplistic method of analysis and could lead to erroneous conclusions about the need for continued funding for decommissioning expense.

Q25. How is the annual funding requirement for decommissioning calculated?

To calculate the funding requirements, the individual component amounts of the decommissioning costs taken from the cash flow tables shown in the Cook Decommissioning Cost Study, Attachment RWK-2, Table 3.1a and Table 3.2a of the TLG Study were escalated at rates appropriate for each component.

The total escalated component costs were then used as the future decommissioning expenses. The current balances of the decommissioning trusts (less the taxes that will be due on current capital gains when the investments are sold) were then used as the beginning point for the amount of assets available to pay for the decommissioning expenses.

The projected balances, plus an assumed amount of annual future funding, were escalated at a range of after-tax rates of investment return through a

Monte Carlo simulation process to determine the likelihood of having sufficient assets available at the end of the plant's useful life to pay for the decommissioning expenses.

Q26. How was the decommissioning cost escalation rate calculated?

The escalation rate is a combination of several components, and was calculated for each year in accordance with NRC requirements. Separate forecasts were made for each of the formula's component pieces: the forecasted costs of labor, the rate of increase for energy costs, and the cost of radioactive waste disposal.

Those costs were escalated at the base inflation rate of 2.25%, plus their inflation premium, as determined below. Costs not included in those specific categories were escalated at the general rate of inflation. The components were then weighted according to the detailed estimates from the TLG Study. The weighted rates were then summed to determine the annual escalation rate for the cost to decommission the Cook Plant.

Q27. How were the forecasts for labor and energy costs developed?

The forecast data for labor and energy costs came from historical information of the Bureau of Labor Statistics. For the labor cost component, the historical increases in compensation for the Midwest region were compared to the Consumer Price Index. Statistics dating back to the 1983 inception of the Midwest regional labor index shows that, on average, the increase in compensation exceeds the base rate of inflation by approximately 0.56%.

The energy cost component has two sub-components: Electricity and Fuel. For the escalation of the Electricity sub-component, the Electric Power Index was used and for the Fuel sub-component, the Petroleum Price Index was used. The indexes for these two cost components were compared to the rate of inflation extending back to the inception of the Electric Power Index in 1958.

Consistent with the NRC formula and guidance, the composite energy factor was then calculated by using a 58% weighting for the electricity component and a 42% weighting for the fuel component. While the rate of increase for the labor cost index and the electric power price index have been relatively stable compared to the general rate of inflation for the past few years, the fuel price index has fluctuated dramatically. The weighted average for the combined cost of energy was calculated to have historically increased by 1.24% in excess of the base rate of inflation.

Q28. How was the escalation rate for waste disposal costs calculated?

The NRC periodically publishes a report on waste burial charges. The report, called NUREG 1307 Report on Waste Burial Charges, gives current estimates of waste disposal costs for decommissioning of nuclear power plants. Historical data is also provided in the report, allowing a trend line for costs to be estimated. The most recent version of the report, NUREG-1307 Revision 18, was released in February 2021.

There are very few waste burial sites available for use by the Cook Plant. One site currently available for disposal of low-level waste from the Cook Plant is located in Clive, Utah, and is run by a private company named EnergySolutions. The EnergySolutions site can take the lowest level of radioactive wastes, but it would not be able to accept the more highly radioactive debris. Accordingly, the TLG study assumes that the EnergySolutions site would be used for the lowest-class waste to be disposed of from the Cook Plant. However, because a long-term public history from the EnergySolutions site is not available, costs from the site cannot be used to estimate an escalation factor for future increases in the waste disposal expense.

A new radioactive waste disposal facility has opened near Andrews, Texas. The TLG Study assumed that the Texas site will be used for the burial of higher-level Class B and C radioactive waste. However, there is not yet a history of publicly

available waste disposal costs from which to estimate a trend line, so it also cannot be used to estimate an escalation factor for waste disposal costs.

