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STATE OF INDIANA
INDIANA UTILITY REGULATORY COMMISSION

INDIANA MICHIGAN POWER COMPANY
COMMENTS
ON
THE DIRECTOR'S DRAFT REPORT
INTEGRATED RESOURCE PLANNING

Submitted to:

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Introduction

Indiana Michigan Power (I&M) submitted its 2018-2019 Integrated Resource Plan (IRP) on July 1, 2019 pursuant to Rule 170 IAC 4-7, [Guidelines For Integrated Resource Planning by an Electric Utility](#). On December 2, 2019, numerous individual, organizational, and governmental stakeholders submitted comments in response to I&M's IRP filing. Thereafter, on July 17, 2020, the Indiana Utility Regulatory Commission (IURC or "the Commission") Electricity Division Director submitted a draft report (Director's Draft Report) regarding I&M's 2019 IRP. I&M appreciates the thoughtful and instructive guidance offered by the Director's Draft Report and the significant effort by the Director and the Staff to create the Draft Report. Please accept these comments in response to the Director's Draft Report and comments provided by all of the stakeholders.

I&M Integrated Resource Plan Stakeholder Process

I&M implemented an enhanced stakeholder outreach/public advisory process to guide the development of its most recent IRP. I&M designed and implemented the IRP public advisory process in accordance with the requirements of Commission Rule 170 IAC 4-7-2.6. I&M's goal throughout the process was to improve its resource planning process by conducting a meaningful, transparent and comprehensive stakeholder outreach effort to explore a wide-range of assumptions and resource options as I&M anticipates substantial changes in its resource mix over the IRP planning period. The result of this process is a well-reasoned, vetted Preferred Plan, based on current assumptions, to help guide I&M's future resource decisions.

I&M initiated its IRP stakeholder outreach efforts on January 15, 2018 by giving notice of the opportunity for public participation in the IRP development. I&M provided electronic notice and invitations to participate in the stakeholder process to the Commission staff, the Indiana Office of Utility Consumer Counselor, the interveners in I&M's most recent general rate case in Indiana, and stakeholders that participated in I&M's 2015 IRP public advisory process. I&M also welcomed the Staff of the Michigan Public Service Commission (MPSC Staff) to participate in the process because of its interest in I&M's IRP pursuant to Michigan's recent energy legislation.

I&M also provided invitations to its thirty largest commercial and industrial consumers. I&M established an IRP webpage on its website to allow customers, stakeholders, and interested persons to participate or follow the IRP public advisory process. The IRP webpage provided

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stakeholders with the 2015 IRP, 2018 registration information, "IRP 101" training materials and other IRP related information. The Company's IRP webpage is located at:

<https://www.indianamichiganpower.com/info/projects/IntegratedResourcePlan/>.

The following is a summary of the major activities.

Various stakeholders, including the IURC Staff, the MPSC Staff, the Indiana Office of the Utility Consumer Counselor (OUCC), Indiana Coal Council, CAC of Indiana, Sierra Club, individual I&M customers, public officials from the cities of Fort Wayne and South Bend, representatives from colleges and universities, and many other stakeholders participated throughout the process.

The foundation of the process was built upon four stakeholder meetings, with the majority held in I&M's service territory. The meetings brought interested stakeholders together with I&M's management and IRP teams to discuss the IRP planning process, exchange ideas, collect input, define assumptions, develop scenarios, review preliminary results, discuss risk and uncertainty associated with resource options and ultimately discuss I&M's Preferred Plan. Between stakeholder meetings, other stakeholder outreach activities occurred throughout the process, ranging from "breakout type" teleconference discussions with individual or groups of stakeholders on special topics of interest to customized training sessions on the use of the Plexos modeling tool. Please refer to Table 1 in the Company's IRP for a list of some of the stakeholder outreach activities.

A high level of professionalism and quality information exchanges occurred throughout the stakeholder outreach process. Although I&M considered all stakeholder input, a consensus on every input or assumption was not always achieved despite the best intentions of all parties. However, the outreach process used to develop the IRP was an improvement over the process used in the development of its previous 2015 IRP filing. As a result, I&M's IRP represents credible and transparent efforts by all involved parties and provides I&M's management a meaningful roadmap to inform and guide future resource decisions. Please refer to the IRP webpage for documentation summarizing the discussions and I&M's responses to stakeholder input. Stakeholders were presented information at Stakeholder meetings in February and April of 2018, and February and May of 2019. Based on those sessions, stakeholder feedback was considered and incorporated in the analysis, including suggestions such as modeling of the following:

- Evaluating a "High Renewables" scenario;

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- Evaluating Rockport scenarios with and without carbon futures;
- Evaluating an “Energy Efficiency (EE) Decrement” approach;
- Modifying EE potential to reflect the Market Potential Study;
- Evaluating unconstrained renewable build scenarios;
- Evaluating portfolios with Low Load with Low Band pricing and the High Load with High Band pricing;
- Providing access to the Company's modeling software and associated training; and
- Providing opportunities at all Stakeholder meetings for stakeholders to present and discuss key issues, including a presentation by students from Ball State University Immersive Learning Project.

