FILED
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INDIANA UTILITY
REGULATORY COMMISSION

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

IN THE MATTER OF THE VERIFIED PETITION OF INDIANA MICHIGAN POWER COMPANY FOR APPROVAL OF DEMAND SIDE MANAGEMENT (DSM) PLAN, INCLUDING ENERGY EFFICIENCY (EE) PROGRAMS, AND ASSOCIATED ACCOUNTING AND RATEMAKING TREATMENT, INCLUDING TIMELY RECOVERY THROUGH I&M'S DSM/EE PROGRAM COST RIDER OF ASSOCIATED COSTS, INCLUDING PROGRAM OPERATING COSTS, NET LOST REVENUE, AND FINANCIAL INCENTIVES.	)	**CAUSE NO. 45285**

IURC
PETITIONER'S
EXHIBIT NO. 9
10-15-20 DATE REPORTER

SUBMISSION OF REBUTTAL TESTIMONY OF
<u>G. SCOTT FISHER</u>

Applicant, Indiana Michigan Power Company (I&M), by counsel, respectfully submits the rebuttal testimony and attachment of G. Scott Fisher in this Cause.

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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing was served upon the following via electronic email, hand delivery or First Class, or United States Mail, postage prepaid this 2nd day of March, 2020 to:

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I&M Exhibit ____

INDIANA MICHIGAN POWER COMPANY
CAUSE No. 45285

PRE-FILED REBUTTAL TESTIMONY

OF

G. SCOTT FISHER

PRE-FILED REBUTTAL TESTIMONY OF G. SCOTT FISHER
ON BEHALF OF
INDIANA MICHIGAN POWER COMPANY

Q. Please state your name and business address.

A. My name is G. Scott Fisher and I am a Resource Planning Manager for American Electric Power Service Corporation. My business address is 1 Riverside Plaza, Columbus, Ohio 43215.

Q. Are you the same G. Scott Fisher who submitted pre-filed Direct Testimony in this proceeding?

A. Yes.

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

The purpose of my rebuttal testimony is to respond to portions of the testimony offered by Indiana Office of Utility Consumer Counselor (OUCC) witness Haselden and Citizens Action Coalition of Indiana, Inc. (CAC) witness Anna Sommer pertaining to I&M's Integrated Resource Plan (IRP) Modeling. In addressing witness Sommer's assertions, I respond as follows:

- The Company's IRP is not "irredeemably flawed".
- The IRP's Preferred Plan is a reasonable path forward and is balanced with respect to the planned resource additions both in the near-term and long-term.
- The IRP provides the Company's demand-side management and energy efficiency (DSM/EE) planners a reasonable economic level of energy efficiency resources to be added over the planning period.

In addressing witness Haselden, I respond to his assertion that the Company's avoided cost of energy includes “estimates of arbitrary future carbon taxes used in the IRP process”.

Q. Are you sponsoring any attachments?

A. Yes. I am sponsoring the following attachment:

- Attachment GSF-1R – I&M’s response to CAC DR 4-1.

Q. Was this attachment prepared or assembled by you or under your direction and supervision?

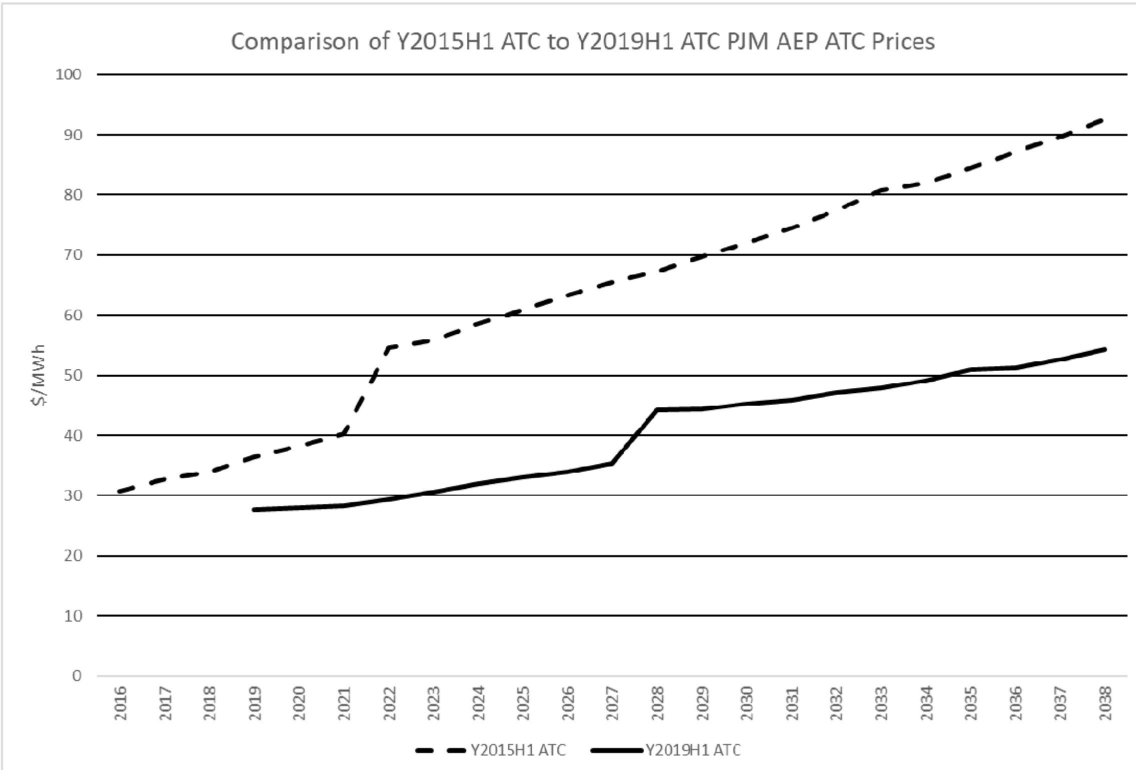
A. Yes.

