



An **AEP** Company

BOUNDLESS ENERGY™

Indiana Michigan Power Company
2021 Integrated Resource Plan
Stakeholder Workshop #2 Meeting Minutes
(April 14, 2021)



An AEP Company

BOUNDLESS ENERGY™

1. Welcome – Toby Thomas, I&M President and COO

Toby began the meeting at 9:30 and covered slides 1-3.

Toby began the meeting by thanking Stakeholders for their participation and time on the call. He continued to reinforce the importance of this forum to allow AEP I&M to voice the planned approach to the 2021 Integrated Resource Plan (IRP) and to solicit feedback and input from others throughout the process.

Toby introduced Jay Boggs, Siemens Managing Director and Moderator for the Stakeholder Workshops.

2. Meeting Guidelines – Jay Boggs, Siemens Managing Director

Jay covered slides 4-6.

Jay presented the Meeting Guidelines portion of the presentation and established the role of Moderator for the Stakeholder Meeting. He stated that the purpose of the presentation is to explain the DSM/EE components of the IRP process and collect feedback from stakeholders. He provided an overview of the webinar platform and tools and discussed meeting guidelines.

Jay also provided an overview of the Questions and Feedback process, including directing stakeholders to submit comments and stay informed at the I&M IRP Website:

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

In addition, stakeholders are encouraged to submit questions via email to

I&MIRP@aep.com

Jay introduced Dona Seger-Lawson, Director of Regulatory Services, to provide a safety moment and introductions.

3. Safety Moment and Introductions – Dona Seger-Lawson, Director of Regulatory Services

Dona covered slides 7-10.

Dona reviewed a safety moment and introduced the American Electric Power (AEP), Indiana Michigan Power (I&M), Siemens Power Technologies International (PTI) and GDS Associates (GDS) team members.

Dona introduced Andrew Williamson, Director of Regulatory Services, to provide opening remarks.



An AEP Company

BOUNDLESS ENERGY™

4. Opening Remarks – Andrew Williamson, Director of Regulatory Services

Andrew covered slide 11

Andrew stressed the importance for feedback and continued participation from Stakeholders and gave an overview of Energy Efficiency (EE), Demand Response (DR) and Distributed Energy Resources (DER) programs in Indiana and Michigan. He mentioned the main topics for today would be the Market Potential Study (MPS) approach, preliminary MPS results, the impact of EE on load forecasting and the selection of EE, DR and DER in the IRP modeling.

In addition, Andrew highlighted that the meeting minutes and presentation from Stakeholder Workshop #1 have been posted.

Andrew introduced Bob Bradish, SVP Regulated Investment Planning, to discuss integrated grid planning at AEP.

Table 1 Verbal Questions Captured Related to 2021 Opening Remarks

Question #	Question	Response
Q1	Are there currently any specific planning activities for community solar projects?	Will continue to be explored by I&M and will be encouraged in the future.
Q2	Who should virtual power producers contact within AEP Indiana and Michigan?	Point them to the “All-source RFP” that will be online next week, this is the best way to get info out there.
Q3	Is there a goal for a date to remove carbon from the portfolio?	AEP just released an analysis. Goal is net zero by 2050.
Q4	Will transmission be part of the resource planning exercise?	Transmission plans will be considered. AEP has made organizational changes to support the alignment of GT and D resource planning.

5. Bob Bradish, SVP Regulated Investment Planning

Bob covered slides 12-17

Bob discussed the evolution of the grid and the way in which AEP as an organization is addressing the changing analytical and planning environment. He characterized the continued evolution of the industry that is driving changes in how utilities plan and operate systems. Common themes are decentralization, digitalization and decarbonization that are driven by active stakeholder engagement and public policy drivers. AEP sees DERs as an emerging and important source of supply to the power system and wants to create further alignment to inform new resource characterization approaches and DER sourcing mechanisms.