The radioactive waste burial site in Barnwell, South Carolina has been used in previous decommissioning cost studies for the Cook Plant. However, that site was closed in 2008 to most waste generators, including the Cook Plant. So, although the Barnwell site cannot be used in the decommissioning plan for the Cook plant, the publicly available history of costs for the use of that site give an indication of the pattern of cost increases that can be expected for similar sites, including the Texas facility. For that reason, the disposal costs at the Barnwell, South Carolina site were used to estimate the escalation factor for nuclear waste disposal.

Although historical waste disposal cost data for the Barnwell site is available for more than 25 years, changes in regulations resulted in a high rate of increase in waste burial costs in the 1990's. More recent data better reflects current conditions, and is more useful for establishing a trend for future cost increases.

Over the past 21 years, the cost of waste burial has increased by an average of 0.23% more than the base rate of inflation.

Q29. What asset classes for investments were used in developing estimates of investment returns?

The major asset classes used were the broad categories of domestic equities, fixed income, and cash. Each of these asset classes has a long history which can be used to evaluate return potential, risks, and correlations with the other classes.

The average rates of return used for the asset classes reflect the long-term outlook, and are based on the rates used for setting the rate of return expectations for the AEP pension fund. The rates for equities and cash were not adjusted for investment restrictions in the decommissioning trust funds.

Q30. What is the impact of taxes on the investment portfolio?

The trust fund must pay taxes on the investment income and any investment gains that are realized in the portfolio. The taxes paid detract from the growth of the trust fund, and reduce the amount of funds that will ultimately be available to pay for decommissioning expenses. Currently, the tax rate on the qualified trust fund is 20%.

Q31. How will the asset allocation of the decommissioning trust investment portfolio change over the life of the trust fund?

The allocation will be changed as the planned date for decommissioning the plant draws near to reduce the amount of investment risk in the portfolio and to provide sufficient liquid assets to pay for decommissioning costs. The current allocation is appropriate for the long-term growth of the fund.

However, as decommissioning draws closer, the investment portfolio will be shifted to reduce the potential for investment losses. Beginning about ten years prior to the retirement of the plant, the level of equities will be reduced and more fixed income securities will be held in the portfolio in order to reduce the level of equity market risk in the decommissioning trust fund.

Although the reduction in the equity allocation will reduce the expected rate of return on the fund, prudent investment practice calls for a reduction of risk when there is less time available to recover from a potential market loss before the funds are needed for decommissioning. The projected changes in asset allocation were included in the modeling.

Q32. How were the projected costs of decommissioning the plant allocated between I&M's retail jurisdictions?

In order to determine the net decommission cost responsibility for I&M's retail jurisdictions it is necessary to first reduce the total decommissioning cost

estimate by an estimate of the total contributions from I&M's wholesale customers. This properly recognizes the reduced decommissioning liability for retail customers as a result of wholesale customers' contributions over time.

The remaining balance of decommissioning cost responsibility is then allocated to I&M's Indiana and Michigan retail jurisdictions using the historical average of demand allocation factors. The development of demand allocation factors can be described by Company witness Duncan. Indiana's portion of the remaining decommissioning obligation is 82.7% of the total decommissioning cost.

Q33. How were the decommissioning projections accomplished?

As in previous cases, a Monte Carlo simulation was used to project both the trust fund and decommissioning costs. Monte Carlo simulation is a problem solving technique utilized to approximate the probability of certain outcomes by performing multiple trial runs, called simulations.

Q34. Why is a Monte Carlo simulation useful in modeling the nuclear decommissioning funding requirements?

Monte Carlo simulation is a useful method to create a set of possible results for situations in which the inputs are uncertain. In the case of the decommissioning funds, the investment returns and the base cost inflation rate are the uncertain variables. The output of the Monte Carlo model is a set of probabilities that there will be sufficient funds available to successfully achieve the decommissioning goal. In this case, it is useful in determining the funding requirements for the nuclear decommissioning trust fund since it can be used to simulate a range of possible investment returns for the fund in the future.