I. <u>The IRP Selected a Reasonable Amount of DSM Savings</u>

Q. CAC witness Sommer states (pg. 3) that “Energy efficiency savings were so distorted by multiple, flawed assumptions that there can be no meaningful preferred DSM plan derived from I&M’s modeling”. Do you have any overall comments on the amount of DSM/EE in the Company’s IRP Preferred Plan?

A. Yes. As I explained in my direct testimony (pg. 21), I&M’s IRP modeling selected a diverse set of proxy DSM/EE resources over the IRP planning period, including the DSM Plan period of 2020-2022. While the overall magnitude of DSM energy savings selected is less than levels from the prior IRP, this can be generally explained as a new analysis/study with all new inputs as previously summarized in my direct testimony (pages 4 – 12) and described in detail in the Company’s 2018-19 IRP. A key driver is the impact from lower avoided costs versus the previous IRP. Figure GSF – 1R is a comparison of the around the clock (ATC) energy prices from the 2015 IRP versus the 2018-19 IRP. Looking at 2020, the 2015 forecasted ATC value was $38.20/MWh and the 2019 forecasted ATC value was $28.07/MWh, a difference of over $10/MWh or an approximately 26% decrease in the forecasted avoided energy cost. In 2022, the decrease grows to approximately 46% as compared to the 2015 forecast. Major drivers in the decline in around the clock energy prices include: lower natural gas outlook, change in the carbon pricing assumption and lower load/demand projections. Thus, the major driver in the change in EE levels is driven by the change in forecasted avoided energy costs, not flaws in the IRP inputs or modeling process. The overall, IRP methodology/process is the same as the Company used in its previous IRP.

Figure GSF - 1R



Q. Do you agree with Ms. Sommer that energy efficiency potential "was unreasonably constrained even below the levels currently implemented by I&M" as she contends on page 3 of her testimony and in Sections 6.1 and 6.2 of Attachment AS-2?

A. No. The IRP EE bundle potential was not unreasonably constrained. The Company followed a reasonable process to develop the IRP EE bundles that included working with Applied Energy Group (AEG) to develop the Market Potential Study (MPS) and the IRP EE bundle inputs. Company witness Walter has responded to the IRP EE bundle potential relative to current Company DSM programs in his rebuttal testimony.

Q. On pages 15 and 16, witness Sommer suggests that the IRP degraded EE savings should be adjusted to "undegraded" EE savings for use in the DSM Plan. Do you agree?

A. Yes, and this was done by I&M. As can be observed in Company's response to CAC's Data Request 4-1, the Company provided the undegraded EE savings levels for the Company's Preferred Plan.[1] Page 16 of witness Sommer's testimony Table 6 has a column labeled "Undegraded IRP Savings (GWh)", but these values are not the IRP savings. Another column on Table 6 labeled "I&M Plan Savings (GWh)" is the Company's undegraded EE savings as the Company provided in response to CAC's Data Request 4-1. Furthermore, Company witness Walter direct testimony (pages 57-58) describes how the undegraded IRP EE savings are converted to DSM plan savings levels.

Q. Are the EE savings in I&M's Preferred Plan reasonable?

A. Yes. The overall level of EE savings in I&M's IRP Preferred Plan is based on the process the Company followed in conjunction with AEG to develop the MPS and the IRP EE bundle inputs; the Company's avoided cost estimates or Fundamental Commodity Price forecast; and the Company's IRP model and the output or results seen in the varying levels of DSM (EE, VVO and DR) included in the 20 different cases the Company developed, shown in IRP Tables 18, 20, 22, 24 and 26.

[1] A copy of the Company's response to CAC DR 4-1 is included with my testimony as Attachment GSF-1R.

II. I&M's Modeling of Energy Efficiency Bundles In the IRP Is Reasonable

Q. On page 10, witness Sommer is concerned that the Company ignored the "actual estimated useful lives" of the energy efficiency bundles. Do you agree with this concern?