An AEP Company

BOUNDLESS ENERGY™

Bob discussed how the planning alignment occurs by bringing the processes together from the integrated resource planning and analysis, transmission planning and analysis, distribution planning and analysis and interconnection services groups. Specifically, Bob discussed how the direction would be provided through consistent set of policy objectives, the input assumptions driven would form a common foundation and that decisions would be informed through information exchange.

Bob introduced Carlos Casablanca, Managing Director for Distribution Planning and Analysis, who covered slide 18

Carlos discussed the importance of non-wire alternatives as the future needs of the grid system. He discussed that a major goal of the new alignment is to improve and enhance the internal methodologies used for valuing various transmission and distribution applications, which include updating assumptions and planning tools.

Carlos introduced Kamran Ali, VP of Transmission Planning and Analysis, who covered slide 19-20

Kamran discussed the approach to transmission planning and analysis and highlighted the current activities of the group. He noted that their group is looking to understand and guide interconnection values and opportunities to be utilized in fundamental commodity forecasts, as well as evaluating delivery potential for renewable RPS. The current goal is to understand value streams and benefits that the non-wire alternatives offer to provide a holistic view of the solutions when facing transmission or power delivery issues.

Kamran introduced Jay Boggs, Siemens Managing Director and Moderator to facilitate Stakeholder Feedback / Q&A.

6. GDS Associates, Market Potential Study

Jon Walter from AEP covered slides 21-25

Jon provided an update on the Market Potential Study (MPS), noting that the results are in the development phase. He also provided an expanded overview of the various expected results of the MPS, detailing utility sponsored EE programs, DSM programs, AMI programs and CVR programs. Jon also reiterated important definitions for stakeholder to grasp as part of the GDS presentation, including technical potential, economic potential, maximum achievable potential and realistic achievable potential.

Jeffrey Huber from GDS Associates covered slides 26-55

Jeffrey introduced GDS Associates and the Brightline Group team members that have contributed technically to the MPS. GDS is the prime subcontractor for the MPS and is



An AEP Company

BOUNDLESS ENERGY™

leveraging the Brightline groups’ expertise in DSM program planning and evaluation. Jeffrey provided an overview of the MPS study tasks and key considerations for the planning study. An important feature is that the MPS study will assess potential for I&M’s separate jurisdictions and be customized and tailor-made to each local.

Jeffrey and Patrick Burns then discussed the market research performed to inform the MPS. Patrick discussed how the market research performed for the MPS was used to assemble baseline data and to inform the technology adoption curves used in the modeling. He described the web surveys that were constructed and provided to participants, noting that the results provide insights into current equipment being used in homes and residential and non-residential willingness to participate (WTP) data. Residential WTP Survey Data is used to help estimate the long-term adoption rates that might be expected across various end uses and technologies.

Jeffrey then went into detail on the expected results of the three MPS products being looked at, including EE potential, DR potential and DER potential. EE Potential: Jeffrey provided a flow chart and equation to describe the process by which the study results form from various energy efficiency potentials. He described two potential EE scenarios, including a high case that assumes 75% incentives relative to measure cost and a realistic potential case, which reflects more traditional incentive levels. DR Potential: Regarding DR Jeffrey spoke about the way in which the study will assess and screen load shifting options through incorporating over 20 performance and cost metrics. As part of the MPS, GDS looked at 37 sector and technology permutations for load shifting options. DER Potential: Lastly, Jeffrey noted the DER potential study that is focused on solar PV and combined heat and power and that DER will result from a market adoption based on bass diffusion theory.

Jeffrey concluded by talking about how the MPS study will create program portfolio recommendations and IRP inputs, which include converting achievable potential results into transparent formats and deliverables to the IRP team. More specifically, he noted that the approach includes mapping measures to potential programs and delivery channels, creating delivery streams / measure bundles, and recommending a portfolio of programs for consideration. GDS noted they will work closely with Siemens PTI during the formation of IRP inputs.

