2021 I&M IRP Website Stakeholder Comment Summary				
	Stakeholder	Topic	Comment	I&M Response
CAC and Earth Justice submitted comments on Friday, March 26, 2021 7:39 PM; for tracking purposes Day 1 of the 15 working day clock begins on MARCH 29TH. The comments are due on April 16.				
1.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Metrics/balanced scorecard	the proposed metrics are too narrow, arbitrarily limited to the "balanced scorecard" framework, and do not always capture the variables they intend. The "balanced scorecard" framework is arbitrary for several reasons. First, because it is a table, the metrics that populate it have to be presented as a single value. This would result in CO2 emissions in a single year or in total, for example, being the single measure of "sustainability impact". But the impact of CO2 emissions on climate change or as an economic risk to I&M and its customers is not the same in any given year. It would be far more informative to present a visualization of emissions for each simulated portfolio throughout the planning period. And the same is true for many of the other metrics, e.g. spot purchases and sales. We should be far more concerned with a proposal to sell large quantities of energy in the near-term than a portfolio that shows that happening in the late 2030s because the results that far out are far less certain than the near-term results. These important details cannot be shared in a scorecard framework. Using a scorecard prioritizes brevity of information over utility of information.	General Note: Please review the responses to these questions in total, as they will provide additional clarity for each individual question. The Balanced Scorecard provides many benefits to decision makers and consumers of the IRP analysis. A principle benefit of the Balanced Scorecard is that it can be used to communicate the balanced nature of the ultimate preferred portfolio. By displaying relevant metrics for sustainability, affordability and reliability, the Balanced Scorecard shows the manner in which these important portfolio attributes are balanced to best meet the needs of all of I&M's stakeholders. The Company plans to use Time Series metrics in addition to those used in the Balanced Scorecard and will consider the weighting methodologies that could be used within these metrics to address short-term vs. long-term impacts.
2.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Scorecard Color Coding	Second, the scorecard is arbitrary because of the color coding.1 During the IRP workshop, Siemens and I&M both stated that the color coding is intended to make the scorecard easier to digest, but this is exactly the problem with color coding. Rather than allowing the reader to draw his/her own conclusions about the metrics, the color coding is effectively telling the reader which portfolio is preferable. We have observed in prior Siemens scorecards that the red, green, and yellow coding is sometimes assigned based on trivial differences, for example. So the color coding is not providing neutral guidance about what is important, rather it is a product of the totally subjective color coding that Siemens and I&M choose.	As with most visualization methods, colors provide another method of consumption for the information presented but it doesn't prevent readers from drawing their own conclusions. I&M continues to promote broad and diverse access to its publically available information. We will include in the report, the opportunity for those with disabilities to receive an alternative format.

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			1 It is also important to note that a color-coded scorecard does not communicate anything additional to those who are color blind.	
3.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Metrics	Finally, the metrics proposed do not necessarily capture the concern they purport to. Rate stability is much more of a near-term concern in the sense that cost and rate impacts are more known in the near term. Testing portfolios stochastically and particularly in the manner proposed by Siemens, does not differentiate between near and long-term concerns. Nor do we think this methodology is actually representing revenue requirements. It is our understanding that Aurora is incapable of calculating revenue requirements, all capital costs are represented as a carrying charge (levelized charge) rather than as assets with depreciation schedules, which can have a very different rate impact. We also do not believe measuring reserve margin captures reliability concerns, all portfolios will have to meet that constraint. It would be much more informative to measure how resilient the system would be to a major contingency like a long-duration generation outage and/or to think about other points of weakness such as reliance on a single gas pipeline. Lastly, we do not believe "mix of adequate resources" is a good measure of Resource Diversity. Where fuel supply is not at issue, diversity by resource type has little meaning. A better indicator would be number of unique generators relied upon.	As part of our continuous improvement in IRP's, new metrics are being considered to which, many different attributes could be considered as part of the evaluation. The Company will continue to consider additional metrics associated with this IRP throughout the process to support the stated objectives. Detailed production cost modeling issues will be addressed in more context during the Aurora Technical Conference scheduled to occur in late May.
4.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Metrics/Score card	**Our top-level recommendation as it relates to metrics would be to skip the scorecard altogether and talk about each metric qualitatively supplemented with quantitative data that captures the objective of the metric.** For example, a discussion of off-system sales and purchases in each portfolio with a chart showing how those change over time. It is much more informative, though no more subjective for I&M to then discuss how it balances these data into the selection of a preferred plan rather than simply color coding the "winning" portfolio.	See response to item 1 pertaining to the use of a scorecard. However, for metrics that change over the planning period, the Company is considering supplemental analysis methods to inform the relative value between portfolios.
5.	Citizens Action Coalition of Indiana		As it relates to a diversity, equity and inclusion ("DE&I") metric, because this metric should be reflective of the preferences of affected communities, it makes the most sense to solicit the feedback of those communities. Since those preferences may vary amongst different	Good feedback regarding our impact on communities. We are committed to working with the communities in which we work, live and locate resources. We have a team of

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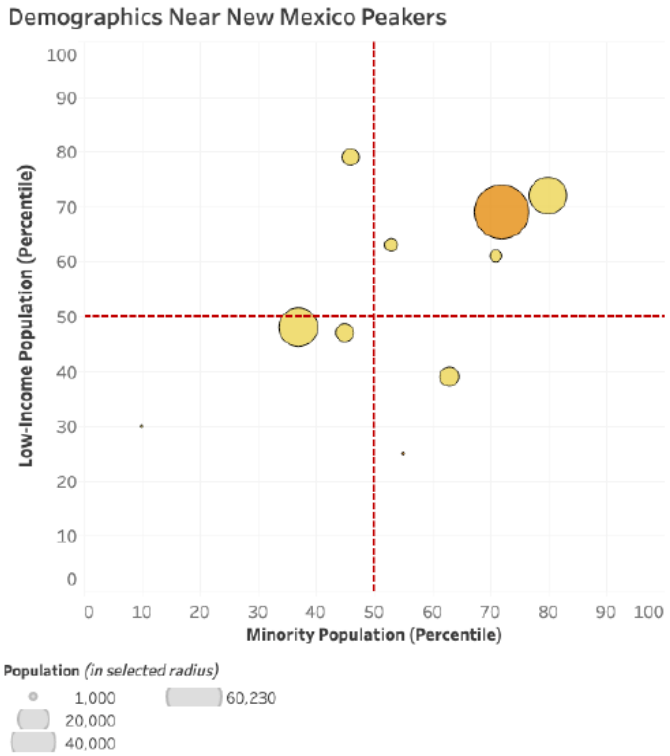
	("CAC") and Earthjustice		service territories, we would propose the following as interim metrics. First, a metric that measures whether emitting units in each portfolio are located in low-income and/or communities of color. An example of this as it relates to peaker plants in New Mexico is given below. See comment package for example) .  The circle size indicates the population within a given radius of the plant and the color, in this case, distinguishes between peakers at their own	external affairs representatives that engage customers, officials, and community leaders and organizations to understand their interests and concerns and to help them understand our goals and objectives in meeting their needs. For this IRP, we also value the feedback we receive through the stakeholder process and are pleased that it is a diverse group of interests that includes communities we serve, customer groups and individual customers. We are also aware of the demographics of the communities in which we have existing resources and can discuss those as appropriate. The location of new resources is generally not known or specified when developing an IRP and the impact on communities of new resources may be better discussed as part of the review of a specific resource action. For more information regarding I&M's and AEP's commitment to a Just Transition within the communities we serve, please reference our recently issued Climate Impact Analysis. http://www.aepsustainability.com/performance/report/docs/AEPs-Climate-Impact-Analysis.pdf

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			site versus those co-located with a combined cycle plant. We would also note that this is another example of useful information that cannot easily be included in a scorecard. For I&M's purposes, we would recommend keeping the low-income and community of color axes, but changing the color coding to reflect the fuel burned at emitting units. We would note that a similar graph, but for all fuel types, could be used to identify some of the positive and negative impacts as well as the equity of those impacts of replacement generation once those locations are identified.	
6.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	metrics	We would also propose a second DE&I metric that attempts to capture the potential for benefits of new resources (both supply and demand-side) to low-income and communities of color in I&M's service territory by quantifying the total investment that has potential to be located in these communities. That investment could include dollars spent on energy efficiency, dollars spent on solar, etc. This is a metric that will need future refinement, but should be accompanied by consideration of programs that will directly address the objective of the metric. Ideally, I&M would also be evaluating programs that directly impact affected communities as part of its IRP, e.g., low-income community solar, low-income electric vehicle incentives, investment in "green zones" in communities located near I&M's power plants, etc. 3 *3 Clearly, there is an implementation component to this that is important and complementary. And that is to weigh where to invest those dollars also using these metrics (and other metrics) once I&M moves from the generic resources modeled in the IRP to the specific resources it would seek to implement. At that stage, I&M could also supplement this analysis by considering whether historic investment has gone equitably towards affected communities.*	We appreciate this feedback and input. DE&I considerations are very important to our business goals and objectives. The IRP process typically is focused on a more macro resource plan level, however, consideration will be given to programs similar to what is described in the feedback. For example, IRP modeling could specifically capture some of the factors mentioned as they would be location and situation specific. That said, renewables and demand-side resources will continue to be key elements of the IRP and I&M will be incorporating DE&I considerations into future resource decisions and new customer programs. As an example, I&M recently proposed and received Commission approval of new programs in Michigan that expand opportunities for low-income and customers without broadband access to customize their electric service and manage their electric bill. I&M plans to seek approval of similar programs in Indiana. Also, see response to 5.