A. No. Witness Sommer first refers to the "actual estimated useful lives" on page 10, but then repeatedly refers to this as the "actual life" of the EE bundle. Regardless of whether you use witness Sommer's approach or the Company's approach, it is an *estimate* of the EE bundle's life. The Company used two estimated lives, either 10 or 15 years, for modeling purposes versus the weighted average measure life of each EE bundle, shown in IRP Table 11. Accordingly, the estimated EE bundle lives were not ignored. This is simply an IRP planning assumption to simplify both the EE inputs and the overall IRP modeling analysis. The Company used this same approach in the previous IRP. While neither the Company nor the CAC has quantified the impact of this simplifying assumption on the IRP modeling results, as explained below this IRP planning assumption is not material to the IRP results.

Of the 29 Energy Efficiency (EE) bundles or resources included in the IRP, the net measure life impact based on witness Sommer's Table 1 is 4 years less than the Company's estimated bundle life. This difference is predominantly driven by the Company's assumption to model the Residential Building Shell bundle for 15 years versus 20 years. Furthermore, this EE bundle is the most expensive bundle considered in the IRP and was not selected in the IRP modeling. Thus, this simplifying planning assumption should not have impacted the overarching, balanced IRP modeling results, which ultimately drives the development of the Company's Preferred Plan.

Q. On pages 13-15, CAC witness Sommer has a concern regarding the Company's assumption related to estimating EE bundle savings on an annual basis. Do you agree with this concern?

A. No. Again, this is simply an IRP planning assumption to simplify both the EE inputs and the overall IRP modeling analysis. In witness Sommer's Section 5.2 in Attachment AS-2, she claims that the Company's process for modeling EE underestimates the available energy savings by 25%, as shown in Tables 16 and 17. First, this example, while illustrating the Company's process, is only one of the 29 proxy EE resources developed for the IRP. To develop its 29 proxy EE resources the Company further developed 111 EE resources for the Plexos/IRP model to account for the changing potential energy savings over the IRP planning period. As discussed with the IRP Stakeholders, if the Company were to model proxy EE resources as witness Sommer suggests, the Company would need to develop over 800 EE resources to model. For comparison purposes, the Company has 28 inputs for all other supply- and demand-side resources in total for the IRP model; witness Sommer's recommendation is an unreasonable request relative to expected impact on the modeling results.

Furthermore, this is one of many assumptions for modeling proxy resource options within an IRP. Section 4 of the IRP provides a discussion of the assumptions for IRP proxy resources additions to be modeled. Specifically, consider the proxy EE bundles shown in IRP Tables 9 and 10. The “Yearly Potential Savings (MWh) 2020 – 2024” column shown in the tables represents the available potential for this time period from the Company’s MPS. Within the Plexos model, these values are rounded to the nearest 1,000 MWh, so for some proxy EE bundles the resource potential is slightly higher and for some it is slightly lower. This is done to simplify the modeling of this type of resource. To further understand this simplifying assumption the Company looked at the total annual potential savings for the modeled EE bundles shown in Tables 9 and 10 as compared to the rounded total annual potential savings included in the model. This simplistic comparison shows that the Company included an additional 2,600 MWh of available potential than what was identified in the MPS. While this simplifying assumption may seem (at first) to create an unrealistic amount of additional EE potential, when this is compared to the total potential from Tables 9 and 10 for this time period it is less than 2% of the total potential of approximately 147,000 MWh.

The Company’s approach to modeling proxy EE resources within the IRP process is reasonable.

Q. On page 16, Ms. Sommer argues that "energy efficiency was not accurately characterized in I&M's [IRP] modeling" because the IRP selected zero residential bundles. Do you agree?

A. No. As described in Section 4.4 of the IRP, the Company utilized AEG to develop EE resource bundles based on the MPS. This analysis developed 7 different Residential bundles each with an Achievable and High Achievable Potential. The IRP model will select the resource that provides the most value to the model. Thus, if no Residential bundles were selected in the various IRP cases then one should conclude that there are other resource options that provide greater benefits. This can be observed in the diverse resources included in the Preferred Plan and the other cases the Company completed in the IRP analysis.

Q. Ms. Sommer also disagrees (p. 17) that the energy efficiency bundles modeled in the IRP could be "proxies for the energy efficiency that will be implemented by I&M." Please respond.

A. All of the incremental resources modeled in the IRP are proxies. The resources modeled in the IRP represent various types of either supply- or demand-side resources that can be utilized to meet the Company's projected capacity and energy requirements. The IRP is a 20 year plan and is not a commitment to specific resource additions or other courses of action. This is in contrast to the

DSM Plan which is a much shorter duration plan, 3 years, and is a commitment to deploy the EE programs identified in the plan as described by witness Walter.

Q. On page 17, CAC witness Sommer states that "if the energy efficiency bundles are merely proxies for one another, then I&M has no basis to constrain the savings in the different bundles and no basis to categorize those bundles by different costs." Do you agree?

A. No. While the EE bundles are proxy resources they are based on the Company's MPS; they align with the retail customer classes; they align with the load shapes within the retail customer classes; and they provide a cost and savings level that provides the IRP model over 29 different EE options over a 25 year planning horizon. Ultimately, the EE bundles selected provide insight to the DSM planner into the development of the Company's proposed DSM Plan.