Table 2 Verbal Questions Captured Related to Market Potential Study

Question #	Question	Response
Q5	Will it be a rebate program for the EV charger?	Based on the costs associated with installing the charger and acquisition of the EV. Thus, based on the whole package of acquiring an EV.
Q6	Are food Sales for Grocery stores?	Yes



An AEP Company

BOUNDLESS ENERGY™

Q7	Were low-income customers included in the survey?	Did target low-income customers. Split up the data as much as possible to capture any difference between customer segments.
Q8	For EV specifically, when researching willingness to participate do you also research the ability to participate?	By giving information about the costs, it also includes the incentive. So given the incentive, are people willing and able to participate? 6 different categories that we questioned for the customer.
Q9	Is there a similar awareness adjustment for residential and is that also adjusted by 78%?	Yes
Q10	Curious about what IM has planned for its AMI data. Other studies looked at correlation between residential type. Was interesting from the standpoint visually of how they should target different consumption. Wondered if I&M would consider doing something like that?	In general, the benefits that I&M can bring is of key interest as we move forward, to get better information and analysis of how customers use energy and approach them about different EE offers. Don't have full AMI yet so cannot deal with that yet. We will be looking to do that as we get the information.
Q11	In looking at the level of awareness and participation in your survey have you reached out the churches and other community centers to increase their participation?	We did not include that in the engagement. Might come out of the analysis that will be done at the end of the market potential study.
Q12	Jacob gave the example of the residential AC. You said that the AEO forecast exceeds 15%. Make sure we are confident with that. Efficiencies that come out of AEO are done on national level not regional level.	We are sure the East North Central efficiency gets up to 14.8 so more than 14 not 15. Interpretation of the forecast is that there is a code and EIA does not project this will change in the future but does allow for customers to operate above code.

7. Impacts on Load Forecasting – Chad Burnett, AEP Load Forecasts

Chad covered slides 56-65

Chad provided an overview of the various methods for accounting for DSM/EWR in load forecasts and the mechanisms by which utility sponsored programs can help accelerate adoption of programs at an earlier date than otherwise. He provided an illustrative example of the impact of recent DSM programs within I&M's service territory but highlighted that there are differences between measuring EE savings within the market potential study and within the load forecast that need to be understood.

Chad went on to discuss the load forecasts provided by GDS and the way in which AEP plans to apply the results of the MPS study.

Table 3 Verbal Questions Captured Related to Impacts on Load Forecasting

Question #	Question	Response
------------	----------	----------



An AEP Company

BOUNDLESS ENERGY™

Q13	For future projection on heating and cooling temperatures are the new normal from climate change considered?	The load forecast and the weather we are using is trended normal, so it does account for the warming trend. We are also doing other load scenarios and one of those scenarios where we saw temperatures warming at a much faster pace. It would go up by about 10 degrees over a 10-year period.
Q14	Jacob had agreed that there was no changing codes and standard in the EIA data. Anna understood from Jacob that there may be changes to that and wanted to confirm.	What GDS found is what is in the base SAE is above the baseline that would be provided by SAE.
Q15	Regarding Slide 61 and 62. The lines that we are seeing are illustrative or based on the forecast from the SAE model?	GDS built this graphic, the red line is somewhat illustrative and is back of the envelope calculation. The base and frozen is actual but red is hypothetical.
Q16	How is it estimated what effect the code changes had on the forecast?	Looked at starting efficiency of the HVAC and relative to 2023 code, how much of the change that we are seeing between the top line and the base forecast would be relative to code and above code. Was approximately 50%.
Q17	The lines are based on the change of efficiency level over time. Isn't it also true that assumed efficiency over time could be due to turn over?	With that stock turnover people could only go to 14, but because the MPS goes above that GDS is trying to back out the stock turnover. EIA data that is being used does not assume new codes and standards. There is a list of codes and standard that is assumed in EIA. All are either already passed or approved.
Q18	Curious to hear if the intend of this approach is to avoid double counting the savings from MPS. Chad is it reasonable to use the method proposed by Anna? Is there a way to compare without double counting anything?	ITRON does not necessarily recommend that and an important consideration is consistency in our load forecast that is used for many purposes, including various regulatory filings where it has been determined to be reasonable and accurate.