Although it is impossible to know in advance what the actual rate of return the trust fund's investments will be over the life of the plant and the subsequent decommissioning, an estimate of the possible ranges of annual returns can be

constructed. The Monte Carlo simulation generates a large number of possible outcomes for the decommissioning fund by varying the annual rate of return on the fund's investments.

In doing so, it can help estimate the probability of meeting the goal of having enough assets to fully pay for decommissioning the plant. The probability of having sufficient funds at the time of the planned plant retirement available to fully decommission the plant was computed to determine the appropriateness of the current level of funding.

Q35. What will be done with the spent nuclear fuel when the plant is retired?

Since funding for the national spent fuel repository has been canceled, it has become more likely that the spent fuel will remain at the plant site indefinitely.

The TLG Study includes annual cost of storing the spent nuclear fuel at the plant site. The fuel will be removed from the plant and transferred to an Independent Spent Fuel Storage Installation (ISFSI) at the plant site, where it can be secured and monitored.

For the projections performed for this testimony, I assume that, starting in 2034, the decommissioning fund will need to provide reasonable assurance that funding is available for managing spent nuclear fuel storage as required by 10 CFR 50.54(bb). The cost for the storage and surveillance of all spent fuel generated during the life of the plant is included in the annual cost. These costs were escalated out to year 2100, effectively reflecting indefinite storage for accounting purposes.

In addition to the costs for the storage of the final load of spent nuclear fuel, there will also be costs incurred to decommission the ISFSI when the spent fuel is finally removed, whether that occurs in 2100 or another date, from the plant site. Those costs are also included in the decommissioning cost estimates.

Q36. What is the most significant risk for the decommissioning trust fund?

Although the risk of an investment loss is commonly associated with an investment portfolio, the greatest risk to the decommissioning trust is the possibility of a shortfall – not having sufficient assets to fully pay for the cost of decommissioning the plant.

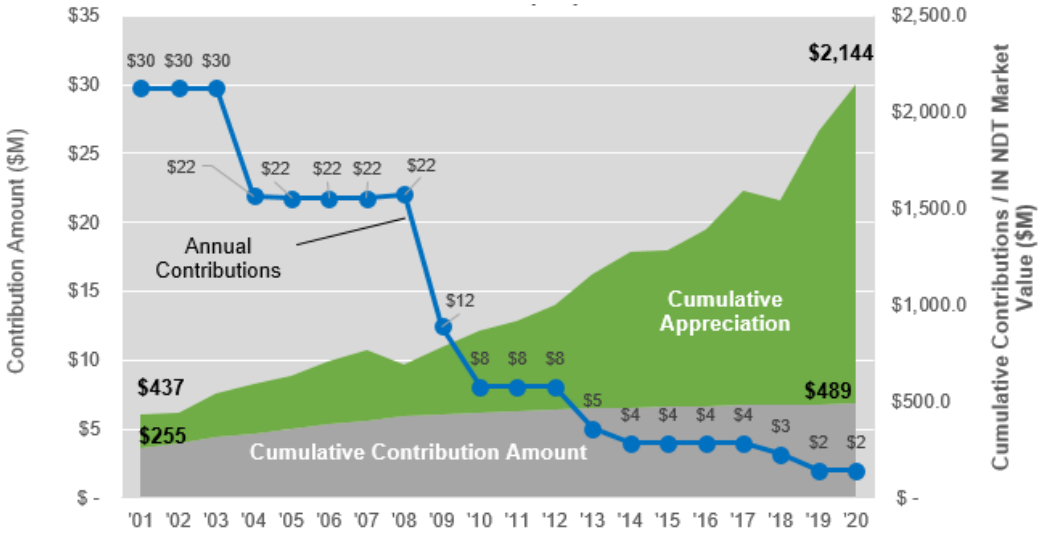
A shortfall in the fund is difficult to manage, and would be difficult to recover from. A shortfall would mean that the fund has failed to meet its basic objective of fully providing for the decommissioning of the plant. Since the decommissioning activities will continue for many years after the plant is removed from service, the existence of a shortfall and the extent of a shortfall may not be known for some time after the decommissioning process begins.