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7	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Scenarios	We believe the carbon reduction goal for Net Zero by 2050 should be at least a 95% reduction from a baseline year. Because we would have to transition so many end-uses to electricity to meet an economy wide climate goal, there will be extremely limited options to offset electric sector GHG emissions, and the modeled goal should reflect that reality. 4. *A common baseline year is 2005, but we recognize that AEP's corporate goal is relative to a year 2000 baseline.*	The Company agrees that a substantial reduction is necessary and is consistent with its recently released Climate Impact Analysis report.
8	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Scenarios	Furthermore, because a plan to achieve this goal would most reasonably result in system emissions reductions over time, it will likely make sense to model one or more interim goals. An annual constraint is probably overly limiting, but a 2030 goal could be reasonable. AEP's corporate goal of an 80% reduction from 2000 emissions by 2030, as applied to I&M's system, may be a good choice though it's unclear if this would be achieved by already contemplated reductions such as the retirement of Rockport. And because this magnitude of decarbonization will have to happen system-wide, we recommend two scenarios that include this goal: one with I&M's base case load forecast as proposed, and the other reflecting I&M's best estimate of the load impacts of large scale electrification (likely more electrification than would be reflected in the "market electrification" scenario).	The Company expects the final IRP scenarios will address a variety of alternative futures including increased ambitions around climate and scenarios around higher electrification. Further analysis related to the suggested additional high electrification scenario will be considered and reviewed through the stochastics analysis.
9.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Scenarios	We also concur with Emily Medine's recommendation that gas assets should be modeled as fully depreciated, ideally by 2040, in at least this scenario. Finally, we note that in evaluating and modeling resource options, I&M should factor in the lifecycle GHG impacts of each option, rather than considering only the CO2 directly emitted by the resource. This is especially important with regards to gas-fired resources given the significant GHG impacts from the extraction and transport of natural gas.	The Company does not plan to modify the asset lives of its non-CCS fossil resources due to the expectation of the availability of low carbon fuels. Furthermore, the Company may constrain energy production from non-CCS fossil resources to support a "Net Zero by 2050" objective. The Company plans to review GHG impacts from the resource perspective and the lifecycle perspective.

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10.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Scenarios	We understand that I&M wishes to keep its scenarios to a manageable number, so we would recommend the following: Reference Net Zero by 2050 Net Zero by 2050 with Electrification Rapid Technology Advancement	We appreciate the suggestion for a reduced number of scenarios and are considering the final set of scenarios and their inputs based on all the Stakeholder feedback. The Company intends to make adjustments to the proposed scenarios discussed in the Stakeholder Meeting #1 and will share these during Stakeholder Meeting #3.
11.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Scenarios	We are uncertain about the value of the Market Electrification scenario. I&M's stakeholder presentation implied that High Load is merely reflective of more optimistic economic assumptions, which would not necessarily be reflective of electrification because the shape of load may not reflect the realities of electrification. If that is the case, we think high load is better reflected as a sensitivity than a scenario.	See response to 10.
12.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Scenarios	We are also uncertain about the value of the Enhanced Regulation Case. Slide 48, pasted below, does not include the High CO2 price, so it is not clear what I&M would model.5 Indeed, this graph raises the question of whether "Base" CO2 means no CO2 price at all, which would raise other concerns about the remaining scenarios.	The Chart shown illustrates only the Base CO2 price in the current fundamentals of $15/metric ton starting in 2028. The Enhanced Regulation case assumes a higher CO2 burden, as noted in slide 37 of the presentation. The charts will be updated as the Company continues through the process

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			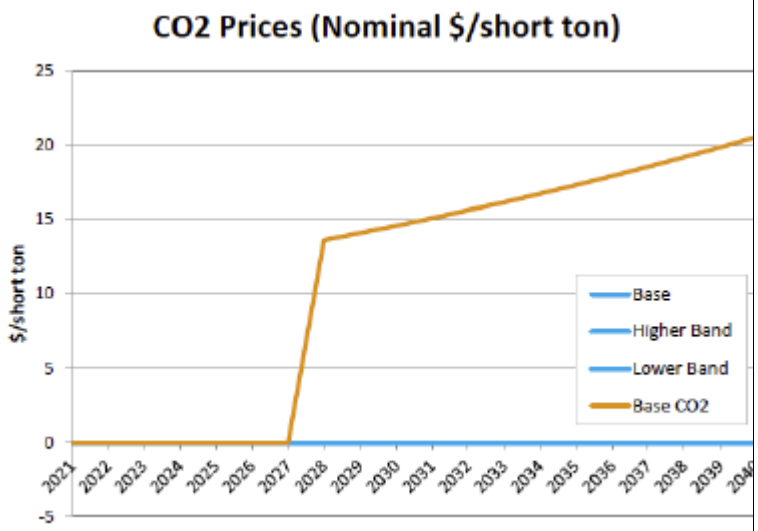 *5. We note that AEP's Climate Impact Analysis has a "Fast Transition" CO2 price of $30 per ton escalating at 3.5% per year, but it's not clear if this is what AEP intends as the High value. http://www.aepsustainability.com/performance/report/docs/AEPs-Climate-Impact-Analysis.pdf*	
13.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Capital Cost Curves and Stochastics	As we stated during the IRP workshop, we do not believe it is appropriate to test capital costs stochastically. Capital costs, particularly those for renewables and battery storage, do not increase in one year, then decrease in the next, and then increase in the subsequent year, a situation that is entirely possible with the probability bands given. Renewable and battery storage capital costs are uncertain, but their overall trend is downward, a dynamic that makes scenario analysis the more appropriate way to examine their uncertainty.	While it may be correct that capital cost recovery for existing units does not vary from year-to-year, this is not the case for overnight costs or financing costs that are applicable for new units in Siemens PTI's analysis. Perhaps more importantly, capital cost uncertainty is not typically applied to candidate portfolios Capital cost uncertainty is most frequently applied to the dynamic build logic that is used to add or retire capacity in neighboring energy market areas in response to varying supply-demand

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				conditions across the stochastic simulations. This is necessary to ensure that the simulated inter-tied areas maintain a reasonable supply-demand balance while capturing the uncertainty regarding the technologies that neighboring regions might add.
14.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Resource cost estimates	The proposed solar, wind, and storage costs appear to be roughly similar to National Renewable Energy Laboratory's Annual Technology Baseline (NREL ATB), which is often used to characterize generic pricing of these resources. However, we've found that the NREL ATB often overstates storage costs in particular. A possible solution to this may be to use I&M's RFP responses rather than Siemens' capital cost curve (similar to the approach that Vectren and Siemens used in preparing Vectren's 2019 IRP), and then apply the ATB's cost curves going forward	The capital costs depicted in the initial slide deck were still in development. The Siemens team will be incorporating the results of I&M's RFP responses.
15.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Load Forecast	The presentation of I&M's load forecasts raised several questions. First, it is not clear why the extreme weather forecast would have the same compound average growth rate ("CAGR") as the Base forecast. If the extreme weather forecast is intended to account for significant climate impacts, it would seem likely that both the air conditioning loads and line losses would grow significantly. We also are not clear why the loss of wholesale customers in approximately 2034 would have such an outsized impact on the CAGR calculated over the entire period from 2020 – 2035. Finally, we renew our request that I&M not use "degradation" to adjust incentivized energy efficiency either in its load forecast or in the modeling of energy efficiency. This is a critical issue to the accurate modeling of energy efficiency in the IRP.	The extreme weather scenario had a neutralizing impact on overall load growth. In other words, the higher loads it created during the summer months (due to warmer temperatures) was offset by the lower heating loads during the winter (also caused by warmer temperatures). The load impact of wholesale contracts ending in 2034 has a significant impact on the compound average growth rates computed for the period between 2020-2035. You could exclude the wholesale load from the comparison, but it would no longer represent I&M's projected load growth. The Company is committed to accurately modeling the impact of energy efficiency in the IRP and is actively working with our Market Potential Study (MPS) Consultant, GDS, to ensure these resources are included appropriately.

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16.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Stakeholder Engagement –define limits of renewables that will be modeled	We would also request that I&M work with stakeholders to define the limits on renewables that it will model consistent with Section 6(d) of the settlement regarding I&M's 2019 IRP that was filed with the Michigan Public Service Commission, which states, "I&M will work with stakeholders to define the modeling inputs for the IRP, including scenarios for […] renewable generation resources".	The Company has invited all Stakeholders to be part of the process that includes an open and transparent discussion on modeling inputs and scenarios.
17.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Stakeholder Engagement – Rockport 1 5/31/25 scenario	Pursuant to Section 6(c) of the Michigan settlement, we urge I&M to work with stakeholders in establishing the inputs to be used in modeling a scenario that includes a May 31, 2025 retirement of Rockport Unit 1.	See response to item 16
18.	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	Stakeholder Engagement – OVEC	We also urge I&M to include on the agenda for the next stakeholder meeting discussion of the approach to evaluating the costs to customers of the Inter Company Power Agreement and the economics of terminating the operation of the OVEC units under the ICPA by the end of 2030, as required by Section 10(k) and 12 of the Michigan settlement.	As discussed in I&M's first stakeholder meeting, I&M has a contractual obligation to purchase power from OVEC until 2040. The OVEC purchase is part of I&M's diversified resource portfolio and will be modeled as a going-in resource consistent with the term of the agreement and other I&M resources that are owned or under long-term purchase agreements. Given this, Section 10(k) and 12 of the referenced settlement agreement were specifically written to provide supplemental information and testimony that I&M will prepare and file in support of I&M's Preferred Plan as part of its next Michigan IRP filing.
Posted Q1-Q18 on April 16, 2021				
19.	Jennifer A. Washburn, Counsel Citizens Action Coalition of Indiana, Inc. 4/7/21	Request Stakeholder Presentation at Meeting #2	Could we please do a stakeholder presentation at the April I&M IRP meeting next week? Follow up: Thanks for the confirmation. We'll work to get you a presentation as soon as we can but we are unlikely to be able to meet the COB on Friday deadline. We'll be in touch. Follow-up on 4/12/21 : Here is our stakeholder presentation for Wednesday. Thanks!	Jennifer, thank you for the note. Interested stakeholders will have an opportunity to speak at the April 14th meeting. To ensure we are able to balance the amount of materials to be covered and allow multiple interested parties an opportunity to speak, I&M is making the following arrangements: • 30 minutes will be allotted for stakeholder presentations/comments