III. Response to CAC's General Criticisms of I&M's IRP Modeling

Q. CAC'S witness Sommer has several criticisms (pgs. 3 and 4) of I&M's IRP modeling. Please comment.

A. The CAC'S general criticisms related to the IRP modeling process and assumptions would have a minimal impact on the resources selected in the various cases considered over the planning period. I will provide further detail below.

Q. On page 3 of her testimony, CAC witness Sommer asserts that "[s]ignificant build constraints were placed on renewables without reasonable support for those assumptions." Please respond.

A. I disagree with Ms. Sommer's assertion. I&M addressed this issue throughout the stakeholder process, as described in Section 4.7.6 of the IRP. In summary, for IRP modeling purposes the Company utilized a 300MW annual build constraint for both large scale solar and wind resources. Additionally, the Company has limited the total penetration or build levels for these proxy resources over the IRP planning period: 30% of its energy from wind resources and 15% from large scale solar resources. This total limit is described in the IRP, pages 103 and 107. On page 107 of the IRP, the Company references the "Wind Vision: A New Era for Wind Power in the United States (2015)" as a source for this planning assumption. This planning assumption recognizes there is a practical limit on the amount of renewables that could be integrated into I&M's territory in a given year based on, for example, permitting, siting and regulatory approvals. Furthermore, the annual build constraint planning assumption is based on the Company's experience and professional judgment.

Q. Did the Company consider any alternative IRP portfolios to evaluate the reasonableness of this planning assumption?

A. Yes. To address this concern for this IRP planning assumption, the Company completed four portfolios that increased the solar and wind annual build and total build constraints: as shown in Table 17, page 117, these are Cases 12 and 12A, Case 18 and Case 19. I have included a copy of Table 17 below.

Table 17. Optimized Portfolios

	Type	Name	Commodity Pricing Conditions	Load Conditions
Group 1	**Group 1** Commodity Pricing Scenarios	1. Base - (RP1 Retires 12/2028; RP2 Lease Expires 12/2022)	Base	Base
		2. High Band - (RP1 Retires 12/2028; RP2 Lease Expires 12/2022)	High Band	Base
		3. Low Band - (RP1 Retires 12/2028; RP2 Lease Expires 12/2022)	Low Band	Base
		4. No Carbon - (RP1 Retires 12/2028; RP2 Lease Expires 12/2022)	No Carbon	Base
Group 2	**Group 2 & 2A** Rockport Scenarios Includes Storage & MiniGrid	5. Case 5 & 5A (RP1 Retires 12/2028; RP2 Lease Expires 12/2022)	Base/No Carbon (A)	Base
		6. Case 6 & 6A (RP1 FGD 1/2026 & Retires 12/2044; RP2 Lease Expires 12/2022)	Base/No Carbon (A)	Base
		7. Case 7 & 7A (RP1 FGD 1/2029 & Retires 12/2044; RP2 Lease Expires 12/2022)	Base/No Carbon (A)	Base
		8. Case 8 &8A (RP1 Retires 1/2025; RP2 Lease Extended, FGD 1/2029, & Retires 12/2048)	Base/No Carbon (A)	Base
Group 3	**Group 3** IRP Scenarios Includes Storage & MiniGrid	**9. Transitional** (RP2 Lease End 2022, RP1 Retire 12/2028)	Base	Base
		10. 12 - Year Peaking (Post RP2 Lease End)	Base	Base
		11. 15 - Year Peaking (Post RP2 Lease End)	Base	Base
		12. Case 12 & 12a 12 - High Renewables - Peaking 12a - High Renewables - Peaking and CC	Base	Base
Group 4	**Group 4** Load Scenarios	**13. Low Load**	Base	Low
		14. High Load	Base	High
		15. Low Load	Low Band	Low
		16. High Load	High Band	High
Group 5	**Group 5** Other Scenarios	**17. EE Decrement Method**	Base	Base
		18. Unconstrained Wind and Solar Additions	Base	Base
		19. Reserve Margin Constraint with unconstrained Renewables	Base	Base