I&M further engaged stakeholders by collecting input throughout the modeling process and provided responses back to stakeholders via the stakeholder meetings and by posting on the I&M IRP webpage.

I&M's Next IRP

I&M's management uses the IRP as an important planning tool for assessing the energy and capacity needs of I&M's customers, along with the resources that will be used to meet those needs and how those resources may change in the future. The comments received from the Director and the stakeholders recognize the importance, complexity, and evolving nature of the IRP regulatory review process. Part of the evolution is the requirement to submit I&M's IRP for review in Michigan and I&M has been working closely with the MPSC Staff and stakeholders in a separate proceeding under Michigan law (MPSC Case No. U-20591). Accordingly, I&M will develop its next IRP using a robust process to engage stakeholders from across our service areas to create a single, company-wide IRP to effectively meet the needs of its customers in both Indiana and Michigan, and to comply with the regulatory requirements of both states.

I&M appreciates the engagement and interest of all these parties and the feedback that has been provided throughout this process. As I&M looks to continually improve its IRP and incorporate the input of its stakeholders, I&M is already planning to undertake the following steps in the preparation of its next IRP:

- Enhance the remote accessibility of stakeholder meetings and to the extent in-person meetings are held to hold at least one meeting in its Michigan service territory;
- Dedicate one stakeholder meeting to EE and demand response (DR);

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- Work with stakeholders to define new scenarios to evaluate additional retirement dates for fossil generation, expand battery storage and solar plus battery storage options, along with renewable generation, EE and DR options;
- Conduct a new Market Potential Study (MPS) specific to each of I&M's retail jurisdictions, and expanding the MPS to include the evaluation of DR and distributed energy resources (DER);
- Incorporating available request for proposal (RFP) pricing results; and
- Expanding the IRP to include both owned and purchased renewable resource options.

As discussed further in this document, many of these steps are responsive to and supportive of the Director's Comments and the comments received from other Stakeholders. The commitments related to its next IRP will help move the discussion forward to the satisfaction of all parties involved, and will produce meaningful studies for the consideration of how best to serve the Company's customers over the planning period.

I. DIRECTOR'S DRAFT IRP COMMENTS

The IRP is a planning document that represents I&M's comprehensive view of the resource planning landscape at a point in time. Because changes that may impact this IRP can, and do, occur without notice, this IRP must be flexible and not be considered an immutable commitment to a specific course of action. The implementation action items as described in the IRP must be subject to change as new information becomes available or as circumstances warrant.

The following sections provide I&M's responses to each of the comments and questions identified in the Director's Draft Report.

A. Load Forecasting

a. Comments on Load Forecasting (Director's Report pp. 10)

Comment: It would have been helpful for I&M to enumerate any methodological changes.

Response: There were no substantive changes to the load forecast methodology. The only enhancements were made in the development of load scenarios.

Comment: More discussion of the sensitivities, derived from the Energy Information Administration's (EIA) 2019 Annual Outlook that produced high and low growth scenarios, would have been beneficial. It does appear I&M is being responsive to the

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Director's suggestion that I&M make greater use of I&M-specific data. Additional details and rationale in the narrative would have been useful.

Response: The Company will include more discussion in the next IRP.

b. Questions on Load Forecasting (Director's Draft Report pp. 10-11)

- 1) The Director understands that short-term models do not capture structural changes in the economy but may be more useful to financial forecasts in the near-term. The Director remains unconvinced of the need for "blending" a short- and long-term forecast. Does I&M anticipate changes to reduce the need for the two forecasts?;

Response: No. The Company has a single load forecast that is informed by both the short term and long term model results that is used in Integrated Resource Plan filings, Base Rate cases, fuel filings, and other rider filings. The Company leverages the strengths of two independent sets of forecast models that are useful in reviewing and validating the ultimate load forecast for I&M. The short-term forecast models, which are designed to better predict monthly patterns in customer usage, are used to improve the long term forecast models that are designed to capture longer-term structural trends in customer usage. For example, many of the economic indicators used in the long-term models are only published quarterly. To get those series into a monthly format, the quarterly data is extrapolated to a monthly series for the long-term forecast models. The short-term models, which are specifically designed to capture monthly patterns are used in the review process to ensure that the final load forecast captures both the levels and patterns for future electricity consumption. The forecasts are only blended in instances where the long-term and short-term model output overlap. For the June 2019 load forecast that was used in the IRP, the long term forecast models were used in all of the retail classes for both Indiana and Michigan and 5 out of the 7 wholesale customers that were projected.

- 2) In the residential forecast (*I&M IRP, page 14*), I&M describes the "Cooling use variable drivers" but lists Heating Degree Days (HDD). Should this be Cooling Degree Days (CDD) or was HDD used in this model? This occurred in the 2013 and 2015 IRPs as well.

Response: Yes. There was a typographical error in the last sentence of the fourth paragraph of section 2.4.5.1.2. It should say "The cooling use variable is derived from information related to billing days, cooling degree-days, household size, personal income, gas prices, and electricity prices." A further description of how Itron creates XHeat, XCool, and XOther variables can be found beginning on page 1911 of Appendix 2.