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				• Each presenter is asked to limit their presentation/comments to 15 minutes • Any presentation to be used during the stakeholder comments will need to be presented to I&M by COB this Friday, April 9, 2021 Presentation was provided on 4/12/21. Anna Sommer presented Modeling EE in I&M's IRP at stakeholder meeting #2.
20.	Gould, Karen (LARA) 4/15/21	GDS MPS	One other question, could you follow up with the question I think Dan posed to have GDS benchmark your average incentive as a % of incremental cost compared to other areas? I&M's numbers were fairly low which could be a great indicator why you've been unable to achieve the levels of other utilities in MI. Other utilities in Michigan are usually around 50 and can go as high as 100% (even for non-low income programs such as hard-to-reach commercial customers).	I&M has tasked GDS with recommending industry best practice measures and programs as part of the MPS deliverables. Part of the expected work product from GDS is to benchmark incremental costs for each EWR measure and recommend incentive pricing levels that are economic so that I&M can be aligned with industry best practice but analyzed under I&M's specific avoided costs. From GDS' MPS work product, I&M plans to implement EWR programs consistent with IRP selection and GDS' recommended program delivery models and pricing structures.
21.	Jennifer Washburn 4/14/21	Aurora Workshop	Just a note per Jay's request to let you know that my colleagues cc-ed here and I are interested in attending the late May Aurora technical workshop. (cc: Kerwin Olson, Reagan Kurtz, Anna Sommer , Chelsea Hotaling, Sameer Doshi . 4/15/21 follow-up: Our IRP expert, Anna Sommer, will be out May 10-28. Is there any way we can do a one off meeting with I&M to cover this Aurora subject matter, assuming the meeting may be scheduled when she is out? If so, perhaps sometime during the week of May 3rd?	Thank you for confirming your interest in this technical workshop. We are currently in the process of finalizing details associated with this and plan on providing more information to stakeholders in the near future. Ultimately, we plan on providing access to the model in June and holding the workshop at a later date that better aligns with when we expect to have more of the modeling input data available. Our goal is to make the workshop a meaningful opportunity for our stakeholders.
22.	Wesley Rice-Snow	Rockport	Hello; my home town of Muncie has experienced the many gifts that investing in solar power gives. When I volunteered to film an informative	I&M would like IRP stakeholders to be aware of the plans announced by AEP on April 22, 2021 to add more than

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23.	Anna Sommer – Energy Futures Group April 14, 2021 8:26 PM; 4/15/21 for business purposes	G, T, and D modeling	I also wanted to follow up with my question for Bob and Carlos. We were part of a team that recently wrapped up a study looking at meeting up to 75% of Puerto Rico's energy needs from rooftop solar and battery storage. For that work our team did nodal simulations in Plexos, grid stability analysis in PSS/E, and distribution modeling using OpenDSS. So we can directly relate to the challenge of aligning these functions across different platforms that you were all describing. I had two big takeaways from that work that I think apply to the discussion today. First, it's really not tractable to perform G, T, and D modeling together with a lot of frequency. There is so much iteration	In response to the first comment related to the frequency of performing G, T and D planning together, we would agree that it can be highly iterative and complex, and therefore requires a tenor reflective of the nature of the work involved. What will be important is that all three processes have the same set of goals and objectives. Establishing this up front will influence what happens in each of the planning processes. The conceptual example described in the question highlights this need for a common set of goals and objectives. When the non-wires

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			that takes a lot of time. Second, we saw some counterintuitive results in our study, particularly as it relates to the distribution system. A relatively modest number of mitigations were needed on the distribution system to achieve 75% solar/storage penetration. This was in part because those systems were spread out across lines rather than concentrated. And so I wonder if what I&M might aim for, likely in the next IRP, is to bookend a heavy buildout of DERs throughout its distribution system but particularly on all lines that are or are likely to become overloaded? It seems like the main way we can get distribution planning results to interface with generation planning (for the moment) is if we can better evaluate and isolate the deferral benefit of DERs. And I worry that doing this on a piecemeal basis as is typically done in non-wires alternatives analysis leaves much to be desired in terms of optimizing the total value of DERs. I realize that is a super conceptual suggestion, but it also seems like having an analytical goal to aim for is the only way to start doing this work and figure out how to align these planning processes. So I'd be interested to hear what Bob and Carlos think about that?	alternatives analysis is approached from the perspective of distribution planning, it is done with the objective to resolve an emerging need on the distribution system more so than trying to address a more holistic concern that might involve G and T. If the perspective is changed to where the need is more broadly defined to include G and T requirements, then the analysis, solutions and economics all begin to look very different. This is the perspective the newly formed Grid Solutions organization is expected to bring to our planning efforts going forward – a holistic view of our customers' and/or system's needs and an array of solutions to best address those needs. Relative to the specific analytics being described in the question, there are likely steps we could take in the short-term. For example, distribution station transformers or feeder exits out of substations may be an area where we could focus our initial efforts. We would need to spend some time working out criteria, assumptions, assessment of benefits and costs and process details that don't exist today. For example, developing a set of assumptions around the type/sizing/performance expectations of the DERs would be extremely important. In addition, our planning criteria will need to be enhanced to be more inclusive of the types of solutions we would deploy and when and how we would deploy them. There are other challenges we would need to address, especially if we want to take this type of analysis to the broader reaches of the distribution system, including more detailed load forecasting, enhanced information technology to drive process efficiencies given the potential volume of work,

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				and the new tools and analytics required to develop solutions. All that said, this is a great aspirational goal to put in front of us and we agree that having the goal is a necessary requirement if we ever hope to get there.
24.	Jennifer A. Washburn, Counsel Citizens Action Coalition of Indiana, Inc. April 29, 2021	Aurora Meeting	Just touching base about our email below re: the Aurora meeting. "My pleasure. Our IRP expert, Anna Sommer, will be out May 10-28. Is there any way we can do a one off meeting with I&M to cover this Aurora subject matter, assuming the meeting may be scheduled when she is out? If so, perhaps sometime during the week of May 3rd? "	See response to Q 21.
25.	Jennifer A. Washburn, Counsel Citizens Action Coalition of Indiana, Inc. April 29, 2021	RFP	When will I&M be releasing the RFP and sharing that with the I&M IRP listserv?	I&M issued an All Source Informational Request for Proposal (RFP) on April 23, 2021. Additional information is available at: All-Source Informational RFP (indianamichiganpower.com)
Questions 26 - 30 were submitted on May 19, 2021 by the CAC and Earthjustice (comments on IRP Stakeholder Workshop 2)				
26.	CAC and Earthjustice	Stakeholder Workshop #2 and Feedback on stakeholder Questions	Citizens Action Coalition of Indiana ("CAC") and Earthjustice submit these comments on the materials presented during Indiana Michigan Power Company's ("I&M") April 14th stakeholder workshop for its 2021 Integrated Resource Plan ("IRP"). While we appreciate I&M's emphasis that stakeholder feedback is key and needed, we hope I&M will not just consider this feedback but use it to modify the analysis that it intends to undertake, and will provide written responses that includes descriptions of how the analysis was modified, or explanations of why it was not, in response to feedback. The responses given to our comments so far	The Company continues to develop inputs to the IRP informed by the feedback received by all stakeholders in the previous Stakeholder meetings and correspondences. The IRP is an extensive process that spans many months and represents the compilation of a vast amount of inputs, assumptions and modeling. As I&M receives questions from stakeholders we answer those based on the best information we have at the time. If I&M were to continually evaluate and update its responses to past

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			generally did not make clear whether I&M will actually use any of the feedback we have given to date. Even if I&M is not prepared to say one way or another at this juncture, we do think it is very important that I&M clearly state what stakeholder feedback it is incorporating into its IRP and, if not, give a clear explanation for why it is not utilizing that feedback. We also would appreciate actual dialogue with I&M, wherein I&M meets with us to discuss our comments, collaborate, and problem-solve like other Indiana utilities do. Thus far, I&M has simply posted responses to our comments on its website without notifying us.	questions and feedback, that effort would interfere with development of the IRP itself. I&M has been, and continues to be, forthright in its responses to the feedback received from stakeholders, including the CAC. All feedback is incorporated into I&M's IRP, as it is taken into consideration in the development of the IRP itself. For example, as detailed in response to comment 29 below, I&M plans to group EE measures into sector-level portfolios for inclusion in the IRP modeling based upon I&M's consideration of the CAC's input regarding that topic. The Company looks forward to continued collaboration with all stakeholders, including the CAC, during two additional stakeholder meetings intended to be a forum for productive dialogue throughout the IRP. Further insights into more specific decisions currently being analyzed will be shared during the remaining stakeholder meetings.
27.	CAC and Earthjustice	Supplemental Efficiency Adjustment	CAC would like to reiterate the concerns about I&M's supplemental efficiency adjustment that were discussed in Anna Sommer's presentation during the April 14th IRP stakeholder workshop. We continue to recommend that I&M not apply the supplemental efficiency adjustment, because it undervalues the impacts and overstates the cost of energy efficiency and does not arise from a legitimate concern about increasing codes and standards. The supplemental energy efficiency adjustment (Figure 1) results in a modeled lifetime that is condensed or expanded for many measures and a shape of savings that declines every year, which is completely divorced from how those savings actually accrue and how I&M is actually compensated for lost revenues associated with those savings.	I&M appreciates the CAC's interest in this element of the IRP process and we understand the CAC's recommendation. This matter has been discussed in multiple IRP's and other I&M regulatory proceedings. Most recently, the use of this adjustment was found to be reasonable by the IURC. See, e.g., Cause No. 45285, Order (Feb. 3, 2021). As addressed in that proceeding as well as in this and past IRP's, I&M disagrees with many of the CAC's statements and assertions as they misrepresent this element of the IRP process and the modeling of energy efficiency. That said, I&M appreciates the importance of this matter to the CAC and other stakeholders and shares many of the same interests in ensuring the accuracy of modeling energy efficiency and the alignment of that with I&Ms load forecast. I&M appreciates differing views and approaches to forecasting and is constantly looking for