8. Preliminary IRP Inputs – Art Holland, Siemens Managing Director

Art covered slides 66-73

Art provided an overview of the approach that will be used within the modeling framework to test energy efficiency, demand response and distributed energy resources. He discussed that for energy efficiency Siemens PTI, GDS and the I&M IRP team will collaborate on the appropriate bundling for the EE measures. The bundles will be tested against other resources and the volume will be optimized for each candidate portfolio. Art then discussed demand response, which he detailed that for each candidate portfolio there will be an assumed quantity of demand response resources defined by the GDS Market Potential Study. Art noted however that volume may vary by candidate portfolio. And lastly, he



An AEP Company

BOUNDLESS ENERGY™

discussed that regarding DER the associated volume, costs, and performance characteristics are included equally as a part of all candidate portfolios.

Art introduced Jay Boggs, Siemens Managing Director and Moderator to facilitate Stakeholder Feedback and Timelines.

9. Stakeholder Timelines – Jay Boggs, Siemens Managing Director

Jay covered slides 74-76

Jay reiterated the Stakeholder Process. Four stakeholder meetings will be held. The initial stakeholder meeting about the all-source RFP was held. There will also be an AURORA technical workshop. Additional detail will be released shortly on the AEP I&M IRP website.

Jay introduced Anna Sommer from the energy futures group to provide a stakeholder presentation on modeling EE IRPs.

10. Modeling EE in I&M’s IRP – Anna Sommer, Energy Futures Group (Stakeholder Presentation)

Anna covered slide 77 of the Stakeholder Presentation and slides 1-9 of the Stakeholder Provided presentation.

Anna provided an overview of I&M’s approach to modeling EE in the current and past IRPs and made requests for I&M to modify approaches used in this IRP cycle.

Anna concluded and Andrew Williams followed to provide closing remarks.

11. Closing Remarks

Andrew covered slide 78-79

Andrew provided closing remarks for the meeting.

12. Appendix A: List of Questions Answered on Call

Table 4 List of Questions Addressed on the Call Verbally

Question Asked	Response
Specifically, for electric vehicles, when researching willingness to participate are you also asking about ability to participate? Many electric vehicles are very expensive, so while someone may be willing, there still may be an economic barrier to actually participating.	As answered by GDS
Will I&M used the responses to its informational RFP to pre-qualify vendors and developers in any future bidding?	As answered by Greg S.
What actions is I&M taking to engage Virtual Power Plant providers into this IRP process?	As answered by Andrew W.



An AEP Company

BOUNDLESS ENERGY™

I have been contacted and talked to several virtual power plant companies who are interested in doing business in Indiana. Who should they contact at I&M/AEP?	As answered by Andrew W.
Are there currently any specific planning activities for community solar projects?	As answered by Andrew W.
Will all participants in today's IRP stakeholder meeting receive information about the I&M RFP to be issued on April 23? If not how can I request to receive this information?	As answered by Greg S.
Will I&M consider coupling DER solar incentives with any DSM and EE programs?	As answered by John W.
Does I&M plan to evaluate how expected T&D investments vary under the different scenarios and portfolios that are chosen for review in the IRP?	As answered by Siemens
Is the electric vehicle incentive question based on an incentive for the charger?	As answered by GDS
I would like to add that MI Staff agrees with EFG assessment of the supp. eff. adjustment. No MI utility apply this type of adjustment to EE, and all MI utilities apply a T&D savings to lower EE costs. I think you just missed me raising my hand. Karen Gould	Noted.
For future projections on heating & cooling energy usage, is climate change and the resulting "new normal" temperatures being taken into account? I'm referring to the charts coming up within this presentation on the study.	As answered by Chad B.
Obviously, cost-effectiveness is a consideration in every study and final decision, whether we're talking about generation methods, energy efficiency programs, etc. I imagine that I&M/AEP are always looking for a certain profit margin range. And I know that AEP is a highly profitable company. My concern is that for a sustainable, livable future, the balance needs to move towards a philosophy of People & Planet OVER Profit. Is there ever a conversation about adjusting the profit expectation downward? I'm aware that this may be a hypothetical question aimed at the higher echelon of management, but I'll ask it anyway!!	As answered by Andrew W.
WIs the EV incentive applicable to the car or to the in-home charger?	As answered by GDS
Is there a similar awareness adjustment for non-residential, and if so is that also using the JD Power estimate of 74%	As answered by GDS
How were the incremental measure costs calculated? The values appear to be much lower than the values used/assumed in I&M's most recent DSM plan.	As answered by GDS
Can you please post this correction for others to see? I misspoke regarding non-residential lighting, the incentive % of incremental costs are not 100% in the DSM plan. I had referenced at the wrong table from the DSM plan. Nonetheless, there still appears to be some differences between the DSM plan and what was presented here today. If GDS could share the calculation of incentive % of incremental cost, and benchmark against the DSM plan, that would be appreciated.	As answered by GDS



