Interstate Power and Light Resource Evaluation Study
IEC, ELPC and Sierra Club Post September 12 Meeting Comments (PUBLIC)
September 27, 2024

Sierra Club, Iowa Environmental Council (IEC), and the Environmental Law and Policy Center (ELPC) offer the following comments in response to materials presented at the Interstate Power and Light (IPL) September 12, 2024 Resource Evaluation Study (RES) meeting and shared as part of the RES process.

We have several initial concerns that we will address in our comments, but our ability to respond comprehensively has been constrained by the short time frame for response. As a preliminary matter, the Company's engagement of stakeholders in the process was dormant for six months and now the Company has resumed the process in a manner that feels unnecessarily rushed and that does not provide adequate time for stakeholders to provide feedback or even understand IPL's updates to the analysis. Second, we are concerned that the Company is approaching its load growth in a way that will result in higher costs than necessary for customers. Third, after reviewing IPL's RES resource cost assumptions, we are concerned that the Company's RES model is set up to systematically disadvantage clean energy resources and favor maintaining the status quo. We outline our concerns with these, and other aspects of the Company's modeling, below.

I. IPL Should Manage and Optimize the Timing of Serving New Large Loads

IPL has an obligation to serve new loads located within its service territory. The Company is also obligated to provide low cost reliable power to the rest of its ratepayers. What IPL is not obligated to do is serve that new load on a specific timeline, or with a specific set of resources regardless of cost.

Historically, utilities have treated load as a somewhat static input. When the utility sees increased demand from new customers, the utility programs it into a resource plan and then the utility figures out what resources it needs to meet that demand. However, as we enter an era with projections for unprecedented load growth, this approach no longer serves the best interest of ratepayers. Utilities need to take a new approach that recognizes that timing, resource choice, and customer deployment of resources and flexibility can impact the portfolio costs.

IPL should view a new large load not as a static input that has to be served in the requested year, but rather as a dynamic part of the system. If a new data center or other large-load customer wants to be online by a certain year, IPL should evaluate whether there is a substantial cost difference in serving that load in the requested year relative to delaying a year or two. This is especially important with new resource cost declines expected as the industry continues to rebound from impacts from supply chain constraints, inflation, and interconnection queue delays. IPL should

also work with the new customer to evaluate the impact of load flexibility and customer-sited resources or back-up power to determine whether it is most cost effective for the customer specifically, and the system as a whole, to have IPL install all the resources or to include customer-sited resources and flexibility.

II. IPL Should Not Use Unreasonably High Reference Costs for Modeling New Renewable Resources

A. IPL's reference clean energy input costs are substantially higher than costs used by other utilities and leading industry sources

The input data provided by IPL in the 2024 Resource Evaluation Study shows the company's reference overnight capital cost estimates for new solar, wind, and storage resources are substantially higher than expected both now and going forward. The Company's costs are higher than other utility cost data and higher than leading industry cost data and projections, including from the National Renewable Energy Laboratory (NREL), the United States Energy Information Administration (EIA), and Lazard. Even more concerning is that the deviation between IPL assumptions for solar, wind and storage costs and all other sources becomes more pronounced in the future years based on IPL's assumption that there is no technological learning and resource costs do not decline over time[1] (discussed more below). These assumptions artificially inflate the costs of clean energy resources relative to conventional resources in IPL's modeling and are likely driving the minimal renewable deployment seen in IPL's portfolios. IPL does model a renewable cost sensitivity that includes an additional cost decline over the long term. But even this alternative forecast remains above nearly all other trajectories over the study period - and assumes no cost decline until [redacted].[2]

In Figure 1 below, we compare the current (2024) capital cost of solar, wind, and battery energy storage systems (BESS) that IPL uses[3] to projections from NREL,[4] EIA, and Lazard. On average, IPL's current cost estimate is [redacted] than NREL's, EIA's and Lazard's estimates for wind, [redacted] for solar, and [redacted] for BESS.

[1] Confidential IPL 2024 Resource Evaluation Study, Stakeholder Meeting 3. September 12, 2024, slides 21-22.
[2] Confidential IPL 2024 Resource Evaluation Study, Stakeholder Meeting 3. September 12, 2024, slide 23.
[3] IPL lists its new resource cost source as "IPL Market Analysis, EIA 2023 AEO, NREL ATB 2023 Learning Rates, MISO Market Analysis." Confidential IPL 2024 Resource Evaluation Study, Stakeholder Meeting 3. September 12, 2024, slides 21-23.
[4] The NREL ATB has three different cost projection sensitivities - conservative, moderate, and advanced. The NREL numbers reflected in this analysis are the moderate case unless otherwise specified.