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			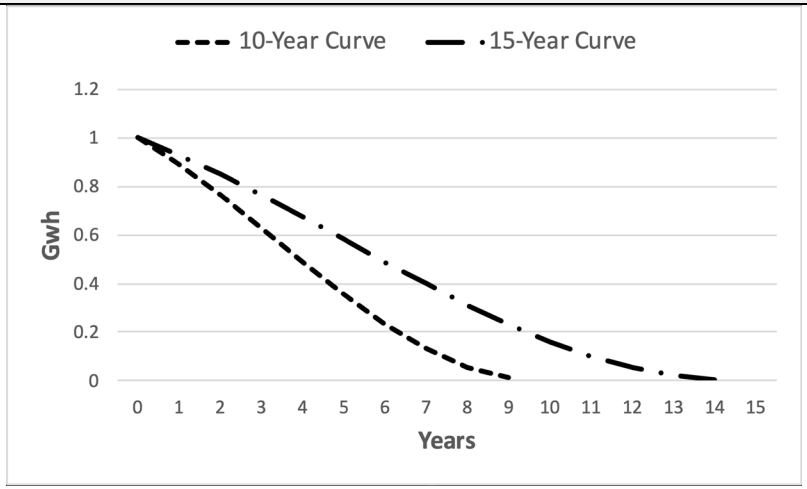 **Figure 1. I&M's Supplemental Efficiency Adjustment** CAC does not believe that a supplemental efficiency adjustment is needed. First, CAC's consultants have evaluated several IRPs from utilities that also utilize Itron's Statistical Adjusted End-Use ("SAE") model, including Duke Energy Indiana, AES Indiana, CenterPoint, NIPSCO, and Xcel. None of these utilities apply any type of "supplemental efficiency" adjustment either in their load forecasts or to their energy efficiency bundles. Second, I&M argues that the supplemental efficiency adjustment is necessary because its forecast has greater efficiency savings. However, AEO documentation of the information upon which that contention is based clearly refutes that. For example, its commercial demand documentation states, "One of the implicit assumptions in the Annual Energy Outlook 2021 (AEO2021) commercial sector Reference case projections is that, through 2050, technology and consumer behavior do not radically change. No new regulations of efficiency beyond current law or new government programs fostering efficiency improvements are assumed."[1]	ways to improve its processes. I&M continues to believe that CAC misunderstands this adjustment and places more emphasis on this adjustment than what is warranted. The Company has reached out to peer utilities in IN and MI including several mentioned and determined the CAC's claim is incorrect. Several of these utilities include adjustments to the forecasted DSM savings to prevent double counting energy efficiency in their load forecast with a net impact of I&M's supplemental efficiency adjustment not that different from the impact other utilities are using with their DSM coefficient adjustment. Furthermore, a discussion with respect to IRP optimization for EE resources should not conflate the way DSM savings are measured for lost revenues as the savings for lost revenue calculations are not dependent on a load forecast. The way DSM savings are measured for lost revenues (based on historical performance) is a completely separate calculation than what energy efficiency is modeled in an IRP optimization (future energy efficiency savings). They are not equivalent. Actual savings computed for the lost revenue calculation (from the EM&V process) does not depend on a load forecast. The IRP does depend on a load forecast and since I&M's load forecast model already includes the impact of future energy efficiency, an adjustment is necessary to prevent double counting energy efficiency in the IRP optimization. Additionally, the suggestion that the AEO documentation clearly refutes a point by I&M forecast has greater efficiency savings built in is not true. For example, the 2021 AEO Residential assumption documentation states,

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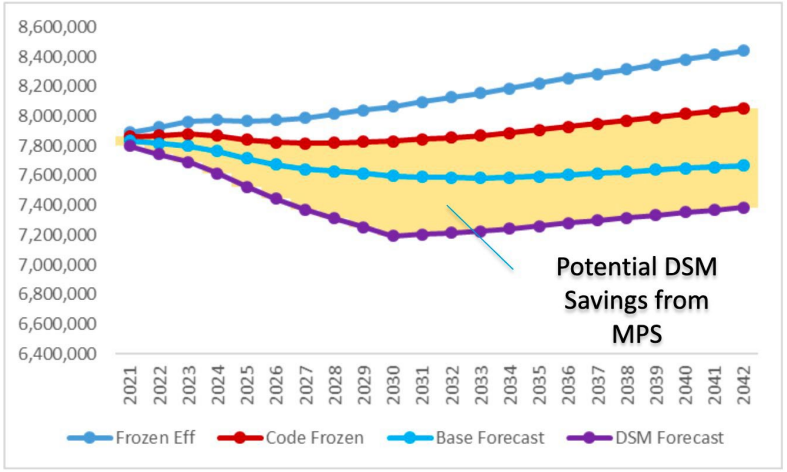
			The increase in end-use efficiency that I&M points to reflects improvements in stock efficiency because of measure turnover primarily and a small amount of incentivized energy efficiency. Figure 2 shows the load forecasts that I&M presented in the April 14th workshop. CAC does not believe that the "Code Frozen" forecast assumes greater efficiency savings in the forecast than the Market Potential Study ("MPS") baseline. I&M reports that the total potential demand-side management ("DSM") / energy waste reduction savings are computed based off the baseline from existing codes.[2] As a result, there should not be a significant difference between the "Code Frozen" (red line) and the "Base Forecast" (teal line).  **Figure 2. Load Forecasts Presented in Second Stakeholder Workshop3** It is CAC's position that continued use of the supplemental efficiency adjustment will radically distort energy efficiency in a way that makes it	"The RDM (Residential Demand Module) accounts for the effects of utility-level energy efficiency programs designed to stimulate investments in more efficient equipment for space heating, air conditioning, lighting, and other select appliances." As I&M has stated on numerous times this adjustment is necessary to ensure I&M's forecast does not overstate EE/DSM efforts that have already been implemented by I&M's customers. I&M worked very closely with GDS on this topic and GDS confirmed that the savings included in I&M's base models were different than the Code Frozen scenario from GDS. AEP uses this methodology in all 11 of the states that it operates in. Without this adjustment, I&M's forecast would overstate load obligations, which over time may lead to unnecessary build or buy decisions that could negatively impact future rates.

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			impossible to select the economically optimal level. It is critical to the accuracy and value of this IRP that I&M stop using this methodology.	
28.	CAC and Earthjustice	Energy Efficiency Recommendations	CAC asks that I&M implement the following recommendations for the modeling of energy efficiency resources for the 2021 IRP:	See responses to Q 28, parts a-e below.
28 a.	CAC and Earthjustice	Energy Efficiency Recommendations	Use the "No DSM" load forecast already created by I&M	The Company is already using a forecast that only accounts for historical and/or approved DSM.
28. b.	CAC and Earthjustice	Energy Efficiency Recommendations	Model energy efficiency savings in magnitude and with measure lives consistent with the GDS 2021 I&M Market Potential Study	The Company plans to model savings consistent with the GDS 2021 I&M Market Potential Study (MPS) and intends to bundle measures into sector-level portfolios for inclusion in the IRP modeling. The measure life of the sector-level portfolio will be developed as a weighted average measure life.
28. c.	CAC and Earthjustice	Energy Efficiency Recommendations	Levelize energy efficiency costs over the MPS life to ensure costs are on equal footing with supply-side resources	The Company does not capitalize Energy efficiency program costs. The costs will be modeled as fixed annual payments over the implementation life of the program/resource. As a result, Siemens PTI will ensure the costs over the life of the asset are placed on an equal footing with other supply side resources.
28. d.	CAC and Earthjustice	Energy Efficiency Recommendations	Use marginal, not average, line losses to convert the MPS savings at the meter to IRP savings at the generator	The 2021 I&M MPS utilized I&M's peak demand line loss factor (LLF), as a proxy for a marginal line loss factor, to adjust both energy and demand savings up to the generator level. The peak demand LLF is roughly 15% higher in the C&I sector, and 9% higher in the residential sector when compared to I&M's average energy LLF. For use in the IRP, the GDS Team will deliver to Siemens energy and capacity savings at the generation level using I&M's peak demand LLF.