An AEP Company

BOUNDLESS ENERGY™

How was the difference between a code frozen forecast and base forecast calculated? Are the trend lines shown on Jacob's slide illustrative, or are they reflective of actual forecasts?	As answered by Chad B. and GDS
Is there a goal for a date to remove fossil fuels from our energy production? Are there benchmark dates to reach certain percentages of renewable energy to help achieve those goals?	As answered by Andrew W.
What would it take to end coal leases sooner than the leases dictate?	As answered by Andrew W.
I didn't understand whether that was a yes or no on the community solar. Can you clarify?	As answered by Greg S.
Were low-income customers included in the survey? Was community solar asked about?	As answered by GDS
In looking at level of awareness/participation in your survey, have you considered enlisting churches, neighborhood associations, environmental groups, etc. to reach a higher level of participation? Is that a question for a later stage?	As answered by GDS
Jon, Duke did some interesting analysis with its AMI data showing that they could identify correlations between energy consumption and characteristics like housing type (e.g. mobile home vs. single family detached) that seemed to me to hold a lot of potential for better targeting and better EE program design though Duke was not, unfortunately, going to use it for that. Is that something you would consider doing?	As answered by John W.
Jacob, IN IRP rules require consistency between the IRP and the subsequent DSM plan. Because of that, in considering these three bundling approaches, I ask myself, which of these three approaches would be most useful in informing the DSM plan? And I think the answer is "none". There's a fourth option that's not mentioned which is bundling by portfolio and I think that's preferable.	As answered by Greg S.
On slide 60, are these load forecasts that I&M has actually developed or are these just representative examples?	As answered by Chad B. and GDS
Jacob said before the break that he agreed that there was no changing codes and standards in the EIA data that is being in the load forecast. But Chad, you are saying that there is?	As answered by Chad B.
Given this discussion, is I&M doing a hosting capacity analysis?	As answered by John W.
Thanks, Andrew. We hope to hear back from I&M as to our request presented on Anna's last slide. Are your statements, Andrew, that I&M is nonetheless going to continue its methodology?	AEP will respond to the CAC presentation in writing

Question Asked	Response
Specifically, for electric vehicles, when researching willingness to participate are you also asking about ability to participate? Many electric vehicles are very expensive, so while someone may be willing, there still may be an economic barrier to actually participating.	As answered by GDS
Will I&M used the responses to its informational RFP to pre-qualify vendors and developers in any future bidding?	As answered by Greg S.



