

**Response of CAC and Earthjustice to
the Director's Draft Report for
Indianapolis Power & Light's
2019 Integrated Resource Plan**

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We appreciate the Director’s Draft Report published February 12, 2021, for Indianapolis Power & Light’s (“IPL” or “Company”) 2019 Integrated Resource Plan (“IRP”) as well as the opportunity to respond¹ to such before the Director’s Final Report is issued. We concur with the Director that IPL’s IRP was “very well done” and that IPL “made significant improvements... compared to the 2016 IRP.” Like the Director, we also feel there is still room for improvement in IPL’s 2022 IRP and offer these comments in an effort to clarify our prior comments and provide additional information that may help the Director in making his recommendations for future improvements by IPL.

In the Draft Report, the Director makes several recommendations around IPL’s load forecast. We agree that more detail about data used in the development of load forecasts is needed. Like the Director, we also think it is beneficial for utilities to provide the load forecast report produced by Itron as an attachment to the IRP and encourage IPL to do that in future IRPs. Similar to the Director, it is our understanding that IPL optimized the five retirement portfolios under the reference case assumptions and then fixed those portfolios across the different scenarios developed by IPL. We agree with the Director that it would be valuable to assess how the capacity expansion plans under the different retirement portfolios may have changed if they were optimized under the different scenarios.²

1 Energy Efficiency

1.1 Director’s Concern about IPL’s Energy Efficiency Bundles

In his Draft Report discussion of IPL’s modeling of energy efficiency, the Director stated:

Currently, the Director’s primary concern is each bundle spans the entire planning period 2021 – 2039 and each bundle also combines residential and C&I measures. Combining unrelated measures across residential and C&I measures, except that they have similar leveled costs, makes a questionable load shape obscuring the time aspects of different measures. This is an important consideration since the PowerSimm model is designed to capture how weather effects load shapes and the performance of intermittent resources at an hourly level. In a world increasingly characterized by low marginal costs across most hours, it is important that the hourly impact of DSM measures be given particular attention.³

The Director also stated:

¹ See 170 IAC § 4-7-2.2(c).

² Director’s Draft Report on IPL’s 2019 IRP, p. 16.

³ Director’s Draft Report on IPL’s 2019 IRP, p. 14.

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The Director understands IPL’s focus is on the cost-effectiveness of the EE measures, and hence the Company’s use of an EE supply curve to create EE bundles. IRP model selection of these bundles provides insight into the cost range over which the IRP model thinks EE is a cost-effective resource. This information should be used by IPL to develop its EE programs at a later date, but it is not in itself determinative as to what should be included in a well-developed EE plan.⁴

We agree with the Director that the time valuing of DSM can better elucidate its value and that an accurate hourly shape of DSM is a critical input for that reason. In our opinion, the problem lies not in the grouping of measures across the residential and C&I sectors, but in the grouping of measures by cost. Grouping of DSM measures in some fashion is necessary to condense the problem size to a manageable level. And the Indiana utilities offer measures to both the residential and C&I sectors so in that sense IPL’s methodology is consistent with the realities of DSM implementation. However, because DSM programs are typically developed to offer measures that cover multiple needs and to minimize multiple treatments of program participants, it does not make sense to separate measures by cost rather than by program type. Indeed, IPL’s methodology runs the risk of selecting measures with a load shape, e.g. commercial HVAC measures, that is only partially consistent with the measures actually offered, e.g. a combination of commercial HVAC and residential appliance incentives. We agree that the measures selected do not need to dictate the program offered, but we do think broad agreement between the measures selected and those implemented (in terms of class and end-use) is a reasonable goal to aim for and would ensure that cost-effective DSM is being selected in the IRP.

We agree with the Director that there could be value in breaking up the DSM bundles into less than 19-year blocks. Ten-year blocks could be reasonable. Continuity of programs is extremely important for the success of DSM, so we would not recommend modeling programs in three-year blocks as I&M does, for example. The result of that approach has been volatile program savings.

In response to the concern about how the grouping of measures does or does not fit within PowerSimm’s weather driven approach to modeling load, we have two observations. First, it is our understanding that PowerSimm does not change the DSM measure shapes based on the “weather” modeled in any particular draw. The only change is to the load shape itself. Making both the DSM shapes and load responsive to weather would be a welcomed improvement. However, we think it is also important not to overstate what PowerSimm is capable of. PowerSimm simulates “weather” based on temperature sampling exclusively. Where there is a winter storm event, for example, PowerSimm would be unlikely to capture the dynamic of wind and cloud cover at the start of the event followed by low wind speed as the storm moves out of the region. Indeed, because load and renewable production profiles are influenced by cloud formation and dissipation, precipitation, changes in surface albedo due to snow, changes in surface fluxes due to soil moisture, etc., we are not convinced that sampling just temperature gives a robust assessment of the effect of “weather” on any utility’s system as opposed to explicitly modeling atmospheric dynamics.