- 3) The National and Regional economic forecasts (*I&M's IRP, page 7*) are ascribed to be from Moody's Analytics December 2019. We assume I&M meant December 2018;

Response: Yes, the December 2019 reference was a typographical error. The Moody's Analytics December 2018 was used in the development of the load forecast.

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- 4) I&M's IRP did not discuss the potential for EVs to increase I&M's energy use and demand as well as changing the load shapes for I&M. While the number of EVs and charging stations may not be significant now, it may become increasingly important to the load forecast. Does I&M anticipate future forecasts and IRPs will provide information on EVs?

Response: I&M is engaged in optimizing the expansion of EVs and other electrification initiatives. The Company will discuss EV trends in future IRPs. Because the Company's current EV scenarios fall within the Company's high economic scenario, EV was not specifically emphasized.

- 5) It is not clear how or why binary variables are integrated into the forecast. For example, is the "addition or deletion of new customers" binary. (e.g., I&M's IRP page 16) In past Reports, the Director has mentioned the use of binaries *may* mask important underlying information. Does I&M anticipate a review of the need for binaries? Regardless, it would be helpful to discuss the rationale in future IRPs;

Response: The Company reviews the need for binary variables in every forecast model. Binary variables are used for a variety of reasons in model development. Some examples of the use of binary variables may include, but are not limited to: significant load changes (e.g. expiration of a contract for a wholesale delivery point), seasonality and data issues (e.g. reclassification of a set of customers between classes). If a large load is added to a specific customer class, it will reflect a jump in load that is not reflected by economic drivers. In that case, a binary variable is useful to properly capture that change. In fact, the omission of a binary variable could mask or skew important information captured in the coefficients of the other variables in the model. The Company's use of binary variables is appropriate and conforms to econometric modeling principles.

- 6) And, with regard to street lighting in specific and lighting generally, I&M's forecast undoubtedly included estimated effects of higher efficiency lights. However, I&M on page 51 of its IRP said efficient lighting could reduce lighting use by 5% by 2033 but it isn't clear this potential was included in their IRP? In future IRPs, will I&M provide additional information on the future of lighting?

Response: The public street and highway lighting forecast reflects trends in lighting efficiency. The Company is open to discussing lighting efficiencies in more in detail in future IRP filings. The comment referred to on page 51 is referring to all energy efficiency, including codes and standards, not solely due to efficient lighting as stated above and this savings is reflected in the IRP.

B. Energy Efficiency, Demand Response and Other DER modeling

a. Comments on Energy Efficiency (Director's Draft Report pp. 13-15)

Comment: Incremental EE programs are not well defined (pp. 13).

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Response: The Company will undertake its next MPS during the latter half of 2020 and early 2021 and will work with the selected MPS vendor to address the definition and transparency for the incremental impacts from EE programs in IRP modeling compared to other external factors such as naturally occurring efficiency and codes and standards timing and variation.

Comment: Nevertheless, this dated MPS raises questions about the relevance of the MPS for this IRP (pp. 13).

Response: I&M made adjustments to the MPS to accommodate specific, changing assumptions to better align it with the timing of the IRP. Nonetheless, the Company will undertake its next MPS during the latter half of 2020 and early 2021 and will work with the selected MPS vendor to address and ensure the future timing and variation of incremental EE program impacts are timely, relevant, and accounted for according to the best known and available information.

Comment: For example, how different was the load forecast used to develop the MPS from the load forecast in the 2019 IRP? (pp. 14)

Response: There will always be some differences in load forecasts developed for an MPS and an IRP unless the analyses are performed at the same time. Nevertheless, for the planned/upcoming IRP process, the Company intends to update its next MPS with the most recent data available during the IRP process.

Comment: I&M's IRP should have included more information on EE bundle development. For example, were measure costs the most important factor? If yes, how were other factors considered in the development of EE bundles? (pp. 14).

Response: The bundles were developed based on information from the MPS on anticipated end-use measures including measure costs, energy savings, market acceptance ratios and program implementation factors. Measures were bundled into programs and re-screened for cost-effectiveness. The programs were then screened utilizing all four benefit-cost tests but relied on the Utility Cost Test (UCT) to determine cost-effectiveness.

The Company will provide more discussion in the next IRP for material EE measure/bundle characteristics that influence the selection of EE resources in IRP modeling. In addition, parties will have the opportunity to provide input through the stakeholder process that includes a review of the MPS the Company will cause to be developed, and a stakeholder meeting for the purpose of reviewing this information. Stakeholders in Michigan were also invited to provide input on proposals the Company received as part of a request for proposals for the MPS.

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Comment: The IRP could have also included more information on the development and use of degradation factors (pp. 14).

Response: The Company will include detail on the development and use of degradation factors in its next IRP filing. By way of a brief explanation at this time, I&M would like to clarify the development and use of degradation factors as follows: The initial base load forecast accounts for the evolution of market and industry efficiency standards by assuming efficiency gains over time. To avoid double-counting the energy efficiency already reflected in the load forecast, the estimated bundle savings are degraded. The Company developed 10-year- and 15-year EE life degradation factor curves to apply to the EE bundles included as resource options in the IRP. Degradation is also discussed in detail in the rebuttal testimony of Chad Burnett in Cause No. 45285.