Q. What were the results from these alternative portfolios?

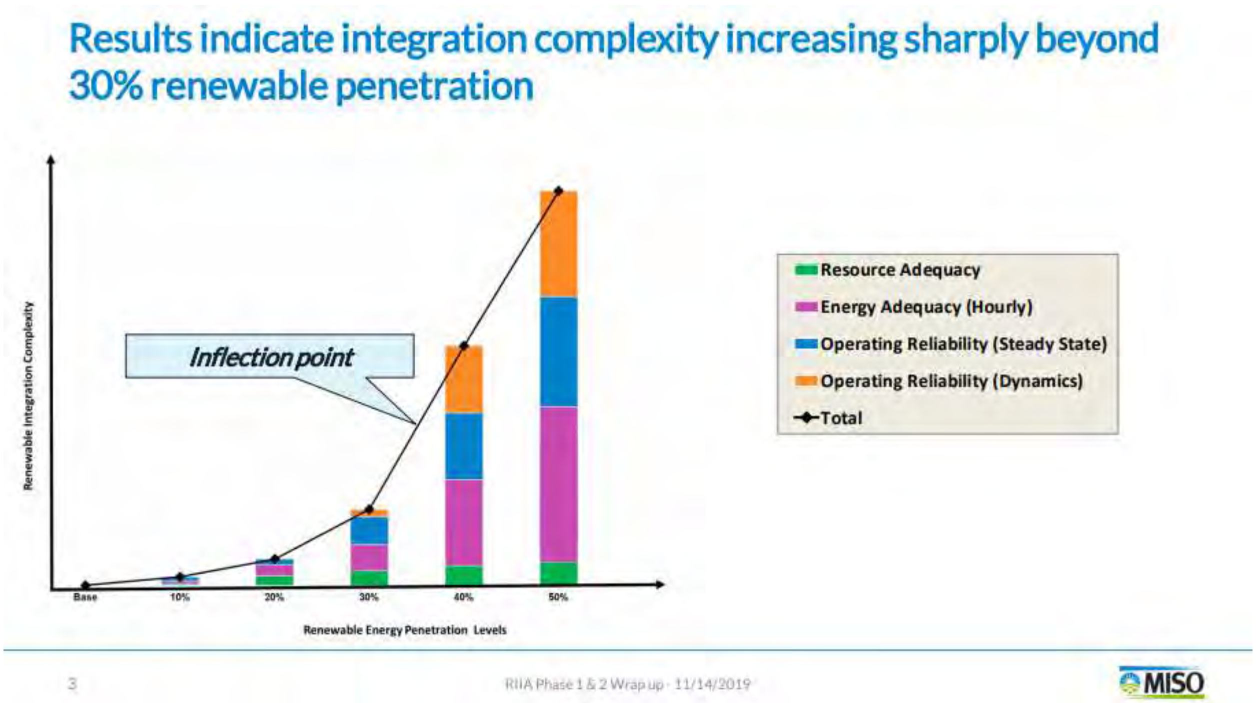
A. The alternative portfolios resulted in either higher near-term revenue requirements or an unrealistic and impractical over-selection of wind and solar resources. More specifically, IRP Table 24, page 127, shows the resource additions for Case 9 (Preferred Plan) and Cases 12 and 12A. Both Cases 12 and 12A selected more solar and wind resources than the Company's Preferred Plan; however, as shown in IRP Figure 30, page 135, Case 12 High Renewables has a higher revenue requirement for approximately 20 years versus the Preferred Plan.

The results of Cases 18 and 19 are discussed in the IRP on page 130 and in the Company's IRP Stakeholder meeting #4. For Case 18 – "Unconstrained Wind and Solar Additions", the model selected 300GW of wind in 2022 and 50GW of solar in 2023. For Case 19 – "Reserve Margin Constraint with unconstrained Renewables", the model selected 46GW of wind by 2028. These model results are clearly not practical when I&M's total load obligation is approximately 4.5GW. Thus a reasonable build constraint is needed for all proxy IRP resources to provide meaningful IRP modeling results.

More recently the Midcontinent Independent System Operator (MISO) released a presentation as part of its Renewable Integration Impact Assessment, finding that the complexity of adding additional renewable energy increases sharply beyond 30% renewable penetration.[2] I have reproduced a chart from MISO's presentation below:

[2] MISO Renewable Integration Impact Assessment, Third Workshop, RIAA Phase 1&2 Wrap-Up (November 14-15, 2019), available at: https://cdn.misoenergy.org/20191114%20RIIA%20Workshop%20Item%203%20Resource%20Adequacy400382.pdf

Figure GSF-2R



While not a PJM study, MISO's recognition of technical and operational difficulties associated with renewable energy deployment aligns with the previously sited Wind Vision report and supports the Company's IRP assumptions related to solar and wind resource build constraints or additions. Furthermore, as stated in the Company's Short-Term Action Plan, the Company monitors the renewable resources market and this planning assumption build constraint may change as the industry improves techniques to integrate intermittent resources on the electric grid.

Q. On page 3 of her testimony, CAC witness Sommer asserts that the wind resource costs "were modeled at higher prices than I&M intended and higher than is justifiable." Please comment.

A. First, I would note that while the modeled wind costs are higher than what the Company intended, wind resources nonetheless are included in the Preferred Plan in years 2022 and 2023. Year 2022 is the earliest this resource can be selected, due to the time needed to select, approve and develop this resource. This criticism is highly unlikely to lead to additional EE resources being selected. As identified in I&M's short-term action plan, the Preferred Plan estimates the addition of over 3,600 MW of wind and large scale solar by 2038. Second, I would point out that to the extent wind resource costs continue to evolve, updated costs will be reflected in subsequent IRPs. Finally, I disagree with witness Sommer that the mere fact that the Company's wind resource costs appear higher than NIPSCO's IRP modeled wind price means the Company's assumptions are unreasonable. It is difficult to comment on this comparison, but one key point is that I&M is in the PJM RTO and therefore, considered PJM only resources, while NIPSCO is in MISO. Based on what witness Sommer has identified, one possible conclusion may be that MISO has lower-cost wind resources than PJM at this time.