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28.e	CAC and Earthjustice	Energy Efficiency Recommendations	Apply the avoided transmission and distribution ("T&D") cost as a reduction in energy efficiency program cost	The MPS included avoided T&D costs in its analysis and this will be applied as a reduction to the EE, DER and DR costs in IRP Modeling.
29	CAC and Earthjustice	Energy Efficiency Bundling	We are skeptical that the value-based approach gives a particularly better result than the cost-based approach, and neither are preferable to grouping measures into sector-level portfolios. It seems very likely that the value-grouped bundles will look similar to the cost-based bundles, which will lead I&M's model to "cream skim" – choosing the cheapest measures regardless of whether they will make a coherent program. And under any of these three approaches, it is highly likely that numerous programs/measures that I&M will actually offer will not be selected by its IRP model, which perpetuates the disconnect between the IRP modeling and DSM plan implementation.	I&M's original proposal for the Value-Based Approach was to recognize time-differentiated savings and the value-based approach would allow I&M to aggregate measures with similar system benefits together. However, based on the comments of the CAC and additional review, I&M intends to group measures into sector-level portfolios for inclusion in the IRP modeling. (Note, income-qualified savings will be included separately due to concerns that these costly program delivery approaches would unfairly impact the remaining residential sector savings). The sector-level portfolios or bundles retain their mix of savings by end-use at the hourly level as identified in the MPS, and are unique relative to the overall I&M system load shape.
30	CAC and Earthjustice	Rockport	In light of the April 22, 2021 announcement that I&M will buy a portion of Rockport 2,[4] we add a sixth recommendation to this slide, which is to add a sensitivity to the MPS that screens the economic potential using a combined-cycle gas generating unit ("CC") as the basis for avoided energy and capacity costs. There will clearly be a lack of capacity on I&M's system in 2028, given the announced retirements of both Rockport Units 1 and 2 that year and given the prior IRP's preference for a combined cycle, which has a much higher cost than the avoided costs I&M uses to screen DSM. Thus, it is much more fair and direct to use a CC as the basis for the avoided costs in the MPS. [4] We expect extensive dialogue and collaboration with stakeholders with regard to this announcement as part of the 2021 IRP stakeholder process, particularly around retirement analyses of Rockport Unit 2 at 2022 (the	The MPS will include a sensitivity analysis, one of which is where technology costs are reduced to support the IRP Emerging Technologies Scenario. The Company's IRP Scenarios are designed to capture a wide range of future market outcomes, i.e. avoided costs, which will influence future resource selection including DSM. This IRP modeling approach provides a comprehensive review of resources over various Scenarios.

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			date by which the lease was supposed to expire and I&M would have been relieved from this obligation) and much earlier dates than 2028 given Rockport's extremely poor capacity factors and other poor operating characteristics.	
Questions 31-36 were submitted by CAC Friday, June 4, 2021				
31.	Citizens Action Coalition of Indiana ("CAC")	Stakeholder Feedback	Please provide unredacted copies of any discovery responses to other interested parties' requests that have not already been provided to CAC. Please continue to provide unredacted copies of any discovery requests to other interested parties' requests through the pendency of this public advisory process.	I&M manages the information sharing components of its IRP Public Advisory Process in accordance with 170 IAC 4-7-2.6. When an interested party requests information related the IRP, I&M typically responds within 15 business days or another agreed upon timeframe. I&M's responses are posted to I&M's IRP webpage and are publicly available to CAC and all other interested parties at the following location: https://www.indianamichiganpower.com/community/projects/irp/.
32.	Citizens Action Coalition of Indiana ("CAC")	Rockport	What are I&M's plans regarding the modeling of possible retirement dates for Rockport Unit 1, as required by paragraph 6(c) of the Settlement Agreement in Michigan Public Service Commission Case No. U-20591 ("Michigan Settlement")?	The Company plans to model multiple scenarios and sensitivities related to the Rockport unit operations in accordance to the settlement agreement. These scenarios will be a topic for review during the upcoming Stakeholder Meeting #3. Scenarios and Sensitivities currently planned include: **Reference Case Scenario:** Rockport Unit 1 Retirement: December 31, 2028 Rockport Unit 2 Retirement: December 31, 2028 **Rockport Sensitivity # 1 (R1):** Rockport Unit 1 Retirement: December 31, 2028 Rockport Unit 2 Retirement: May 31, 2026 **Rockport Sensitivity # 2 (R2):** Rockport Unit 1 Retirement: December 31, 2028 Rockport Unit 2 Retirement: May 31, 2026, 50% I&M Share

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				Rockport Sensitivity # 3 (R3): Rockport Unit 1 Retirement: May 31, 2025 Rockport Unit 2 Retirement: December 31, 2028 **Rockport Sensitivity # 4 (R4)**: Rockport Unit 1 Retirement: May 31, 2025 Rockport Unit 2 Retirement: December 31, 2028, 50% I&M Share
33.	Citizens Action Coalition of Indiana ("CAC")	Rockport	What research and analysis has I&M performed to compare the cost of renewing the Rockport Unit 2 lease with other alternatives, including market purchases or asset acquisitions, as required by paragraph 14 of the Michigan Settlement?	Paragraph 14 of the referenced settlement agreement is specific to actions I&M would take in Michigan if I&M extended the Rockport Unit 2 lease. Late last year, I&M provided formal notice that it would not be extending the lease. On April 22, 2021, I&M advised registered IRP stakeholders of I&M's decision to reacquire Rockport Unit 2. The reacquisition will be incorporated and evaluated in this IRP and I&M will be making separate filings before both state commissions that will allow each state to fully assess the reasonableness of I&M's decision.
34.	Citizens Action Coalition of Indiana ("CAC")	New Resources	Is I&M planning to seek approval in Michigan or Indiana for adding new solar or wind resources prior to the filing of the 2021 IRP, as contemplated by paragraph 17 of the Michigan Settlement?	I&M is still evaluating the potential to add renewable resources prior to the filing of I&M's 2021 IRP but has not made any formal decisions.
35.	Citizens Action Coalition of Indiana ("CAC")	All Source RFP	What is I&M's expected timeline for completing evaluation of the All-Source RFP for which indicative responses were due May 21, 2021? When does I&M expect to publish the results?	A summary of results from the All-Source RFP will be shared with Stakeholders at the upcoming Stakeholder Meeting #3.
36.	Citizens Action Coalition of Indiana ("CAC")	OVEC	What research and analysis has I&M performed relative to the possibility of terminating the Ohio Valley Electric Cooperation ("OVEC") Inter-Company Power Agreement ("ICPA"), as required by paragraph 12(c) of the Michigan Settlement?	Paragraph 12 of the referenced settlement agreement is specific to testimony and supplemental analysis I&M will include in its Michigan IRP filing in mid-December 2021. In Michigan, I&M has an obligation to make a separate filing to seek formal approval of I&M's Total Company IRP. That filing will include the IRP that I&M submits in Indiana as well as additional testimony and supplemental analysis that is specific to requirements in Michigan and set forth in

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				the referenced settlement agreement. I&M has not yet prepared the OVEC analysis described in paragraph 12(c) of the Michigan settlement and will provide as part of the Michigan IRP filing.
37	Citizens Action Coalition of Indiana ("CAC") and Earthjustice	IRP Inputs	What research and analysis has I&M performed to define modeling inputs for the installation of new renewable resources, as required by paragraph 6(d) of the Michigan Settlement?	As stated in paragraph 6(d) of the Michigan settlement, I&M will work with stakeholders to define the modeling inputs for the IRP, including scenarios for renewable generation resources. The inputs for these resources are informed by multiple sources including the AEO2020 report, RFP responses and Siemens subject matter experts. These inputs will be a topic of discussion in the Stakeholder Meeting #3.
38	Emily Medine	IRP Metrics	As indicted on the call, multiple parties are concerned about the economic analysis, specifically because of its failure to consider rates impacts. It is undisputed that the NPV analysis is not a proxy for a rate analysis. As a user of Aurora, I well understand that the NPV results from Aurora cannot be used for this purpose as the costs in Aurora are levelized which is inconsistent with how ratemaking is done. Further, sunk costs cannot be ignored in a rate analysis because of the timing issues. Costs from retired assets will continue to be charged to ratepayers at the same time the costs of new resources are charged. Therefore, the rate analysis must reflect this. Duke Energy Indiana has indicated it is looking at a separate rate impact analysis in its IRP. At a minimum, it is important for IMP to note in the IRP that its economic analysis does not represent customer rate impacts and therefore no conclusions about affordability can be derived from it.	In order to provide information about customer affordability and rate impacts of the resource additions in the Preferred Plan, I&M intends to prepare a traditional, or non-levelized, calculation of the annual cost of service and the change in revenue requirement for the period of the IRP through 2031. This forecast will be prepared in a spreadsheet model outside of the Aurora model, using the underlying capital and O&M costs which were the source of the levelized costs used in Aurora.