Figure 1: 2024 Capital cost of solar, wind and BESS for IPL compared to other utilities and industry sources

In Figure 2, Figure 3, and Figure 4 below, we compare IPL's long-term reference cost estimates (now through 2050) for these same technologies to other industry forecasts. While other utilities, including Berkshire Hathaway utility Pacificorp, assume technology maturation and therefore that resource costs decline over time, IPL holds the cost for these technologies flat, adjusting only for inflation. Because of this assumption, the deviation between IPL's cost assumptions and all other projections grows over time. The combination of inflated starting costs and no technology maturation assumptions or cost declines over time results in cost inputs for wind, solar, and battery energy storage systems that are significantly higher than industry standard projections, especially further out in the study period. By 2040, IPL's reference cost estimate for solar is more than double the EIA and NREL estimates. IPL's alternative cost trajectory does assume some level of cost decline, but even there costs for solar remain far above other industry sources for the entire study period and that is only a sensitivity rather than an assumption embedded throughout IPL's modeling. By the early 2040s, IPL's solar costs reached their lowest level, which even then is still above NREL's conservative cost trajectory. For wind, IPL's declining cost trajectory is still far above other industry sources even into the 2040s. Only for BESS does IPL's alternative cost trajectory fall below NREL's conservative case during the study period.

Figure 2: Solar cost trajectories for IPL compared to other utilities and industry sources

Figure 3: Wind cost trajectories for IPL compared to other utilities and industry sources

Figure 4: BESS cost trajectories for IPL compared to other utilities and industry sources

IPL's forecasts for solar, wind, and BESS are the highest among all utilities we reviewed, and the only ones in our extensive review that include the effects of inflation without including any cost decrease associated with technological learning effects. IPL's failure to use technological learning effects and include cost declines is inconsistent with best practices for resource planning. Additional recent IRPs that have used lower cost estimates for solar, wind, and storage than IPL's 2024 RES include:

- Evergy Kansas 2024 IRP
- Duke Energy Indiana 2024 IRP
- PacifiCorp 2023 IRP
- Tucson Electric Power 2023 IRP
- DTE Michigan 2022 IRP

Numerous utilities, such as Nevada Energy,[5] Pacific Gas and Electric, Arizona Public Service, Xcel Minnesota, and the California Public Utilities Commission all also rely on NREL ATB cost projections (sometimes with adjustments).

[5] Nevada Energy 2025 Integrated Resource Plan. Volume 8 of 20 at 90. Available at https://www.nvenergy.com/publish/content/dam/nvenergy/brochures_arch/about-nvenergy/rates-regulatory/recent-regulatory-filings/irp/IRP-Volume-8.pdf.

B. IPL's assumption that new resources experience no technological learnings or cost declines is contrary to industry consensus and systematically disadvantages clean energy resources

IPL applied the assumption of no cost declines to all generator types, including new gas resources. There is industry consensus that modeling a cost decline for new resources is a best practice (as discussed more below). Further, assuming no change because there is uncertainty about the pace of change is in itself an incredibly conservative and biased assumption. The impacts of this assumption are not uniform across all resource types. The largest impact is felt by resources with the largest expected cost declines - that is, clean energy resources. Gas generators are generally considered mature technologies, and while there is some room for future technology developments and learnings that marginally impact their costs, there is general consensus that the cost of gas plants will change only gradually going forward. Clean energy resources, however, such as solar PV, wind, and BESS are newer technologies, and there is wide industry consensus that there is still substantial room for technological advancement and efficiency improvements in the supply chain and other soft costs, all of which is likely to lead to sustained future cost declines. Modeling conventional resources and clean energy resources both with flat cost decline assumptions systematically favors the conventional resources, and essentially locks clean energy resources out of the future resource mix. Once again, this assumption of no cost declines for any resource types violates best practices in resource planning

Figure 4 below compares IPL, NREL, and EIA projections for both BESS and CTs. This figure shows that while CT costs are expected to remain relatively constant (using NREL and EIA cost projections as an example), BESS costs are expected to drop to around or even below the cost of CTs. With IPL's cost assumptions, BESS remains more than double the cost of CTs for the entire study period - even in the scenario with alternative renewable costs. It is therefore not surprising that the model doesn't choose BESS when CTs are available. But this assumption is unjustified and inconsistent with how other utilities, and leading industry sources, model BESS resources. This is why nearly all other utilities model and build at least some BESS, while IPL continues to fight against BESS in favor of gas and coal resources. IPL does build some new BESS before [redacted], when the model is not allowed to build new gas (IPL does not allow new gas until [redacted][6]). But beyond [redacted], IPL builds only [redacted] MW of BESS in its flat-load scenario,[7] and [redacted] MW in its mid-load and high-load scenarios.[8]

[6] Confidential IPL 2024 Resource Evaluation Study, Stakeholder Meeting 3. September 12, 2024, slide 20.
[7] *Id.* slides 31-32.
[8] *Id.* slides 38-39, 47-48.