Q. CAC witness Sommer (pg. 3) asserts that the solar resource costs "were modeled at higher prices than are justifiable." Do you agree?

A. No. In witness's Sommer's Attachment AS-2, pages 15-17, she generally states that the Company's solar resource costs are higher compared to NIPSCO. It appears she compared NIPSCO's 2018 cost estimate to the Company's 2019 estimate, which is inappropriate. Ignoring this, the differences between I&M's and NIPSCO's estimates remain well within reason for IRP modeling purposes, for reference: per witness Sommer (pg. 16 of Attachment AS-2) the Company's solar installed costs for Tier 1 solar is 7.83% and Tier 2 solar is 19.81% higher than NIPSCO's RFP bid information. Furthermore, with the Company's Preferred Plan including solar resource additions in most years reducing the cost of this resource would provide a limited dynamic to the IRP process and the Portfolios developed, because the resource is already being selected. Through the Company's Short-term Action Plan actual project costs and resource performance levels will be obtained and analyzed to determine the benefit at that time. The Company's approach of using primarily Bloomberg New Energy Finance's cost estimates is reasonable and a better approach than relying on another utility's estimates, especially without any understanding of the assumptions associated with that utility's estimate.

Q. On pages 15-16 of Attachment AS-2, witness Sommer notes that the only year where PLEXOS did not select 150 MW of solar resources was in 2024, when the safe harbor for the higher level of the Investment Tax Credit expires, and suggests that this supports relaxing the constraint on solar additions. Do you agree?

A. No. First and foremost, the year 2024 is beyond the planning period for this DSM Plan, and thus this concern does not impact the proposal in this case. Additionally, since the solar resource was not selected, "relaxing" the annual build constraint in this year has no impact on solar additions. In other words, relaxing a build constraint from 150MW to 300MW (or any other level) would have no effect if the model has selected no solar resource for that year. This underscores the reasonableness of limiting the overall level of solar resources available to select in any given year so as to avoid an over-reliance on a particular resource that may or may not be available at a reasonable cost in the future.

Q. On page 3 of her testimony, CAC witness Sommer asserts that I&M used "an unrealistically low capital cost" for the combined cycle (CC) costs modeled by I&M. Please respond.

A. I disagree the CC costs are "unrealistically low" as Ms. Sommer asserts. Indeed, the cost used to model the CC resource falls within the range of capital costs displayed in Table 8 (pg. 22) of Attachment AS-2. Additionally, AEP's

Generation Engineering group develops the various supply-side resource configurations to model within the IRP, as described in Section 4.7.2 of the IRP. As explained in the IRP, the Generation Engineering group has access to industry collaborative organizations such as EPRI and the Edison Electric Institute, as well as its own experience and market intelligence, to obtain current estimates for the planning process. The IRP modeled the most efficient and cost effective proxy CC options for each capacity type (base-load, intermediate, and peaking). As the Company moves closer to the time where new CC resources are needed additional CC alternatives will be evaluated, as well as other technology options. Given this, the Company maintains that the modeling of this resource is reasonable and appropriate for this IRP.

Q. On page 21 of Attachment AS-2, CAC witness Sommer asserts I&M's planning assumption to hold a minority (25%) share of a combined cycle resource is "unrealistic and unsupported". Please respond.

A. The planning assumption that the Company could acquire a 25% share of a combined cycle resource was chosen so as to provide the PLEXOS model with a resource that could be sized smaller than a full combined cycle generating unit while still maintaining the economies of scale and efficiency available for larger generating units. This IRP's Preferred Plan does not include a CC until 2028; therefore, the Company is planning to consider within its next IRP, modeling alternative proxy CC configurations which should provide an additional dynamic to the modeling results.

Q. CAC witness Sommer asserts (pg. 3) that the Company included three 18MW reciprocating internal combustion engine (RICE) units "without any basis for this assumption." Please respond.

A. I disagree that there is no basis for including three RICE units as part of the Preferred Plan. The Company included the RICE units to support the evolution of its portfolio transformation and as a proxy for a mini/micro grid resource. As explained in section 5.3 on page 130 of the IRP, the inclusion of this resource will help the Company gain a better understanding of how these resources may benefit customers. I&M agrees with the comment on page 24 of Attachment AS-2 that I&M will need to "undertake careful planning to ensure that these units provide cost-effective resiliency."

Q. On page 4 of her testimony, CAC witness Sommer asserts that the Company conflated scenarios and portfolios "in ways that missed important areas for analysis." Can you summarize her concerns?

A. Yes. Ms. Sommer describes her concerns in more detail in Sections 7.1 and 7.2 of her Attachment AS-2. In Section 7.1, Ms. Sommer states the Company has left gaps in IRP modeling, specifically stating "the Preferred Portfolio (Case 9) does not appear to be tested under all scenario characteristics including high and low band pricing conditions, no carbon price, high and low load conditions, and combinations of these characteristics." In Section 7.2, Ms. Sommers attempts to describe the Company's selection of Case 9 as a simple method of "providing a selected comparison to other cases rather than a comprehensive comparison across all modeling runs."