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			Should you wish to discuss, please contact Jeff Earl or me.	
39	Ben Inskeep	IRP Inputs	What impact has recent spiking natural gas prices had on I&M's resource planning in the near and longer terms? How is this reflected in your modeling and scenario analysis?	While forward prices for Winter 2022/23 are 40% higher than AEP's forecast, they are only 13% higher in Winter 2023/24, and within 1% of Winter 2024/25 prices. Given the long-term outlook has not changed significantly between the release of the Fundamentals Forecast and now, the gas price assumptions remain reasonable and have not been adjusted for this IRP.
Questions 40- 42were submitted by CAC Friday, November 3, 2021				
40	Citizens Action Coalition of Indiana ("CAC") and Earthjustice		Citizens Action Coalition of Indiana ("CAC") and Earthjustice submit these comments on the materials presented during I&M's October 14th IRP stakeholder workshop. We appreciate I&M's emphasis that stakeholder feedback is key and needed. As we have said throughout this process, we hope I&M will not just consider this feedback but use it to modify the analysis that it intends to undertake before the IRP is finalized, and will provide written responses in response to feedback that includes descriptions of how the analysis was modified or explanations of why it was not.	The Company has actively listened, and where appropriate incorporated feedback provided throughout the Stakeholder process. The feedback received, including Company responses, has been captured and posted on the I&M IRP website and will continue to be addressed throughout the remainder of the IRP process.
41	Citizens Action Coalition of Indiana ("CAC") and Earthjustice		CAC would like to reiterate the concerns we have raised repeatedly, including at the October 14th workshop: I&M is not sharing information with stakeholders in a timely manner that permits feedback on key details before the modeling is finalized. In a September 2nd email, Jay Boggs from Siemens (I&M's Aurora modeling contractor) said: *The assumptions and input data will be provided in Excel format. It will be available for download from a secure site maintained by Siemens PTI.* *We anticipate emailing an announcement during the week of 9/7 when the data is officially posted to the site.* *** *We will also provide an overview of the data in a special session for Technical Stakeholders on September 10 at 11:00am Eastern*	Siemens led I&M through a 4 Step process to systematically identify key inputs and assumptions and to develop associated portfolios for analysis in order to identify a Preferred Plan. This 4 Step process aligned with the Indiana Stakeholder process to allow for a collaborative interaction at each step. In each stakeholder meeting the Company has held, key details have been shared with the Stakeholders, including the additional meetings related to the RFP and the two specific meetings held with the CAC and Energy Futures Group related to EE modeling held to date with an objective to solicit feedback for the Company to consider while proceeding through the process. The Company has

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			Standard Time. Please look for an invitation from me for this meeting within the next 24hrs. *The following week, we will conduct the I&M IRP Stakeholder Meeting 3B. As part of the agenda for this meeting, we will be reviewing the assumptions and key inputs used in the analysis. You may register for this meeting on I&M's website.* *To complete the review of these IRP Inputs and Key Assumptions, we will be offering a follow up meeting for Technical Stakeholders on 9/24 @ 11:00am Eastern Standard Time to answer any questions and solicit feedback.* *** *On or about the middle of September, we will send Technical Stakeholders an email preparing for the initiation of Stage 3 of this process…* *We anticipate posting the I&M Aurora model on the secure website during the last week of September.* The meetings planned for September 10th and 24th were canceled. The September 10th meeting was rescheduled for October 7th but, to our knowledge, that meeting never happened and has not been rescheduled, nor have the Excel formatted input and assumptions data or the Aurora model been provided either. Furthermore, we have received conflicting feedback from Siemens about whether I&M and Siemens will actually provide the data files to make use of the Aurora licenses provided to stakeholders. We do acknowledge and support that it was necessary to delay the schedule somewhat due to the pending Rockport acquisition settlement in IURC Cause No. 45546 insofar as the settlement changes the manner in which the Rockport units need to be represented throughout I&M's modeling. Our concern, however, is that the schedule still has not been updated and communicated to stakeholders. We still do not know when we will receive the Excel formatted input and assumptions data, when we will	considered all feedback in its journey throughout the process. As noted in this particular feedback, due to the complexities introduced with the pending Rockport acquisition settlement in IURC Cause No. 45546, as well as other requests made to the team, the target dates for data provisioning to the Technical Stakeholders were delayed. This IRP Process Step 4 calibration was completed 11/8. The Reference Case Data and Assumptions Book was offered to the Technical Stakeholders who had a fully executed Non-Disclosure Agreement on 11/18. Stakeholder access to the Aurora model is to allow Technical Stakeholders who were interested in using the Aurora modeling tool the ability to independently review the Company's IRP modeling and results prior to submitting its own comments and assessment of the Company's IRP. It is important for Technical Stakeholders to understand how the inputs and assumptions reviewed over the past 8 months are implemented within the tool. To that end, if Technical Stakeholders have questions regarding the data inputs and assumptions, we are open to additional review discussions of the material. Finally, we will be producing Aurora data model for the Reference Case, as well as the change sets to generate the scenarios and sensitivities to provide the ability for the Technical Stakeholders to analyze alternative dispatch simulation scenarios and sensitivities. We currently anticipate producing this Aurora modeling file in the December 2021 – January 2022 timeframe.

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			receive the Aurora files, whether those Aurora files will be those necessary to replicate I&M's modeling runs, and whether there will be sufficient time for I&M to incorporate changes and feedbacks from stakeholders as part of the IRP stakeholder process and before the IRP modeling is finalized. Again, as we have continued to articulate, the IRP stakeholder process is intended to help us avoid future disputes by working together before IRP modeling is finalized. It is critical to the IRP stakeholder process that we be allowed the opportunity to adequately review the files and modeling, offer reasonable changes, and collaborate with the utility and its vendors. Please ensure adequate time is provided in the revised schedule for this collaboration.	
42		IRP Metrics	During the 3B workshop, Siemens asked CAC's consultants to provide examples of how other utilities have looked at resource diversity, and CAC consultant, Anna Sommer, responded that her expert consulting firm, EFG, does not typically see other utilities use this metric. Siemens representative, Art Holland, explained that the metric is intended to address a concern regarding adequate generation to supply load. The industry as a whole is taking stock of its resource adequacy methodologies, particularly after the events of Winter Storm Uri in February of 2021. Qualitative analyses without adequate evidence do not give useful insight into the question of whether there is sufficient capacity to meet load, rather that is the very reason that PJM develops a reliability requirement. We fully agree, however, that is a good idea to critically evaluate whether resource adequacy requirements provide the desired level of reliability. We would strongly prefer that I&M take on this issue quantitatively instead. How, for example, does the recent PJM study looking at winter resource adequacy affect I&M's view of this question, (https://insidelines.pjm.com/system-remains-strong-in-stress-test-	Consistent with the feedback, I&M is keenly focused on resource adequacy and providing reliable capacity and energy for our customers and works closely with PJM on these matters The Company is following the PJM RTO guidance for capacity planning, including the use of Effective Load Carrying Capability (ELCC) for intermittent resources for its IRP modeling. The Company also appreciates the inquiry to the PJM Fuel Security Study Update report. As the report concludes "Results from this Study do not indicate a winter reliability concern in the near-term" and goes on to conclude continued monitoring on an annual basis is needed. The Company will continue to monitor this issue in the PJM stakeholder process, including additional PJM assessments, and will make adjustments in future IRPs, as necessary. The Company appreciates the feedback related to resource diversity as a metric. As discussed in Stakeholder meeting 3b, in addition to counting the unique generator types,

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			examining-future-resource-adequacy/) and how does the move to accreditation through an ELCC approach impact I&M?(https://www.utilitydive.com/news/esa-storage-advocates-applaud-pjms-capacity-market-valuation-proposal/601273/) We ask I&M and Siemens to reconsider their approach and rely on more credible quantitative analyses, rather than qualitative, for this important topic.	these generator type resources will be further defined by the potential for their unique generating sites based on the modeled blocksize used in the model.
43.	Sierra Club, Wendy Bredhold	Plans for future gas plant CPCN	Submitted on December 8, 2021: Can you tell me when I&M plans to file the CPCN for its initial planned gas units, the 1,000 MW of CT in 2028?	I&M does not have any definite plans at this time regarding the 1,000MW of CT's in 2028. I&M's focus up to this point has been to complete the IRP modeling and develop its preferred plan. With the preferred plan now established, I&M's immediate focus is on initiating the RFP for the 2025 and 2026 capacity needs. I&M expects to convene a project team in 2022 to begin formulating a high level timeline associated with the potential gas capacity identified in the preferred plan in 2028. Ultimately, the decisions regarding 2028 capacity will be made based on the results of an all-source RFP and the best information I&M has available at the time.

The OUCC submitted DR set 1, with 4 questions 0n 12.21.22. They are tracked here as stakeholder questions 44-47. Per the request: In connection with our work in the above-referenced Cause, we are submitting the following request(s) for information or documentation. Please identify the person(s) providing each segment of information or each document. Also, please indicate the witness or witnesses to be called in your Case-in-Chief and Rebuttal who can answer questions regarding the substance of or origination of information supplied by the utility in each instance of the responses to this request. Thank you for your prompt assistance in this matter.

I. Definitions and Instructions.

A. Indiana Michigan Power Company, I&M, Ind-Mich or Petitioner means and refers to Indiana Michigan Power Company, including its officers, directors, employees, agents, attorneys and representatives, and any other entity to the extent acting under the direction or control of Petitioner.