Comment: The approach selected by I&M is less than intuitive and puts a burden on I&M to be clearer in its presentation of this methodological choice and its application (pp. 14-15).

Response: The Company will address this issue both within the MPS and the next IRP. As previously stated through a specific stakeholder meeting to review and discuss modeling assumptions related to demand-side resources. A discussion of the conclusions of this review will be included in the next IRP.

Comment: But location specific does not mean zero in the judgment of the Director. The question is what level of potential location specific avoided T&D costs should be included in the IRP and appropriately adjusted to reflect the system-wide nature of the IRP analysis. Surely if degradation factors can be developed using professional judgement then it must be possible to develop estimates of potential avoided T&D costs (pp. 15).

Response: The Company will consider the addition of avoided Transmission and Distribution (T&D) costs for certain types of programs that have the ability to reduce specific costs (such as Transmission costs allocated based on peak demand), and may do so as appropriate in its future IRPs. The Company continues to maintain, however, that the inclusion of fixed T&D charges across a type of project or program is not appropriate given that these types of avoided costs are, for the most part, project specific. Since the IRP process is evaluating energy efficiency programs as a whole that are offered to customers throughout I&M territory, distribution costs are not avoided on a system-wide basis. Distribution costs are more site specific and depend of the voltage level of service, location, and electricity needs of a specific customer.

In addition, the Company has included requirements in its next MPS for consideration of Demand Side Management (DSM), EE, DR, and DER resource potential. This potential review will include a review the locational nature of DSM resource benefits to avoided T&D and will compare it to a system-wide approach, in collaboration with its selected MPS vendor for use in MPS development and

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modeling. The results of the comparison will be used to inform IRP modeling as well. This approach will also be included for discussion and presentation at the IRP stakeholder meeting to review DSM modeling within the IRP.

Comment: The Director believes that improved EE (and other DERs) analysis will require sub-hourly load information to develop load shapes and EE bundles that better reflect the time and locational value of EE (pp. 15).

Response: The Company uses the best information available that is relevant and/or material to the analysis under consideration. The IRP is a long-term analysis that relies on hourly data using load shapes relevant to and consistent I&M's end-use loads. As the Company implements metering capable of sub-hourly data measurement and identification, this information may be used to inform I&M's load shapes relative to the appropriate end-use measures or load shape altering interventions. Further, the Company will focus MPS efforts to identify best practice in the industry for EE bundle and/or program offerings that will benefit from such load shape and benefit identification. However, it is important to note that the installation of meters capable of sub-hourly measurement alone does not create a need for additional analysis in the IRP. The need and value of sub-hourly analysis comes when the rate design and PJM cost allocations are changed to utilize a sub-hourly measurement in the rate design and cost allocation algorithms.

b. Comments on Demand Response (DR) and other DER modeling (Director's Draft Report pp. 15-16)

Comment: I&M did not place significant effort in evaluating DR programs and even less in anticipating the development of and potential for other DERs to affect I&M's contribution to the PJM system peak demand and PJM's operations (pp. 15)

Response: The Company would like to better understand the basis for this comment because the Company did include DR programs in the current IRP. The Company will include robust analysis and review of both DR and DER within its next MPS and as stated above a review of T&D avoided costs and any other identified benefits.

Comment: Improved load shape data will be a necessity but its importance will depend on how rapidly additional DER and EV load is added, their operational characteristics, and where they are located. Effective development of this information will involve a level of company-specific information combined with data available from other sources such as the national labs (pp. 16).

Response: The Company agrees that the penetration rates for DER and EV may significantly impact both energy and capacity requirements on the energy delivery system as well as overall supply-side resource needs. The Company will include additional discussion of both DER and EV impacts in the next IRP.

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C. Resource Optimization and Risk Analysis

a. Questions on Resource Optimization and Risk Analysis (Draft Director's Report pp. 18-19)

Comment: It appears that I&M did not assess the potential ramifications of the closure of Rockport 1 prior to 2028 combined with lease termination at year end 2022 for Unit 2. Without this information, it is difficult to assess a full range of implications.

Response: I&M did consider the possibility of an earlier retirement of Rockport 1 (combined with the assumed Rockport 2 lease termination), but did not create a formal scenario because it seemed apparent that replacing ~1,000 megawatts (MW) of capacity before 2028 would create a higher cost plan, all other things being equal, particularly considering the Rockport 1 depreciation schedule being set to 2028. That said, the Company will work with stakeholders to identify needed scenarios/portfolios to consider in the next IRP.

- 1) While 24 cases were developed for scenario optimization, the variations in key parameters were limited. For example, only four scenarios used something other than the Base Load forecast. Cases 1, 5, and 9 had small differences in the conditions modeled. Insights drawn from scenario analysis appear to be limited or are not clearly expressed in the IRP discussion. This is despite the discussion on pages 130 – 131 of the IRP report. Also, the use of 24 scenarios is overwhelming to understand what the results are and how they are interpreted.