Q. Do you agree with Ms. Sommer's assertions in Sections 7.1 and 7.2 of Attachment AS-2?

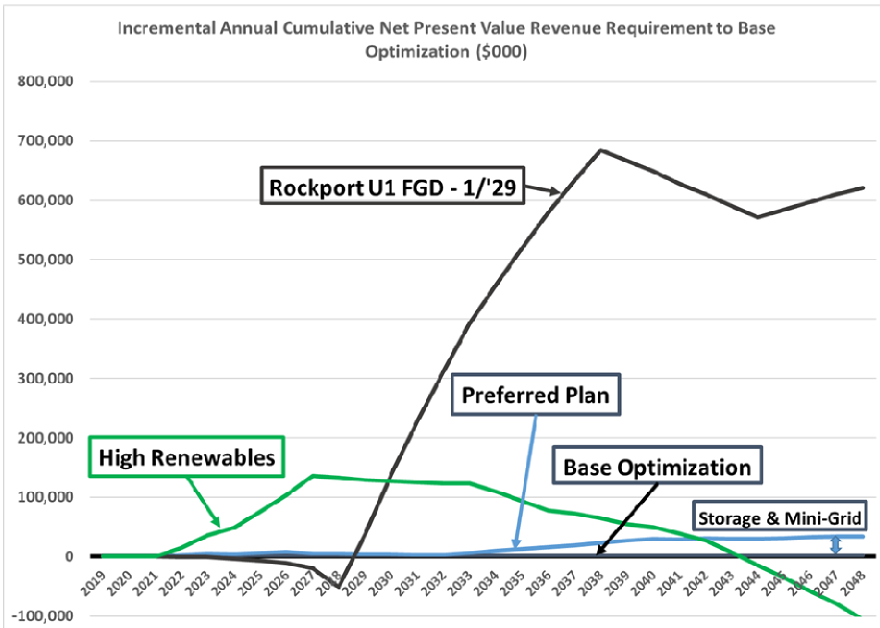
A. No. As an initial point, I neither agree nor disagree that I&M "uses a non-traditional approach to IRP modeling" as Ms. Sommer asserts on page 47 of Attachment AS-2, because the specific meaning of this assertion is not clear. What I can say is the Company's IRP modeling approach is described in detail in Section 5 of the IRP, and the scenarios modeled for this IRP provided a broad range of likely future scenarios. Specifically, the Group 1 and Group 4 scenarios provide a range of scenarios and corresponding portfolios that create a reasonable boundary from which to assess the comprehensive results and begin to develop a Preferred Plan. These two Groups consider futures with different carbon assumptions, both higher and lower economic growth, and higher and lower load growth.

For example, expanding the analysis as Ms. Sommer suggests for Case 9 to include high and low band pricing conditions, no carbon price, high and low load conditions, and combinations of these characteristics would serve only to provide results within the bounds of the Group 1 and Group 4 scenarios. Case 9 was ultimately selected as the Preferred Plan after evaluating it against the relative optimum scenarios in Groups 1, 2 & 3 identified in the IRP. The comparison of the optimum scenarios from each group inherently incorporates a comprehensive comparison of all scenarios. Additionally, the Company completed a stochastics analysis to observe how Case 9 performs over a wide range of conditions.

Q. Please respond to the statement on page 49 of Attachment AS-2 that I&M dismissed the High Renewables case, Case 12, even though it receives the lowest Revenue Requirement at Risk (RRaR) of the cases highlighted by I&M.

A. I disagree with the implication that I&M erred in not adopting Case 12 as the preferred resource portfolio. It is important to note that Case 12 did not have a lower revenue requirement impact than the Preferred Plan until more than 20 years in the future. The Company considered the burden of the associated costs and risks that I&M customers would carry for more than 20 years before this lower RRaR begins to materialize as illustrated in Figure-GSF-2R below.

<u>Figure GSF-2R: Reproduction of Figure 30 from I&M IRP</u>



Case 9 was optimized to include similar renewable resource types to those in the Case 12 portfolio while managing near- and mid-term costs associated with a more aggressive build-out of renewable resources.

Q. On page 4 of her testimony, CAC witness Sommer asserts that the Company's stochastics analysis "is fatally flawed and cannot be relied upon for risk assessment." Please describe Ms. Sommer's concern.

A. As Ms. Sommer notes in Section 7.3 of Attachment AS-2, I&M's IRP risk assessment is performed using a Monte Carlo analysis. As explained in Section 5.4 of the IRP (beginning on page 137), the Monte Carlo analysis takes certain input variables (*e.g.*, gas, coal, CO_2, electric prices) and then randomly selects values for those variables within a reasonably-defined range. The IRP portfolios are then analyzed under these randomly selected input values. Ms. Sommer does not criticize the use of a Monte Carlo approach, which is commonly used for risk assessment. Rather, Ms. Sommer's criticism is based entirely on her belief that 100 iterations of the input variables is insufficient to capture all the possible combinations of the input variables.