Figure 5: CT and BESS cost projections

Table 1 below shows a comparison between IPL resource costs and NREL and EIA new resource costs for 2024 and 2040; Table 2 shows the percent by which IPL costs exceed industry projections for both 2024 and 2040. These tables show how much IPL forecasts deviate from industry standard forecasts over time. For example, IPL's forecast of CT costs are within [redacted] of industry projections for the entire study period. In comparison, IPL's forecast for solar starts out between [redacted] above industry projections, and by 2040, it is [redacted] percent higher than industry estimates. There is a similar pattern for wind and BESS. By ignoring widely expected cost decreases associated with learning, IPL gives an advantage to gas generation over renewable energy. This systematically biases the model against clean energy resources and explains, at least in part, the minimal deployment in the Company's results.

Table 1: Comparison between IPL, EIA and NREL new resource cost assumptions ($2023/kW capital cost)

Resource	2024				2040		
	IPL	EIA AEO	NREL	Lazard	IPL	EIA AEO	NREL
Solar PV	[redacted]	$1,334	$1,608	$1,099	[redacted]	$907	$855

BESS	[redacted]	$1,103	$2,009	1,309	[redacted]	$624	$1,289
Wind	[redacted]	$1,506	$1,737	$1,563	[redacted]	$1,281	$1,307
Combustion Turbine (CT)	[redacted]	$1,127	$1,378	$904	[redacted]	$928	$1,416

Table 2: Percent difference between IPL and industry standard cost estimates (IPL cost is X% > industry projection)

Resource	**2024**			**2040**	
	EIA AEO	**NREL**	**Lazard**	**EIA AEO**	**NREL**
Solar PV	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
BESS	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Combustion Turbine (CT)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

C. Conclusions and Recommendations

To obtain reasonable resource planning modeling results, IPL must use reasonable cost forecasts. IPL's modeling inputs misrepresent the future costs of renewables by omitting the steep cost reduction assumptions widely expected to result from the technological learning effect. A scenario that assumes a flat cost forecast for renewable technologies will have a very different resource buildout than one that assumes that the costs of technologies like solar, wind, and storage will generally continue to decrease as industry experts predict. IPL has provided no evidence to support its high starting costs and flat cost projections.

While supply chain difficulties have resulted in recent cost increases, these are forces that should impact all utilities similarly. Other utility and industry forecasts show an expectation that the market will adjust and cost decreases will resume - IPL should do the same. The Company has not acknowledged or explained why its assumptions deviate so significantly from all other utilities and industry sources. In the event that IPL's costs actually are that much higher than all other utilities and industry sources, that in itself is concerning, and something the Commission should be aware

of. The Company should take steps to address its procurement and cost challenges and update the Commission on its progress on this front.

These discrepancies in forecasts are very likely driving the modelin g results that IPL is presenting For example, in IPL's Flat Load Scenario, the model adds over [redacted] Additionally, the model adds no new solar beyond [redacted]

Recommendations:

1. IPL must revise its new resource cost forecast for new resources to be closer to industry standard cost forecasts.
2. The Company should rely on either industry standard forecasts from NREL, as many other utilities are doing, or else forecasts purchased from an industry source.
3. A technological learning effect for new resources must be included, and the learning effect (i.e. price declines) should be higher for emerging, modular technologies such as wind, solar, and storage than for mature technologies such as combined and simple-cycle gas generators.

Conclusion

We appreciate the opportunity to provide this initial feedback after the September 12 RES stakeholder meeting. We have significant concerns that IPL's cost assumptions for new renewable resources are impacting the results and the usefulness of this RES process. We reiterate our concern that IPL appears to be rushing the RES process after it was dormant for six months and that the timeframe for comment has not allowed for a comprehensive review here. We will continue to engage in the RES process and plan to provide additional feedback going forward.

Respectfully submitted September 27, 2024.

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[9] IPL 2024 Resource Evaluation Study, Stakeholder Meeting 3. September 12, 2024. Slide 32.

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