Since annual contributions to the fund would have already ceased and since the investments would be positioned in a conservative asset allocation to accommodate payments for decommissioning expenses, the shortfall could not be eliminated with either extraordinary gains or normal annual contributions.

Figure ALH-1 shows that contributions and their subsequent appreciation is essential to avoiding such a shortfall since contributions today have the potential

to compound in value and provide the funds necessary to decommission the plant in the future.

Figure ALH-1. Indiana contributions and Nuclear Decommissioning Trust market value



The smaller the amount of contributions, the less principal and appreciation there will eventually be at the time of decommissioning and the higher the risk of a shortfall. *Figure ALH-1* shows that cumulative Indiana contributions to the decommissioning trust at year end 2020 total $489 million, while the total market value of the Indiana Nuclear Decommissioning Trust is $2,144 million.

This difference of $1,655 million reflects the trust return on investments over time and illustrates how use of the trust has reduced the expense that would otherwise be recognized in rates for electric service.

Q37. What could cause the decommissioning fund assets to be less than anticipated?

The investment returns on the trust fund's assets will be affected by future investment markets. The investment markets are unpredictable, and the investment returns achieved may lag behind the returns projected.

A slight decrease in the cumulative investment rate of return could cause a large shortfall in the funds available for decommissioning at the time the plant is retired. For example, a 1% decrease in the average investment rate of return on the qualified fund would cause an approximately $436 million decrease in the Indiana jurisdictional fund balance at the Unit 1 retirement date in 2034.

Q38. Are there any other risk factors in planning for decommissioning?

Yes. Although I&M certainly intends to operate the plant until its planned retirement there still remains the possibility that the plant may be shut down prior to the expiration of the operating license.

This possibility would have the effect of not allowing the decommissioning funds to grow for as long as is currently planned, and would increase the probability that the decommissioning funds available may be insufficient to pay for the decommissioning expenses.

In recent years, several nuclear plants in the United States have shut down prior to the expiration of their licenses. Among those shut down prematurely are the Crystal River Unit 3 in Florida, San Onofre Units 2 and 3 in California, the Kewaunee plant in Wisconsin, and the Vermont Yankee plant.

Q39. Is the current amount of funding adequate for the Cook Plant decommissioning?

The modeling results show that the current amount of annual decommissioning funding for the Indiana jurisdiction of $2.0 million should be adequate to safely decommission the plant at the end of its useful life. The probability of having sufficient funds at the current level of contributions is approximately 84%.

Stated another way, there is approximately a one in five chance the trust fund will not have enough money at the end of the plant life to fully pay for decommissioning. I&M will continue to report to the Commission every three years on the adequacy of the existing provision, however, and it may recommend adjusting the level of decommissioning fund contributions needed in the future.

Q40. Should the Commission order in this Cause incorporate language regarding the funding to assist I&M in obtaining compliance with regulations of the Internal Revenue Service regarding qualified nuclear decommissioning trust funds similar to past orders?

Yes, the Commission should include the language below:

1) The amount of decommissioning costs to be included in the cost of service for Units No. 1 and No. 2 of the Donald C. Cook Plant is $1.00 million and $1.00 million, respectively.