Q. Do you agree with the claim made on page 49 of Attachment AS-2 that I&M's Monte Carlo analysis is "unlikely to result in useful information about risks"?

A. No. Ms. Sommer, in her attachment, inaccurately leads the reader to believe that no less than 10,000 iterations for each scenario would be needed to produce a meaningful output. In fact, all that 10,000 iterations would provide is a more precise value within a similar range defined by the 100 iterations. Stated another way, the results from the Company's analysis are expected to identify a result within a very similar range of potential values defined if 10,000 iterations were run.

Furthermore, since the risk analysis is a relative comparison of the Monte Carlo analysis runs for the different scenarios, the *critical and relevant* conclusion is not the precise value but rather, the difference between the comparable confidence level outcomes (95th percentile in this case) between the scenarios. This is hardly a fatal flaw as Ms. Sommer asserts for the purposes of risk assessment.

Q. On page 4, witness Sommer states "it is my opinion the I&M's 2018-2019 IRP, upon which this filing is based, does not provide an optimal balance of energy resources that "can only result[] from a well-developed and reasoned IRP that evaluates the appropriate balance of new supply-side and demand-side resources taking account of risks and uncertainty". Do you agree?

A. No. The Company's IRP and associated Preferred Plan is a well-developed and reasoned analysis, it is balanced from both a resource type and expected cost impact, it provides for opportunities to invest new technologies for the Company, it recognizes that as technology cost and performance assumptions change opportunities to invest and/or acquire new resources will be evaluated, and the Preferred Plan provides significant emission reduction over the planning period.

Q. On page 19, witness Haselden asserts the avoided cost of energy "may contain adders such estimates [sic] of arbitrary future carbon taxes used in the IRP process."[3] Please respond.

A. The avoided cost of energy for the DSM Plan is the same as used in the Company's Integrated Resource Plan (IRP) Base Case, which was prepared by AEPSC Fundamentals Forecasting Group. As described in the IRP, Section 4.3.1, the Fundamentals Forecast Base case employs a CO_2 dispatch burden (adder) on all existing fossil fuel-fired generating units that escalates 3.5% per

[3] *Id*. at page 19, lines 7-8.

annum from $15 per metric ton commencing in 2028. This CO_2 dispatch burden is a proxy for the many pathways CO_2 may take (e.g. renewables subsidies/penetration, voluntary and mandatory portfolio standards, exceptionally low natural gas prices, considerable reduction in battery storage costs) in addition to any regulation to impose fees on the combustion of carbon-based fuels. It is the assessment of Company experts that the likelihood of any federal climate legislation is very low over the next three years and still unlikely through the tenure of the 116th Congress. With 2021-2023 as the earliest reasonable date for a climate proposal to pass through committee, reach the floor and be approved by house for eventual passage, there will be an implementation period of approximately five years (as seen in previous climate proposals). Thus, 2028 is the earliest reasonable projection as to when such legislation could become effective. Thus, the CO_2 dispatch burden is not arbitrary.

Q. Does this conclude your pre-filed rebuttal testimony?

A. Yes it does.

VERIFICATION

I, G. Scott Fisher, Resource Planning Manager American Electric Power Service Company, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information and belief.

Dated: 3|02|2020

G. Scott Fisher

INDIANA MICHIGAN POWER COMPANY
CITIZENS ACTION COALITION OF INDIANA, INC.
DATA REQUEST SET NO. CAC Set 4
IURC CAUSE NO. 45285

DATA REQUEST NO CAC 4-01

REQUEST

Please refer to Exhibit JCW - 3. Please provide the specific source including the Case modeled in I&M's IRP from which the information in "I&M Incremental DSM/EE Net Energy Savings", i.e., Column 5, was derived.

RESPONSE

I&M objects to the request on the grounds and to the extent the request seeks information that is confidential, proprietary, competitively sensitive and/or trade secret. Subject to and without waiver of the foregoing objection, I&M provides the following response.

I&M assumes the reference to "Exhibit JCW-3" is meant to refer to "Attachment JCW-3" and responds on that basis. The information in Column 5 of Attachment JCW-3 is derived from the "Preferred Plan" case modeled in I&M's IRP.

Please see Company witness Walter's confidential electronic workpapers, which were previously provided to the CAC pursuant to a nondisclosure agreement and are labeled as "IndMich_IN CONFIDENTIAL DSM_EE 3 Yr DSM Plan_082619.xlsx". On the tab labeled "Attach JCW-3 IRP Targets", rows 17-36 can be expanded to show the IRP data that was used to calculate the amounts shown in Column 5 of Attachment JCW-3.

Please also see "CAC 4-1, Attachment 1.xlsx", tabs "Preferred Plan" and "Model Output" for the direct output from the IRP Preferred Plan model runs used to derive Attachment JCW-3. The "Summary", "Summary Capacity", and "Summary Energy" tabs on CAC 4-1 Attachment 1 summarize the *cumulative* energy and demand savings data from the IRP model runs. This information was then used to derive the *incremental* energy and demand savings shown on Attachment JCW-3.