⁴ Director’s Draft Report on IPL’s 2019 IRP, p.33.

2 Resource Optimization and Risk Analysis

2.1 Resource Optimization in PowerSimm

In the discussion about resource optimization and risk analysis, the Director said:

As a preface to the Director’s review of IPL’s discussion of resource optimization and risk analysis, the Director commends IPL management’s commitment to continual improvements. This commitment was evidenced by IPL’s move to using the Ascend Analytics PowerSimm model that enabled IPL to utilize more advanced state-of-the-art analytical and methodological capabilities to good effect.⁵

In the comments filed by CAC and Earthjustice, we brought up several concerns about Ascend’s PowerSimm model. In addition to the fact that it condenses “weather” into a single variable, temperature, one of our main concerns about PowerSimm is that the user cannot see the calculated Net Present Value (“NPV”) for the portfolios. PowerSimm’s objective function is to minimize total system cost, but the model never reports the cost of the optimal plan. It is the only IRP model of which we are aware that does not have that functionality. Among the concerns this raises is that it forecloses the ability to identify whether there are problems in the optimization and/or in the model code itself and, therefore, hinders a full evaluation of IPL’s modeling.

In CAC Data Request 4-2, we asked IPL to provide the PVRRs produced by PowerSimm for all of the portfolios IPL modeled. IPL’s response to CAC’s request was: “Not available. PowerSimm does not report PVRR.” We believe that this limitation is the reason why IPL had to utilize a spreadsheet to post-process the PowerSimm results and calculate the revenue requirements for the different portfolios. As IPL said in the IRP narrative:

IPL utilized a spreadsheet-based set of financial models to build the revenue requirement. The revenue requirement calculation outside of PowerSimm provides a transparent, flexible method to calculate PVRR, compare scenarios and portfolios, and to build customized outputs for stakeholders.⁶

Since the PowerSimm model lacks transparency into its objective function, IPL needed to take the additional steps to process the modeling results outside of PowerSimm in order to try to provide a key IRP result, the NPVs of its plans. The spreadsheet calculated PVRRs do have the benefit of being easily audited, but that does not solve the problem of understanding the NPV calculation that PowerSimm is performing internally to actually arrive at an optimal plan.

This limitation within PowerSimm is one of the main reasons why we were concerned about the different results observed when IPL forced in an additional bundle of energy efficiency. After seeing the initial modeling results released by IPL, CAC requested that IPL evaluate portfolios with higher levels of energy efficiency to gauge the impact that the additional energy efficiency would have on the modeling results. After forcing in the additional energy efficiency bundle, the

⁵ Director’s Draft Report on IPL’s 2019 IRP, p. 18.

⁶ IPL 2019 IRP, p. 121.

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results indicated that the additional energy efficiency resulted in a lower cost plan, which raises serious concerns about the efficacy of IPL’s modeling in identifying the least cost resource plan. We appreciate the Director acknowledging our concerns about this issue, but we respectfully disagree that this, combined with PowerSimm’s inability to calculate PVRRs, is not a major concern with the model.

The Director also said in the Draft Report that “it seems retirements of coal units and DSM levels were all hard-wired in candidate portfolios. If so, the model was unable to be fully utilize the model’s capabilities to perform optimization of a broad array of resources to capture a full range of uncertainties and risk.”⁷ We agree with the Director that modeling optimization would add value, as it would help elucidate the most economic retirement dates for IPL’s coal units. Optimization should also help identify the most economic level of DSM, but we are uncertain about whether it would have changed the PowerSimm modeling results given the issue we found with PowerSimm not selecting the incremental energy efficiency bundle that lowered the PVRR. IPL’s PVRR analysis indicated conflicting results about the additional energy efficiency increment lowering the PVRR of the portfolio, even though it was not optimally selected within PowerSimm. Both portfolio optimization and constructing portfolios to test under different scenarios have value, and we would recommend that IPL do both in the future.

2.2 Risk Analysis

With respect to risk analysis, the Director states:

*Specifically, we would like IPL, in consultation with stakeholders, to consider using stochastic analysis with distinct optimized scenarios and compare to a reference case with stochastic changes for important drivers.*⁸

We welcome the opportunity to work with IPL in a collaborative manner to develop scenarios and identify which drivers to look at in a stochastic analysis. It is our belief that the best drivers to look at for stochastic analysis include market prices and fuel prices. For many variables that are often tested, like carbon pricing and capital costs, the data does not exist in order to develop meaningful probability distributions, and we do not recommend testing them stochastically.

3 Conclusion

We reiterate our appreciation for the Director’s Draft Report on IPL’s 2019 IRP and the opportunity to provide comments on the Draft Report. It is attentive to both issues raised by stakeholders and those identified by the Director. We welcome continued dialogue on this and other issues of importance to IRPs in Indiana.

⁷ Director’s Draft Report on IPL’s 2019 IRP, p. 18.

⁸ Director’s Draft Report on IPL’s 2019 IRP, p. 18.