B. "Documents" means and includes any and all materials within the scope of Ind. Trial Rule 34(A)(1) and shall be construed broadly to encompass, without limitation, all handwritten, typed, printed or otherwise visually or orally reproduced materials, whether copies or originals and irrespective of whether they are privileged, and includes drafts and translations of any document, microfilm of documents that may have been destroyed, computer tapes, data sheets, punch cards, discs, diskettes, data contained in any computer, information that can be retrieved from any computer, and any information produced or reproduced mechanically, magnetically, electrically, electronically,

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photographically, chemically or by any other means. Any original or copy of a document containing thereon or having attached thereto any alterations, notes, comments, or other material not included in the first document shall be deemed a separate document. C. "Identify" means: i. As to an individual, state the individual's name, business address, present occupation, present organizational title, and, where relevant, past occupation and organizational title; ii. As to an entity other than an individual, state its full name, the address of its principal place of business, and its state of incorporation or organization; iii. As to a document, state its author or maker, date, general subject matter, addressees, and recipients, if any; iii. As to a document, state its author or maker, date, general subject matter, addressees, and recipients, if any; iv. As to a meeting or oral communication, state the date and place of such meeting or oral communication, the purpose and subjects of such meeting or oral communication, every person participating in or present at such meeting or oral communication, and every document referring or relating to such meeting or oral communication; v. As to a fact, state the subject and substance of the fact, each meeting, communication, or other event, which constitutes the fact, and each document referring or relating to the fact. D. For each data request, please identify all persons who provided responsive information or materials. Also, please indicate the witness or witnesses to be called in your case-in-chief and rebuttal who can answer questions regarding the substance of or origination of information supplied by Petitioner in each instance of the responses to this request. E. With respect to any document or thing being withheld from production on the basis of privilege, please provide the author, addressee and all recipients of copies of the documents, all other persons to whom the document was shown or discussed, the subject matter of the document and the basis of the claim of privilege. F. Except as otherwise indicated explicitly or by context, these requests shall be deemed to be continuing. Any information or document responsive to these requests which Petitioner acquires, or which becomes known to Petitioner subsequent to the initial response shall be provided within a reasonable time after such information or document is acquired or becomes known to Petitioner. G. This set of data requests requires supplemental or amended responses to the extent required by Ind. Trial Rule 26(E). In addition, these requests shall be deemed to be continuing requests for supplemental responses pursuant to Ind. Trial Rule 26(E)(3). H. Please provide copies of all responses, both formal and informal, to data requests from all other parties in this proceeding.				
44.	OUCC	Modeling, retirements & buildouts	OUCC DR Set 1 Q1: As part of its work in this IRP, did I&M model the build-out and retirement of generation facilities beyond the build-out and retirement of units for I&M itself? If so, please describe: a. The purpose of that modeling; b. The extent of that modeling (e.g. MISO or Eastern Interconnect); and c. The software and methodology used for performing that modeling.	Yes, as part of the candidate portfolio modeling, I&M utilized the Siemens PTI team to model generation facilities beyond the build-out and retirement of units for I&M itself. The results are derived from a dynamic build and retirement process that produces two-hundred variations of build paths that surrounding utilities could undertake. a. The purpose of the portfolio analysis IRP step is to ensure a realistic surrounding in which I&M will be

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				interacting with in future years that represents the changing dynamics of the electric grid. b. PJM and MISO Zones 3-7. c. The retirement assumptions are a combination of announced retirements derived from EIA 860 as well as a dynamic retirement process for the economic retirement of existing coal units. The buildout for the surrounding regions is created using a dynamic build process that is integrated into the stochastic analysis. A summary of the mean stochastic result of the expansion plan is provided as part of question #2.
45.	OUCC	Modeling, nameplate and UCAP capacity	OUCC DR Set 1 Q2: To the extent modeling was conducted for the build-out and retirement of generation facilities beyond the build-out and retirement of units for I&M itself (as asked in question 1), please provide: a. The nameplate capacity modeled as existing at the end of each year modeled by generation type (e.g. coal, natural gas combustion turbine, natural gas combined cycle, wind, solar, hydro, storage). b. The UCAP value of capacity modeled as existing at the end of each year modeled by generation type (e.g. coal, natural gas combustion turbine, natural gas combined cycle, wind, solar, hydro, storage).	Requested information provided in excel format.
46.	OUCC	Modeling, customer demand and resource output	OUCC DR Set 1 Q3: For each resource planning model run performed by I&M, please respond to the following questions: a. Please identify the top ten hours based upon the difference between the level of I&M's customer demand and the output from I&M's generation resources for each year of the planning horizon; b. For each hour identified in part 'a' of this question please provide the following data: i. I&M's modeled customer demand; ii. Modeled output of I&M's generation resources by generation type (e.g. coal, natural gas combustion turbine, natural gas combined cycle, wind, solar, hydro, storage);	Due to the volume of data that would be produced, the Siemens IRP team's stochastic analysis does not output the required hourly data from the stochastic simulations in order to fulfill this request.

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			iii. MISO market price for that hour (to the extent MISO prices are modeled as being different for I&M's generation vs. its load, please provide both prices); iv. Natural gas price forecast for that hour.	
47.	OUCC	ancillary services	4) Regarding ancillary services expected to be provided by MISO over I&M's resource planning horizon: a. Does I&M expect that the level of ancillary services provided by MISO (PJM) and related costs will increase as the level of intermittent resources increases over the planning horizon? Please explain your answer. b.Did I&M's modeling in this IRP incorporate the effects of any expected increases in the level of ancillary services provided by MISO(PJM) and related costs? If so, please explain how this was modeled. If not, why not.	a. The Company is uncertain as to what level of ancillary services provided by PJM might change, although generally, it is anticipated that changes will occur. PJM is expected to undertake an analysis of what additional "reliability services" would be needed in the future, although these discussions have not started at this time. The Company will continue to monitor this issue in the PJM stakeholder process, including additional PJM assessments. b. Because of the uncertainty related to future ancillary services, no assumptions were made to incorporate the effects of any expected increases in the modeling
The CAC submitted the following 4-part question on November 29, 2021.				
48.	CAC	Bundling of DSM Measures	Good evening, I wanted to follow up on our conversation regarding the bundling of DSM measures in I&M's IRP. We had a few questions about the workbooks provided and then one comment. Thanks! Anna. 1. To confirm the spreadsheet "I&M IRP EE - Aurora Inputs Template - Siemens - Final" gives the net to gross bundles not the SEA bundles, correct? 2. Could you provide the peak hour of the Aurora load forecast? 3. Could you provide the spreadsheets used to create the savings shape for each bundle? We wondered if the shapes were based on end-use consumption and not savings? For example, C&I bundle 5 has some daylighting controls in it but peaks in the winter time, when you'd expect	48.1 The inputs template spreadsheet contained SEA bundles. Inputs were provided for both the net to gross and SEA bundles. 48.2 The peak hour in 2021 is 7/9/2021 Hour 19. 48.3 yes, the spreadsheets will be provided via a secure file transfer application due to their size. For the EE shapes, the annual saving for each measure are mapped to a specific end-use load shape. Generally, the end-use load shape used to convert the annual savings value to 8760 reflects end-use consumption patterns. 48.4 The approach to the cumulative energy efficiency savings resulting from the data provided by GDS was

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			summer time daylighting savings to be higher because there is more daylight. 4. The Siemens calculation on of annual persisting savings is problematic in that it assumes the cumulative persisting savings are equally distributed across all years of a bundle vintage. As shown in the example below for RES Vintage 2023-2025 Block 6, the savings associated with 2023 increase in the 2nd and 3rd years of persistence (purple box), which is not possible. This outcome is due to the treatment of cumulative savings, which are simply distributed evenly across all vintage years (red box). Incremental annual savings change year to year due to varying measure lives and adoption rates in the MPS.	applied as a simplifying assumption to allow the Aurora model to select energy efficiency programs annually. This method ensured the total potential savings across the three years in the bundle was equal to the total potential savings identified for the bundle.

Operating Life 7

SOURCE	GDS	SIEMENS			
Year	DSM MWh	DSM MWh	2023 Program Annual Savings (MWh)	2024 Program Annual Savings (MWh)	2025 Program Annual Savings (MWh)
2021					
2022			↓ 2023 persisting savings *increase* in years 2 and 3		
2023	42,904	42,904	42,904		
2024	88,841	44,421	44,421	44,421	
2025	134,599	44,866	44,866	44,866	44,866 ← Equal savings a
2026	116,203	38,734	38,734	38,734	38,734
2027	96,198	32,066	32,066	32,066	32,066
2028	75,585	25,195	25,195	25,195	25,195
2029	55,529	18,510	18,510	18,510	18,510
2030	31,728	15,864		15,864	15,864
2031	13,084	13,084			13,084
2032	0	0			

The CAC submitted the following 10 part question containing CONFIDENTIAL INFORMATION as CAC DR Set 2 on December 10, 2021

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49.	CAC	Rockport, OVEC, Cook, DR, Resource production profiles, gas and coal prices and stochastics	1. Overall, Rockport O&M values seem low. In 2020, Rockport reported $175 million in non-fuel O&M. At a 50% capacity factor, the 2021 modeled values would be 2620 MW x 50% x 8760 x $1.09 = $12.5 million + $21.3 million in FOM = $33 million, why is there such a difference? 2. Is any capitalized maintenance for any units, new or existing modeled? If so, can you provide that? If not, why not? 3. Can you please provide the Clifty and Kyger Creek contract and exit costs? 4. Minimum up time for Rockport units is 72 hours, why is it so long? 5. Are any thermal units, besides the Cook units assumed to be self-committed? 6. Are the capital charges those that were used for all modeled areas or just non-AEP areas? And if the latter, can you provide the AEP IM assumptions as well? 7. So that these assumptions are fleshed out for all parties, can you please provide DR and EE assumptions including not just savings and costs, but resource parameters such as whether/how these resources were grossed up for line losses or the reserve margin (peak credit assumption), min up time, max hours/energy, etc.? 8. Can you please provide the resource production profiles, FCRs, ILR assumptions, or the battery limits (SoC, roundtrip efficiency, etc.)? 9. Siemens said that it produced its gas and coal price distributions off a reference high and low case give to it by AEP. Can you please provide that high and low case and also explain and show how Siemens transformed those cases into its distributions? 10. Will we able to rerun the stochastic simulations once the .apz files are delivered to stakeholders? On the question of modeling EV load as responsive to at least a TOU rate, here's one study that gives an indication, somewhat accidentally, of the difference between charging with a TOU rate or not. You can see the effect in the charging profiles by metro region. For example, San Diego had a TOU rate for EVs during these time periods, but Phoenix did not.	49.1 Without confirming your source, we believe the $175M for 2020 non-fuel O&M includes the Rockport Unit 2 lease payment of $136.5M. 49.2 Capitalized maintenance for existing units is generally considered to the extent it is incrementally or decrementally changed relative to different cases. It is modeled as a part of O&M for new units. Due to the late addition of multiple Rockport unit 1 early retirement scenarios, associated capitalized maintenance was not included in the original modeling. However, I&M agrees that some reduction to ongoing capital would occur for these earlier cases relative to the 2028 retirement baseline. The additional maintenance cost savings were incorporated into the Balanced Scorecard CTSL metric results for the early Rockport Unit 1 retirement cases discussed in the IRP. The estimated capitalized maintenance cost assumptions for the different RP1 retirement portfolios will be included with an updated file of the AEP IM Assumptions Book workbook made available to the Technical Stakeholders group. 49.3 The Inter-Company Power Agreement is publicly available on FERC's eTariff website. I&M assumed two scenarios, one assuming I&M only exited and one assuming all Sponsoring Companies exited. CONFIDENTIAL INFORMATION OMMITTED 49.4 The purpose is to limit the number of thermal cycles on the equipment. The thermal cycles result in thermal