Response: The Company will work with stakeholders to identify needed scenarios/portfolios to consider in the next IRP, as well as, alternative presentation options, including additional discussion of key assumptions and results.

- 2) The optimized portfolios were not compared with each other in an organized manner. No clear criteria was identified and used to evaluate the various portfolios.

Response: The Company will work with stakeholders to improve the communication and key evaluation criteria to consider. For this IRP, the Company organized the cases into Groups and included a discussion of the cases within each group. The results were also reviewed by Group and a separate discussion was included describing the development of the Preferred Plan. Pages 130 to 131 describe the specific considerations/criteria in developing the Preferred Plan.

- 3) The IRP document lacks a detailed description of how the Preferred Plan was chosen from the scenario analysis.

Response: Pages 130-131 of the IRP describe the specific considerations/criteria in developing the Preferred Plan. The Company will continue to work with all

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Stakeholders to improve the transparency and effectiveness of its communications because it is important for everyone to understand the reasoning and judgment employed by management to create the Preferred Portfolio.

- 4) It is not adequately explained why cases 1, 7, 9, and 12 were selected for comparison and for the probabilistic risk analysis.

Response: The Company selected the referenced cases because they represented a broad set of outcomes that would span a large difference in risk profiles. That included the Base (optimized) plan, a plan with a future Flue Gas Desulfurization (FGD) installation at the Rockport Plant, the Preferred Plan, as well as the High Renewables case. The selection of these scenarios for probabilistic analysis was described on pages 138-140 of the IRP. The Company will expand its explanation of scenarios to be included in the stochastic analysis in the next IRP.

- 5) Why only consider the Revenue Requirement at Risk in the stochastic risk analysis?

Response: The Revenue Requirement at Risk analysis is an accepted method for evaluating portfolio risk. The Company, working with stakeholders, will consider alternative methods for measuring resource portfolio risk.

- 6) Though the aggressive build out of renewables may not be practical for I&M in the short-term, the results from the optimization analysis show that adding more renewables would reduce the long-term revenue requirement risk. This type of result should have stimulated more analysis to better understand the trade-offs involved. For example, I&M could have removed the capacity limitation on renewables under preferred Case 9. It may have created a different resource portfolio which may be more economic than the current Case 9 portfolio.

Response: The Company will work with stakeholders to identify key cases/portfolios to consider in the next IRP. In general, the differing results and customer impacts of Case 9 vs Case 12 will only be understood through an RFP for renewable resources. This will help the Company and stakeholders understand the opportunities available and at that time determine a reasonable path forward. Within this IRP, the Company explored two cases where constraints on renewable resources additions were considerably different than the Preferred Plan, the analysis provided little insight into a direction the Company may take to deploy renewable resource. As discussed in the IRP, the Company's concern with Case 12, at that time, was shown on page 135, in Figure 30, is the relatively high near term cost to customers relative to the Preferred Plan.

- 7) It appears that I&M's IRP has an overabundance of wind resources in particular and solar which cause the preferred portfolio to be long on energy. The pricing projections in the scenario analysis seem to be driving these resource decisions. The Director presumes this is done to promote sales (off-system or to select customers). The Director would welcome

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I&M's comments on whether this is I&M's intention. Did I&M consider the extent to which the economics of various resource portfolios depended on wholesale power sales?

Response: The resource additions within the IRP process are based on operating with the PJM Regional Transmission Organization (RTO), which includes at a very high level monetizing the Company's supply- and demand-side resources at the forecasted fundamental wholesale price for energy and capacity and buying the Company's load obligation at the same forecasted fundamental wholesale prices. As such, a resource that produces or saves a relatively large amount of energy may provide a cost saving to the Company's customers through wholesale energy sales. Within this IRP, the Preferred Plan's energy position is shown on page ES-9, Figure ES-5, with a few exceptions is relatively similar to the Company's current long energy position; however, reviewing the final year of the analysis, shows an almost balanced energy position in 2038.

The Company will continue to consider the relative energy position over the planning period in the next IRP.

- 8) Finally, in its analysis of risks, I&M considered four commodity price scenarios (i.e. Base, High Band, Low Band and No Carbon). I&M also analyzed the effects of a lower and upper band of forecasts to consider lower and higher North American demand for electric generation and fuels and, consequently, lower and higher fuels prices. Nominally, fossil fuel prices vary one standard deviation above and below Base Case values. (*I&M's IRP, page 79*) However, this limited risk analysis is not likely to capture the potential risk reductions caused by additional amounts of EE and DR in its preferred portfolio on its load forecast. Similarly, I&M has given little consideration to the potential for other DERs to further mitigate risks. One of the most significant on-going risks for I&M is assessing the value of reduced exposure to market price risk by integrating DERs along with other resources. This is not adequately evaluated by I&M embedding distributed solar in amounts equal to a Compound Annual Growth Rate (CAGR) of 10.3% over the planning period. (*I&M IRP, page 116*) The Director also believes I&M should consider the potential risk ramifications of increased penetration of EVs within I&M's service territory.