An AEP Company

BOUNDLESS ENERGY™

What actions is I&M taking to engage Virtual Power Plant providers into this IRP process?	As answered by Andrew W.
I have been contacted and talked to several virtual power plant companies who are interested in doing business in Indiana. Who should they contact at I&M/AEP?	As answered by Andrew W.
Are there currently any specific planning activities for community solar projects?	As answered by Andrew W.
Will all participants in today's IRP stakeholder meeting receive information about the I&M RFP to be issued on April 23? If not how can I request to receive this information?	As answered by Greg S.
Will I&M consider coupling DER solar incentives with any DSM and EE programs?	As answered by John W.
Does I&M plan to evaluate how expected T&D investments vary under the different scenarios and portfolios that are chosen for review in the IRP?	As answered by Siemens
Is the electric vehicle incentive question based on an incentive for the charger?	As answered by GDS
I would like to add that MI Staff agrees with EFG assessment of the supp. eff. adjustment. No MI utility apply this type of adjustment to EE, and all MI utilities apply a T&D savings to lower EE costs. I think you just missed me raising my hand. Karen Gould	Noted.
For future projections on heating & cooling energy usage, is climate change and the resulting "new normal" temperatures being taken into account? I'm referring to the charts coming up within this presentation on the study.	As answered by Chad B.
Obviously, cost-effectiveness is a consideration in every study and final decision, whether we're talking about generation methods, energy efficiency programs, etc. I imagine that I&M/AEP are always looking for a certain profit margin range. And I know that AEP is a highly profitable company. My concern is that for a sustainable, livable future, the balance needs to move towards a philosophy of People & Planet OVER Profit. Is there ever a conversation about adjusting the profit expectation downward? I'm aware that this may be a hypothetical question aimed at the higher echelon of management, but I'll ask it anyway!!	As answered by Andrew W.
WIs the EV incentive applicable to the car or to the in-home charger?	As answered by GDS
Is there a similar awareness adjustment for non-residential, and if so is that also using the JD Power estimate of 74%	As answered by GDS
How were the incremental measure costs calculated? The values appear to be much lower than the values used/assumed in I&M's most recent DSM plan.	As answered by GDS
Can you please post this correction for others to see? I misspoke regarding non-residential lighting, the incentive % of incremental costs are not 100% in the DSM plan. I had referenced at the wrong table from the DSM plan. Nonetheless, there still appears to be some differences between the DSM plan and what was presented here	As answered by GDS



An AEP Company

BOUNDLESS ENERGY™

today. If GDS could share the calculation of incentive % of incremental cost, and benchmark against the DSM plan, that would be appreciated.	
How was the difference between a code frozen forecast and base forecast calculated? Are the trend lines shown on Jacob's slide illustrative, or are they reflective of actual forecasts?	As answered by Chad B. and GDS
Is there a goal for a date to remove fossil fuels from our energy production? Are there benchmark dates to reach certain percentages of renewable energy to help achieve those goals?	As answered by Andrew W.
What would it take to end coal leases sooner than the leases dictate?	As answered by Andrew W.
I didn't understand whether that was a yes or no on the community solar. Can you clarify?	As answered by Greg S.
Were low-income customers included in the survey? Was community solar asked about?	As answered by GDS
In looking at level of awareness/participation in your survey, have you considered enlisting churches, neighborhood associations, environmental groups, etc. to reach a higher level of participation? Is that a question for a later stage?	As answered by GDS
Jon, Duke did some interesting analysis with its AMI data showing that they could identify correlations between energy consumption and characteristics like housing type (e.g. mobile home vs. single family detached) that seemed to me to hold a lot of potential for better targeting and better EE program design though Duke was not, unfortunately, going to use it for that. Is that something you would consider doing?	As answered by John W.
Jacob, IN IRP rules require consistency between the IRP and the subsequent DSM plan. Because of that, in considering these three bundling approaches, I ask myself, which of these three approaches would be most useful in informing the DSM plan? And I think the answer is "none". There's a fourth option that's not mentioned which is bundling by portfolio and I think that's preferable.	As answered by Greg S.
On slide 60, are these load forecasts that I&M has actually developed or are these just representative examples?	As answered by Chad B. and GDS
Jacob said before the break that he agreed that there was no changing codes and standards in the EIA data that is being in the load forecast. But Chad, you are saying that there is?	As answered by Chad B.
Given this discussion, is I&M doing a hosting capacity analysis?	As answered by John W.
Thanks, Andrew. We hope to hear back from I&M as to our request presented on Anna's last slide. Are your statements, Andrew, that I&M is nonetheless going to continue its methodology?	AEP will respond to the CAC presentation in writing