2) The assumptions used to determine the decommissioning costs to be included in the cost of service for each of the two Units are:

    a. The weighted after-tax rate of return expected to be earned by amounts collected for decommissioning is 4.2%.

    b. The method of decommissioning each of the two Units assumed in the Decommissioning Study of the D. C. Cook

Nuclear Power prepared by TLG dated January 4, 2019 is immediate decommissioning of the site ("DECON"), on-site storage of spent fuel, and clean removal.

c. The total estimated cost of decommissioning in 2018 dollars in total for the Donald C. Cook Plant is $2,404,017,000, consisting of $2,032,121,000 in base decommissioning costs per the TLG Study, $335,013,000 of annual post decommissioning spent fuel storage costs through 2098, and $36,883,000 for the eventual decommissioning of the independent spent fuel storage installation ("ISFSI"). The estimated cost of decommissioning for each unit is $1,165,328,721 for Unit 1 and $1,238,688,279 for Unit 2.

d. The methodology used to convert the current dollars estimated decommissioning cost to future dollars estimated decommissioning costs is to use the formula prescribed by the NRC for development of escalation rates for nuclear decommissioning costs. The NRC formula breaks the decommissioning costs into 3 three components: labor, energy, and radioactive waste burial. The weight of each component is based on the detailed estimates in the TLG Study. A base rate of 2.25% was assumed. The escalation rates for labor, energy and radioactive waste burial were assumed to exceed the base rate of inflation by 0.56%, 1.24% and 0.23%, respectively.

e. Decommissioning costs to be included in the cost of service are an amount of $2.0 million apportioned between units as shown in Item No.1 and are expected to be included annually in the cost of service for each of the two units, continuing through the dates shown in Item (f), unless changed by future order of the Commission.

f. The estimated date on which it is projected that the nuclear unit will no longer be included in I&M's electric utility plant in service is October 31, 2034, for Unit 1 and December 31, 2037, for Unit 2.

g. The TLG Study was utilized in determining the amount of decommissioning costs to be included in I&M's cost of service.

VI. Spent Nuclear Fuel Trust

Q41. What is the history of the funding for the disposal of spent nuclear fuel?

The Nuclear Waste Policy Act of 1982, signed into law on January 7, 1983, established that the Federal Government had responsibility to provide for the permanent disposal of spent nuclear fuel and the costs of such disposal were the responsibility of the generators and owners of the spent nuclear fuel.

The DOE promulgated rules under this Act that relate, in part, to the disposal of spent nuclear fuel from commercial nuclear reactors including Cook Plant. In June 1983, I&M signed a contract with the DOE that provided, among other things, for payment of fees to the U.S. Treasury for such disposal.

The contract consisted of fees derived by two cost mechanisms. One mechanism was a one-time fee for nuclear fuel spent to generate electricity at civilian nuclear power reactors prior to April 7, 1983 (Pre-April 7, 1983). The second mechanism was a fee per kilowatt-hour of generation for spent nuclear fuel resulting from the generation and sale of electricity on or after April 7, 1983 (Post April 6, 1983).

So, in addition to the liability for decommissioning the nuclear plant, I&M also has an obligation to the DOE to pay for the disposal of spent nuclear fuel used prior to April 7, 1983. The obligation is a fixed amount that increases with interest accumulated each year.

Amounts included in the fuel cost adjustment mechanism for the Post-April 6, 1983 spent nuclear fuel disposal costs are required to be deposited quarterly with the U.S. Treasury. Starting in June 2014, the DOE concluded that appropriate quarterly payment is zero until a viable spent fuel disposal program is progressing. These collections will continue at the present zero level unless the U.S. Government either funds and executes the current program or revises the statutes to start up an alternate, viable program. Those amounts do not directly affect decommissioning.

Q42. How much is the liability for disposal of Pre-April 7, 1983 spent nuclear fuel?

On a Total Company basis, the initial liability for Pre-April 7, 1983 spent nuclear fuel disposal was $71,963,830. The liability increases each quarter based on the most current yield for 3-month Treasury bills. It has increased through the accumulation of interest to $281,152,149 as of December 31, 2020, and, based on the current Treasury bill rate, is projected to increase only slightly by December 31, 2022 to about $281,720,363.