Response: The Company's analysis of Group 1, Group 4 and the Preferred Plan shows minimal differences in the selection of DSM (EE), Volt Var Optimization (VVO) and DR versus these resources in the Preferred Plan. Additionally, the Preferred Plan includes DER resources amounting to 54 MW over the planning period, as well as, the deployment of 50 MW of energy storage resources, which may be a DER resource or utility scale resources and both of these resources along with the EE, VVO and DR are included in the Company's risk analysis.

D. The Stakeholder Process

- a. Comments regarding Future Enhancements to I&M's IRP Process (pp. 21-23)

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Comment: I&M's recognition that, in addition to avoided generation costs, there are also distribution and transmission system avoided costs, should prompt an effort to quantify or approximate the full avoided costs by time and location as a means of reducing distribution system expenses (recognizing that a significant degree of transmission related costs are RTO driven and thus FERC jurisdictional) and improving the reliability and economic efficiency of the distribution system.

Response: The Company will perform a robust review and approach to T&D avoided costs based on DSM resources. This approach will be included, as appropriate, in the MPS and IRP and presented at the IRP stakeholder meeting to review DSM modeling within the IRP.

Comment: As stated previously, the Director would like I&M to provide an update in the next IRP process on how I&M intends to fully utilize its data from advanced metering infrastructure, or AMI (software, hardware, and types of information such as load shapes for a variety of different types of customers).

Response: I&M has completed two pilot programs (one in Michigan and one in South Bend, Indiana), is considering the full AMI deployment by the end of 2022. I&M is currently evaluating AMI roll out plans and intends to share those plans with both IURC and the Michigan PSC. Full AMI deployment throughout the I&M service territory is expected to bring real-time data and monitoring capability to both the utility and its customers. I&M is evaluating and developing new energy efficiency, peak demand reduction, and other service offerings to all types of customers that will utilize AMI and other grid modernization technologies.

As data becomes available, and to the extent it can be used in the Company's next IRP, the Company will do so as appropriate.

Comment: To improve I&M's load forecasting (including projections of DERs and EVs), more accurate design of rates and programs for DERs, enhanced resource planning, and improving distribution system planning, the Director urges I&M to develop short-term (e.g., 3 years) and longer-term (e.g., 6 years) plans to integrate AMI data that is supplemented with:

- A) End-use load research on selected appliances / end-uses on a sub-hourly basis. This should include data on DERs and EVs;

Response: It will take time to build a historical data series at a sub-hourly level for all of I&M's customers that can be used in load forecasting. In the mean-time, the Company can and has leveraged the end-use data and load shape analysis from I&M's sister companies that have already deployed AMI metering.

- B) As part of I&M's on-going load research, I&M should conduct regular customer surveys (every three years or so). These should be robust random representative samples of residential and commercial customers to add increased credibility to I&M's load forecast.

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This information should provide insights into the degradation analysis of EE and how customers perceive DERs in general. This survey data should help I&M gain a more holistic understanding of its customers for forecasting, rate design, DSM, and EVs. The information should involve surveyors that have sufficient expertise to obtain appliance/end-use information that details the age, connected load, condition, housing stock/building information, and demographic data. I&M may want to coordinate with other utilities, the National Laboratories, the Energy Information Administration, etc.;

Response: The Company performs a Residential Appliance Saturation Survey approximately every three years to help calibrate the long-term end-use load forecast models. The most recent survey was conducted at the end of 2018, with the analysis completed in early 2019, and those results were captured in the IRP Load Forecast (see Section 2.9 on pg. 27 of IRP). We will be interested in exploring other resources that can inform our judgment in this area.

- C) Obtain sub-hourly load data and information on distributed energy resource customers, including battery storage and any new technology. Coordination with PJM seems appropriate;

Response: Once I&M has full deployment of AMI meters throughout the service territory, it will be able to collect this information from the samples of customers participating in future Residential Appliance Saturation Surveys. The Company does coordinate with PJM on load forecasting issues.

- D) Obtain and maintain commercial customer identification using the North American Industrial Classification System (NAICS) to supplement AMI and survey data;

Response: The Company reports its monthly Commercial and Industrial sales by NAICS code. Once I&M has full deployment of AMI meters throughout the service territory, it can begin to collect and analyze load profiles by NAICS code.

- E) Develop a variety of load shapes based on sub-hourly load data that is predicated on a variety of parameters to develop groupings of customers that are more homogenous (e.g., intra-rate class, different usage levels, customers with different types of appliances/end-uses, customers that have different types of DSM, etc.);

Response: Many data analytic opportunities would be available once full deployment of AMI metering throughout the service territory is completed, and I&M will develop such analytic capabilities as is possible given the timing of installation of its AMI infrastructure.

- F) Develop a more comprehensive approach to avoided costs so that DER evaluation is more accurately based on credible estimates of valuation by time and location. Explore with PJM how DER may be better integrated into PJM's and I&M's planning and operations.

Indiana Michigan Power's Comments on the Director's Draft Report

Response: As part of I&M's evaluation of AMI and grid modernization, the Company is studying how system information can be used to locate sites for potential DERs that may improve system performance or reduce losses on the distribution system. I&M plans to include DER integration into its grid modernization plans.