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				stresses in the equipment from the expanding and contracting and reduces the life of the equipment. 49.5 There are no thermal units set to must run for I&M units in the modeling. 49.6 The capital charges that were used for AEP areas was the same capital charge rate applied to non-AEP areas. 49.7 The inputs provided to Siemens were grossed up from the meter up to generation. In the C&I sector, a multiplier of 1.0513 to increase retail meter savings to generation was used. For residential, the multiplier was 1.0869. 49.8 Batteries were modeled using AURORA's storage logic, specifically the demand control setting, in which the shape will target generation for the highest demand hours of the week within the zone that the battery is placed. The roundtrip efficiency is assumed at 90% and SoC at 50%. 49.9 The file will be provided as requested. 49.10 The stochastic inputs will be able to be loaded into the AURORA model and stakeholders will be able to recreate the stochastic simulations in the IRP Report.
The CAC submitted the following questions as "CAC DR Set 3" on March 31, 2022.				
50.	CAC (Q3.1)	2021IRP_Vol 1 Ex D_	Please provide the supporting workbook, with all formulas and links intact, used to translate the capital costs for new supply side resources provided in the workbook named "IndMich_2021IRP_Vol 1 Ex D_01312022". If the new resources were translated into $/MW-week	Please see "SC 1-12 Resource Cost - Support Sheet.xlsx" for the requested information. The Excel file will be provided to other stakeholders upon request.

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			inputs to model in Aurora, please provide the supporting calculation, with all formulas and links intact, showing this translation for all of the new resources contained in this workbook.	
51.	CAC (Q3.2)	Solar ITC/Tax Normalization	Please confirm if the costs modeled for new solar and solar paired hybrid resources assume tax normalization of the Investment Tax Credit ("ITC"). If not, please explain what assumptions I&M made about the ITC.	Confirmed. New solar and solar paired hybrid resources assume tax normalization of the ITC at a 7.19% discount rate. The I&M IRP Team assumed a 26% ITC through 2025 which then steps down to 10% for the remainder of the study period. Refer to Exhibit IM-2, section 7.6.4.1 in the IRP report where this is discussed.
52	CAC (Q3.3)	modeling inputs for the energy efficiency bundles	Please confirm if the energy efficiency workbooks that I&M and Siemens provided to CAC and its experts on October 25, 2021, (file named "I&M IRP EE – Aurora Inputs Template – Siemens – Final") contain the most up to date modeling inputs for the energy efficiency bundles. If these workbooks do not contain the most up to date inputs, please provide the supporting workbooks, with all formulas and links intact, used to develop the savings and $/MW-week cost inputs modeled in Aurora for the supplemental efficiency adjustment and the Net to Gross sensitivity energy efficiency bundles.	Confirmed. Please see "SC 1-02 Attachment 1.xlsb" which contains the most up to date information. A copy of the attachment will be provide to other stakeholders upon request.
53	CAC (Q3.4)	battery storage constraints	Please refer to Table 9 on page 105 of the IRP. Please explain if annual and cumulative constraints were placed on new standalone battery storage resources. If constraints were applied, please provide the annual and cumulative amount.	Resource limits were placed on new standalone battery storage resources with an annual max of 300 MW and overall max of 1,500 MW. Please refer to Exhibit IM-2, section 7.6.5.1 for further discussion on the resource limits used in the IRP.
54	CAC (Q3.5)	OVEC	Please refer to Section 9.1.1 on page 155 of the IRP. a. Please provide the annual OVEC demand charges that were added to the Preferred Portfolio costs. b. Please provide the repayment of the remaining debt obligation and decommissioning costs modeled for I&M under the analysis of the early OVEC termination scenarios.	a. Please refer to Exhibit IM-4, IRP report Appendix Volume 3, Confidential Exhibit F, Column 3 for the demand charges added to the Preferred Portfolio costs. In addition, I&M states the ICPA costs added to the Preferred Portfolio costs are presented in Column 3 on pages 3 and 4 of Exhibit IM-30 (JMS-2). b. Please refer to Exhibit IM-4, IRP report Appendix Volume 3, Confidential Exhibit F-2, Column 7 for the remaining

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				debt obligation. & Column 8 for decommissioning costs modeled. In addition, I&M states that the repayment of the debt obligation is presented in Column 7 on pages 3 and 4 of Exhibit IM-30. The decommissioning costs are presented in Column 8 on page 3.
55	CAC (Q3.6)	Cost to serve load & variable O7M	Please refer to the workbook named "IndMich_2021IRP_Vol 1 Ex C_01312022". a. Please confirm if all of the column inputs flowing into the "Cost to Serve Load" column are direct outputs from Aurora. If not, please provide the supporting calculation, with all links and intact, for how the "Cost to Serve Load" is calculated. b. Please explain what is driving the Variable O&M values to be negative starting in 2026.	a. The direct outputs used from Aurora include Fuel Costs, Emission Costs, Variable O&M Costs, Select Fixed O&M (FOM 2 from Aurora output), Costs Energy Export Revenue and Energy Import Costs. The Fixed O&M and capital recovery costs for new assets were developed outside of the Aurora model and added back into the Cost to Serve Load Calculation to represent a flat nominal contract assumption. In addition, please refer to the Step 4 files (See I&M's Response to Staff 1-01, STEP 4 RESULTS – FINAL.7z) for the file associated with the outside the model costs. b. The negative Variable O&M reflects the value of the Wind Production Tax Credit ("PTC") from wind resources coming online through 2026.
56	CAC (Q3.7)	Stochastics	Please refer to the Aurora APZ file named "AEPIM_Model_Stochastics" that was provided to CAC through the Siemens secure file exchange. a. This APZ file appears to contain only the Standard Zonal Runs. Please explain if the capacity expansion modeling runs are contained within these modeling files. If they are not, please provide the supporting Aurora files for all of the capacity expansion runs completed for this IRP. b. Please explain what the Study Cases that are numbered 1 – 200 represent. c. Please explain how the CDS named "Capital Cost Refined 501" is modeling the cost of new resources for I&M's service territory. d. Please explain what the CDS named "AEPIM Hardcoded Dynamic Builds" represents.	a. The Capacity Expansion files were not included in the modeling files as they were part of the Step 3 process that did not produce metrics used as a basis for determining the I&M Preferred Portfolio. Siemens PTI staff will work to develop these modeling files for submittal. b. Each study case 1-200 represents an individual stochastic iteration using a specific stream of the varied components (gas price, CO2, capital cost, etc.). c. This table is not modeling the cost of new resources for I&M's service territory within the stochastic environment.

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			e. Are the resources contained in the Resource Modifier Table named "MI – LMPS" all the resources that were selected in capacity expansion runs? f. Please explain what the table named "Hardcoded Dynamic Builds" represents. g. Please explain the difference between costs for new resources found in the table named "Capital Cost Inputs" are the costs in "Capital Cost Refined 501".	This table is used for the capex costs for new resources in LTCE for all regions including AEPIM or if running a deterministic reference run ("iteration 501") but not utilized for stochastics (iterations 1-200). For stochastics, the one that is used is the table named "Capital Cost Refined" which only affects the fixed cost of the surrounding regions new build resources based on that specific iterations capital cost inputs. d. This represents the individual buildout for the surrounding PJM zones that were created in step 4 of the analysis which was hardcoded for CDS proprietary purposes. It is within the CDS tables as it is programmed to change depending on which study case is being run (1-200). e. No, this table only represents what was selected in the Michigan Lower Peninsula sensitivity. Each portfolio has its own designated Resource Modifier Table (RMT). f. This is another piece of the way in which the stochastic surrounding PJM areas buildout was hardcoded into the model in order for technical stakeholders to replicate results without having the specific proprietary CDS technology that builds these resources within step 4. g. Capital Cost Refined 501 is the equivalent of the reference case inputs, or represent the iteration number 501 within the Capital Cost Inputs table.
57	CAC (Q3.7)	real or nominal costs	Please confirm if the Aurora modeling is based on real or nominal costs and if real, give the year used.	Siemens PTI inputs are done in real 2019$. Aurora applies an inflation vector and conducts the simulation in nominal costs. The Siemens PTI team deflates the nominal costs back to 2019$.

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58	CAC (Q4.1)		Please refer to the workbook named "SC 1-02 Attachment 1.xlsb", worksheet named "DSM Annual Savings." a. Please explain why 2 is included as a subtraction from the operating life of each bundle in rows 4 and 47. b. Please explain why 11 is included as a subtraction from the operating life of each bundle in row 94.	The approach was used to find the operating life of each program within the vintage. This was accomplished by subtracting the amount of programs within the vintage (minus 1) from the amount of years there are savings within the vintage. The 2023-2025 and the 2026-2028 both have 3 total programs resulting in the -2. The 2029-2040 vintage have 12 total programs resulting in the -11.