The portion of the liability allocated to Indiana, after applying assets accumulated from wholesale customers, was approximately $195,315,255 at December 31, 2020, and it should grow to about $195,709,991 by December 31, 2022 as shown in WP-ALH-9.

Q43. Please describe the Pre-April 7, 1983 spent nuclear fuel disposal trust fund.

Like the nuclear decommissioning trust, the spent nuclear fuel trust fund is held at BNY Mellon. The fund is considered to be a non-qualified fund, and, as such, contributions to it are not tax deductible and investment income and capital gains are subject to corporate income taxes.

Q44. What is the value of the assets in the trust fund for the Pre-April 7, 1983 spent nuclear fuel disposal liability?

As of December 31, 2020, the Indiana jurisdictional portion of I&M's spent nuclear fuel trust fund had a market value of $230,432,286. That balance is expected to increase to about $230,800,157 by December 31, 2022 as shown in WP-ALH-8. The Indiana jurisdictional balance of the spent nuclear fuel trust fund is currently greater than the spent fuel liability allocated to it, and is projected to remain so for the projected test year. As such, the trust may be considered fully funded at this time and for the duration of the projected test year.

It is important to note that the spent nuclear fuel liability will continue to increase through the accrual of additional interest until paid. Furthermore, the liability can move from fully funded to less than fully funded through changes in the market value of trust fund securities, differences between the liability accretion rate and the investment earnings rate and other factors.

Q45. What are your recommendations for the funding of the spent nuclear fuel liability?

The spent nuclear fuel trust is adequately funded at the present time. As the current level of assets exceeds the liability and both are growing very slowly, the fund does not appear to be in danger of becoming under-funded in the near future. For those reasons, additional funding is not necessary at this time. I recommend that the funding for the Pre-April 7, 1983 spent nuclear fuel disposal remain suspended.

It should be noted that the obligation to the DOE has not yet been satisfied, and that the need for funding of the spent nuclear fuel disposal trust will be evaluated periodically. If additional funding is needed in the future, I&M will make a recommendation at that time.

VII. Prepaid Pension Asset

Q46. Has I&M included a prepaid pension asset in this case?

Yes. Consistent with the Orders in IURC Cause Nos. 44075, 44967 and 45235, I&M seeks to continue the inclusion of Prepaid Pensions in I&M's rate base.

The Order in Cause No. 44075 (p. 10) stated that the prepaid pension asset was recorded on the Company's books in accordance with governing accounting standards, the prepaid pension asset reduced the pension cost reflected in the revenue requirement in the case, preserves the integrity of the pension fund, and should be included in rate base.

In its March 11, 2020 Order in Cause No. 45235 (p. 27), the Commission again concluded that the prepaid pension asset should be included in rate base. The reasons underlying the Commission's previous determinations remain unchanged.

Company witnesses Ross and Seger-Lawson further support the accounting and ratemaking treatment. My testimony addresses the Test Year end prepaid pension asset value.

Q47. Please explain your view that the reasoning in Cause No. 44075 and 45235 for including the prepaid pension asset in rate base still apply today.

Funding included in the prepaid pension asset represent amounts expended by the Company in providing utility service in advance of receiving related goods or services. The cost of this service is recognized in the ratemaking process because a utility is entitled to have all of its reasonable costs reflected in the ratemaking process.

In other words, the utility has prepaid an allowable cost and the inclusion of the prepayment in rate base is consistent with well-accepted ratemaking principles and necessary both to compensate the utility for use of the funds it has

advanced and to avoid a disincentive to the utility for making similar prudent advances in the future.

Q48. Please describe I&M's ongoing funding strategy for the employee pension plan.

I&M's strategy is to fund at least the annual minimum amount required by the Employee Retirement Income Security Act of 1974 (ERISA). Additional discretionary contributions may be made to support the funded status of the plan, after taking into consideration among other factors, the plan's funded status, market expectations, asset allocations, the Company's financial position and projected liability growth rates. The additional contributions are generally in the amount of the plan's service cost to account for benefits earned by active employees during the year.