- G) Especially with greater reliance on DERs, increasing penetration of EVs and charging stations, and integration of renewable resources, there is an impetus for greater integration of distribution system planning with I&M's IRP, as well as RTO planning and operations. This will require greater involvement with PJM which may include collaborative programs that may be mutually beneficial such as projecting the implications of DERs on both the distribution system planning and operations as well as PJM's planning and operations.

Response: The Company will discuss in its next IRP its consideration of EVs, charging stations, DER, and other intermittent resources and their potential impact on the IRP process. The Company will continue to work with all stakeholders, including PJM, to understand these opportunities. Furthermore, the IRP will bring together key considerations in Transmission and Distribution planning that impact the IRP process and long-term utility planning.

- H) I&M should also keep track of load shape changes for the system, classes of customers, and groups of customers within a rate class.

Response: The Company already tracks load shape changes for the system and classes of customers. At this point, the need and value to forecast customer loads at a rate class level for use in the IRP is not apparent so we will seek to better understand this comment as we develop our next IRP.

Comment: Each future IRP should explicitly address the progress on the plan for continued improvements. Because IRP's address both the short and long-run resource assessment, it is essential that the plan address the rate structure changes that are consistent with the strategic plan.

Response: The Company will continue to use the best data available to perform its IRP analyses. To the extent the Company plans to institute rate structure intended to affect customer behavior and usage patterns, such information will be incorporated into future studies of load shape and consumption.

E. Stakeholder Comments

- a. Comments regarding the Stakeholder Process (Director's Draft Report p. 29)
- b. Clean Grid Alliance (CGA)

Comment: For these reasons, the RFP should be actionable as a source for better cost information.

Indiana Michigan Power's Comments on the Director's Draft Report

Response: The Company is amenable to performing an RFP for resources prior to its next IRP, with the intent of using such an RFP to accurately reflect the cost of various resources. The Company notes that whether or not an RFP is “actionable” (which the Company assumes means such an RFP could lead to entering into agreements for resources based on bid prices) is highly dependent on the timing of needed acquisitions or additions to the Company’s resource fleet. If it is possible to act on responses to such a RFP and prudent for the Company to do so, the Company would take such action. However, if the timing of such future additions does not align with the period over which responses to an RFP are valid, the Company may not be able to reasonably do so. The Company understands the Director’s comment, and to the extent it is possible and reasonable to do so, the Company will.

Comment: I&M is installing AMI and the Director expects I&M to improve its planning processes by making effective use of the load data made available through AMI.

Response: As stated earlier, I&M is evaluating full AMI deployment by 2022 and expects to use AMI and other grid modernization technologies to obtain better information about customer load patterns, as well as how the distribution grid is performing. We expect these efforts to improve the manner in which DERs are integrated into the system and identification of locations where distributed generation may improve system reliability and decrease line losses. AMI information can be shared with customers so that they will be able to monitor their electric usage and make informed decisions about how and when they use energy. I&M is evaluating and developing a portfolio of energy efficiency, demand response, and tariffed service offerings that will allow customers to have more control over their energy bill. Further, if I&M identifies a need for new or replacement generation resources, the Company plans to evaluate renewable and non-traditional generation projects.

c. Indiana Advanced Energy Economy (AEE)

Comment: For example, the Director would like to see more analysis devoted to understanding or trying to quantify the sensitivity of EE selection in the optimization process to changes in the projected costs of EE.

Response: The Company is willing to work with stakeholders to increase the next IRP’s discussion of EE and its selection in the IRP model.

d. Indiana Coal Council (ICC)

Comment: The analysis presented by I&M is not as thorough as it might initially appear. The Director believes there is room for considerable improvement by I&M, but also believes I&M artificially constrained its review to avoid putting in a public forum critical information that might hinder negotiations regarding the possible extension of the Rockport 2 lease.

Indiana Michigan Power's Comments on the Director's Draft Report

Response: The Company understands this concern of the Director and other stakeholders. While circumstances may reasonably limit analyses that can be performed, it does not mean that such limitations are “artificial”. The Company will work with stakeholders to model scenarios to the greatest extent reasonable and practicable.

e. Indiana Office of Utility Consumer Counselor (OUCC)

Comment: Since I&M's projections for large combined cycle units are several years out, they should be regarded as illustrative of the potential need for resources but not as a fait accompli. I&M's statements that they will maintain as much optionality as possible and consider developing technologies is appropriate.

Response: The Company appreciates the comments related to the potential future additions of central station generating resources and acknowledges the Director's comment that the Company will maintain as much optionality as possible and make future resource acquisition decisions at the appropriate time.

Comment: Many of the OUCC's comments address limitations in I&M's scenario and risk analysis. The Director believes many of these limitations were self-imposed to address any potential adverse impact on I&M's legal strategies involving the Fifth Modification to the Consent Decree and negotiations involving an extension of the Rockport 2 lease. The self-imposed limits might have been reasonable given I&M's circumstances but it undoubtedly hampered the usefulness of the IRP process. As the Director noted above, the portfolio and risk analysis is not what it should have been.