Q49. Please define a prepaid pension asset.

A prepaid pension asset can be defined as cumulative pension cash contributions less cumulative pension cost.

Q50. Have the additional pension contributions to the trust fund resulted in additional trust fund investment income that directly reduces the annual pension cost?

Yes, pension contributions have benefited customers by creating additional trust fund principal and investment income that has served to reduce each subsequent year's pension cost included in cost of service. The contributions and returns have also contributed to the avoidance of paying the variable Pension Benefit Guaranty Corporation ("PBGC") premiums since 2012 that must be made when a pension plan falls below certain funded levels. This ultimately reduces plan costs and helps preserve the plan's funded status.

Q51. What is the value of the prepaid pension asset included in I&M's rate base?

The value of the prepaid pension asset is projected to be $80,675,062 on December 31, 2022, I&M's Test Year end, on a Total Company basis. For Indiana, the prepaid pension amount as of December 31, 2022 is $58,104,811.

The prepaid pension asset has decreased since the prior order, Cause No. 45235, when the prepaid pension asset balance was approximately $89 million on a Total Company basis and $59 million on an Indiana basis. Please refer to Company witness Duncan for support that determines the prepaid pension asset on an Indiana basis.

Q52. Please describe the process of forecasting the prepaid pension asset.

The prepaid pension asset is forecasted similar to other asset balances, beginning with an actual balance as of a period end and adjusting for forecasted activity. The value of the prepaid pension asset on a Total Company basis was $81,502,062 as of December 31, 2020.

Forecast pension cash contributions of $10,504,000 and $10,459,000 for years 2021 and 2022 respectively, are added to the December 31, 2020 prepaid pension asset balance. Forecast pension costs of $11,195,000 and $10,595,000 for years 2021 and 2022 respectively, are subtracted. The result is the projected December 31, 2022 prepaid pension asset balance.

Q53. What process does I&M use to forecast pension contributions and costs?

I&M uses the services of a professional actuarial firm, Willis Towers Watson, to develop this forecast. I collaborate with them, along with internal AEP departments such as Accounting and Human Resources, to ensure the assumptions included in Willis Towers Watson's model are consistent with plan provisions, participant demographics, asset balances and other important data

and plan characteristics. The resulting forecast contains expected pension costs and contributions and are based on the assumptions input into the model.

VIII. Prepaid OPEB Asset

Q54. Has I&M included a prepaid OPEB asset in this case?

Yes, a prepaid OPEB asset is included in this case. My testimony explains the prepaid OPEB asset and addresses the Test Year end prepaid OPEB asset value. Company witnesses Ross and Seger-Lawson further support the accounting and ratemaking treatment of the prepaid OPEB asset.

Q55. Please define the prepaid OPEB asset.

Similar to the prepaid pension asset, a prepaid OPEB asset can be defined as cumulative OPEB cash contributions less cumulative OPEB cost.

Q56. Does the Company's OPEB plan have a separate trust fund?

Yes. There are multiple Voluntary Employees Beneficiary Association (VEBA) trusts established, as well as a 401(h) account, to fund retiree medical obligations. Collectively, the trusts fund benefits for the OPEB plans.

The trusts qualify as plan assets in accordance with GAAP accounting, meaning that the trusts are irrevocable. The trust designation requires I&M to keep within the trusts, all funds not used to pay employee retiree benefits.

In accordance with this requirement and rather than comingling funds with other business operations, I&M has prudently invested and earned a return on plan assets allowing the Company to reduce OPEB costs incurred and reduce the amounts reflected in the revenue requirement used to establish base rates.

Q57. Please explain how the prepaid OPEB asset balance was established and why it has increased.

The OPEB trust assets represent prudent investments made to account for the costs associated with providing certain retiree medical benefits and life insurance to plan participants and beneficiaries. Trust assets are invested to earn a return and grow over time to fund these retiree benefits, while, at the same time, reducing expense recognized in rates for electric service. The Company's practice has been to make contributions to the OPEB trusts that were nearly equal to the OPEB costs reflected in rates.