Response: The Company appreciates the OUCC's and the Director's comments. Unfortunately, the IRP represents a snapshot in time that does not always align perfectly with the timelines of other decisions and actions that must be made. The Company will work with Stakeholders to identify useful scenarios, and will address those concerns in the next IRP process.

Comment: The Director appreciates that filing cases for changes in rates, DSM programs, and Certificate of Need cases that are roughly contemporaneous with the submittal of IRPs and the review by stakeholders and the Director's Report, pose real concerns. In the past, particularly with DSM programs, stakeholders expressed concerns that the IRPs were stale and could not provide information necessary to be relied upon. There may also be instances where time is of the essence and the proximity in time between an IRP submittal and a case is unavoidable. Obviously, there is a need to strike a balance. However, this should be a matter for the Commission to decide on a case-by-case basis.

Response: The Company appreciates the Director's comment, and will continue to strive to use the best information available at the time of its next IRP, including updated studies and assumptions.

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f. **Citizens Action Coalition (CAC), Carmel Green Initiative, Earthjustice, IndianaDG, Sierra Club, and Valley Watch (Referred to as "CAC Joint Commenters")**

Comment: The Director disagrees in part and agrees with CAC Joint Commenters in part. That is, I&M's use of the PJM energy and capacity markets as a proxy seems to be an appropriate estimation of avoided costs as far as it goes. As I&M correctly states, the complexities of the T&D system pose a daunting task to give effect to the avoided T&D costs. However, the Director believes that an evolutionary effort to quantify avoided T&D systems costs are in the public interest. In sum, trying to capture the dynamic costs of the bulk power market and the avoided T&D system costs should be the objective.

Response: Please see the Company's previous comments related to avoided costs. The Company will study this issue and work with stakeholders through the next IRP process and is willing to consider the addition of avoided costs as appropriate.

Comment: The Director believes that the CAC Joint Commenters and I&M agree that any method should enable EE to be evaluated on as comparable a basis as possible with other DERs and all other resources, which is a limitation of both approaches. As utilities integrate data from advanced metering infrastructure into their planning processes, there may be opportunities for advancement in EE (and other DER and EV modeling) using sub-hourly load shapes and supporting information to better reflect the dynamic changes in the value (avoided costs) of all DERs and other resources.

Response: Please see the Company's previous comments related to avoided costs and the potential to use of sub-hourly load to inform its modeling assumptions.

Comment: The Director believes the analysis of EE had many conceptual complications that warranted more discussion. Chief among these conceptual complications were the development and application of degradation factors and how EE bundles considered other DSM measure characteristics beyond costs. However, the Director cannot overlook the fact that avoided costs are a significant driver of EE selection and similarly for other DERs, and that avoided costs used by I&M in the IRP decreased significantly from the 2015 IRP. This decrease seems reasonable given the changes in the PJM marketplace. As noted earlier, the Director would like to see more analysis of how sensitive resource selections are to changes in the cost of EE bundles and other DERs.

Response: The Company will consider alternatives through the stakeholder process for the next IRP. Within this IRP, the Company considers the analyses associated with the Group 1 and Group 4 cases to address the relative value of all resources when the futures are different from the "base" assumption or Case 1.

Comment: The Director agrees with the CAC Joint Commenters that I&M should engage stakeholders to better ensure these resources are cost-effective and enhance economics, reliability/resiliency.

Indiana Michigan Power's Comments on the Director's Draft Report

Response: The Company will be performing an updated MPS for its next IRP filing, and will work with stakeholders to address these concerns and to help all parties more clearly understand the Company's assumptions that may or may not lead to increased adoption of such resources.

Comment: The Director acknowledges that, ideally and under best practices, I&M should have modeled these units on a comparable basis to all generating units. However, given the significant legal concerns about the future status of the Rockport units, at the time I&M submitted its IRP, I&M was unable to model these facilities. Similarly, there are complicated contractual issues with OVEC prevented modeling. Future IRPs should not be as constrained.

Response: The Company understands the viewpoint of the Director and the CAC Joint Commenters regarding the need to model additional scenarios related to I&M's existing resource commitments and appreciates the Director's understanding of the mitigating circumstances that exist due to other important considerations. The Company and stakeholders in Michigan's IRP proceeding have worked together to address some of these concerns and I&M will work with other parties through the stakeholder process to ensure all parties are satisfied with the breadth of scenarios chosen for the Company's next IRP.

Conclusion

I&M appreciates the comments and input of the Director in critiquing I&M's IRP and is committed to continuously improving the IRP process. I&M appreciates the opportunity to participate in the comment process and reiterates its offer to meet with the Director and other Staff of the Commission if such a meeting is determined to be beneficial to further discuss these matters.

I&M's assumptions in developing its IRP, and its treatment of existing and proposed resources, were reasonable, appropriate, and developed after I&M met with interested stakeholders under the Commission's proposed process and initiated a dialogue on IRP topics. That process and nature of the dialogue allowed I&M to modify its IRP in an attempt to address a number of the stakeholder's concerns

The Company is committed to working with stakeholders in Indiana and Michigan on the modeling in its next IRP, among other elements, and looks forward to continue improving the integrated resource planning process.