In 2012, AEP announced changes to the OPEB plan for existing employees effective January 1, 2013. These changes included the capping of contributions to retiree medical costs, thus reducing the Company's future exposure to medical cost inflation. AEP also closed the plan to new employees effective January 1, 2014.

Due to these changes made to retiree medical coverage, the retiree medical liability was reduced and the Company discontinued contributions to the OPEB trusts.

The medical plan changes resulted in an OPEB prior service credit that reduced expense. In other words, prior to the retiree medical benefit changes in 2013, the Company accrued a higher postretirement medical expense to reflect the then higher postretirement liability. After the postretirement medical benefits were changed and the liability was reduced, a credit to expense was reflected in order to amortize difference between the higher liability that was accrued prior to the medical benefit changes in 2013, and the new, lower liability, that was established after the medical benefit changes in 2013.

Consequently, the prepaid OPEB asset has steadily increased due to the trust earnings; contributions have remained zero and cumulative OPEB costs have been a net credit, or negative.

Q58. What is the value of the prepaid OPEB asset included in I&M's rate base?

The value of the prepaid OPEB asset is projected to be $96,252,892 on December 31, 2022, I&M's Test Year end, on a Total Company basis. For Indiana, the prepaid OPEB amount as of December 31, 2022 is $69,324,472.

Q59. Do customers of the Company continue to benefit from the OPEB prepayment?

Yes. Due to the prudent decisions the Company made to keep employee postretirement costs low, I&M currently records a significant net credit to expense that is reflected in the Company's previous and currently proposed cost of service and resulting base rates.

The prepaid OPEB asset represents a prudent investment made to help meet utility obligations and to reduce cost of service for customers. In addition, OPEB Plan assets earn a return that benefits customers. The return is used and useful as it reduces (credits) OPEB expense, resulting in lower cost of service for customers. Company witness Ross explain why the treatment of OPEB costs in the retail ratemaking process creates a prepayment that is reasonably recognized in rate base.

IX. Summary

Q60. What is your recommended level of funding for the Cook Plant nuclear decommissioning trust, Pre-April 7, 1983 spent nuclear fuel trust?

The current rate of funding of $2.0 million annually should be maintained. I believe that maintaining the current level of funding provides an adequate probability of having sufficient assets in the trust fund to safely decommission the plant.

The funding for the Pre-April 7, 1983 spent nuclear fuel disposal should remain suspended for the time being. I&M will continue to monitor the level of funding for nuclear decommissioning and for Pre-April 7, 1983 spent nuclear fuel disposal and will continue to report to the commission on a regular basis.

The prepaid pension asset is accurately forecasted and its continued inclusion in I&M's rate base is appropriate.

Q61. Does this conclude your pre-filed verified direct testimony?

Yes.

VERIFICATION

I, Aaron L. Hill, Director of Trusts and Investments for 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: June 22, 2021

Aaron L. Hill

Cook Nuclear Plant
Summary of Decommissioning Liability
January 2019 Decommissioning Study
2018 Dollars

Decom Method	Spent Fuel Storage	Storage Site / Systems	Spent Fuel Repository Open	Base Decom Costs	Spent Fuel Storage Costs to 2098	ISFSI Decom	Total Decom. Costs to Year 2100 in 2018 Dollars	Indiana Jurisdictional Portion of Liability
DECON	Dry	On-Site	Never	$2,032,121,000	$ 335,013,000	$ 36,883,000	$ 2,404,017,000	$ 1,763,054,679
				2022 Dollars[1]				
DECON	Dry	On-Site	Never	$2,248,672,313	$ 366,197,122	$ 40,680,165	$ 2,655,549,600	$ 1,971,072,139

[1] Escalated to 2022 using the escalation rates described in the testimony.