



Brad Borum
Indiana Utility Regulatory Commission
101 West Washington Street, Suite 1500 East
Indianapolis, Indiana 46204 -3419

April 14, 2020

Re: Indianapolis Power & Light Company's 2019 Integrated Resource Plan

Dear Dr. Borum

Indiana Advanced Energy Economy ("Indiana AEE") respectfully submits this letter of comment regarding Indianapolis Power & Light Company ("IPL")'s 2019 Integrated Resource Plan ("IRP") to the Indiana Utility Regulatory Commission ("Commission").

Advanced Energy Economy ("AEE") is a national business association representing leaders in the advanced energy industry. AEE supports a broad portfolio of technologies, products and services that enhances U.S. competitiveness and economic growth through an efficient, high-performing energy system that is clean, secure, and affordable. AEE has been operating in the Hoosier state as Indiana AEE since 2016. In Indiana, AEE aims to drive the development of advanced energy by identifying growth opportunities, removing policy barriers, encouraging market-based policies, establishing partnerships, and serving as the voice of innovative companies in the advanced energy sector.

First, Indiana AEE appreciates the stakeholder process that IPL held with regard to this IRP and its consideration of the feedback it received. Indiana AEE supports IPL's stated criteria for evaluating various energy pathways over the next 20 years, including lowered costs, customer centricity, flexibility and reduced carbon intensity. Indiana AEE also appreciates that IPL is transparent about its resource cost assumptions and is taking active steps to improve its modeling and data for better resource planning in 2022.

Second, Indiana AEE commends IPL for its recent decision to retire 630 MW of its coal generation at Petersburg Units 1 and 2 by 2023 and agrees with IPL's expectation that solar, wind, energy efficiency and demand response ("DR") will prove to be the least cost bids into its recent 200MW all-source Request for Proposals ("RFP") to provide replacement capacity. Integrated Resource Plans across the country have demonstrated that a combination of renewables, storage, and demand-side resources continue to be the least-cost resource options, and we expect to see this trend hold in Indiana.

In response to IPL's preferred resource portfolio, Indiana AEE will make 3 main points:

1. By deploying additional renewable energy and battery storage on a more expedited timeline, IPL could realize greater savings for consumers and satisfy growing commercial and industrial demand for these resources;
2. Indiana AEE appreciates IPL's efforts to incorporate energy efficiency, demand response and electric vehicles into this IRP, but could deploy these resources more aggressively to benefit consumers, especially commercial and industrial ("C&I") demand response; and
3. The Commission should closely scrutinize IPL's plan to invest in new combined cycle gas plants against cost-effective advanced energy alternatives.

1. Indiana AEE supports a portfolio that increases IPL's use of renewable energy and storage in both the short and long term because it will offer affordable energy to Indiana ratepayers and satisfy growing commercial and industrial demand for clean energy.

Indiana AEE supports an investment approach that more aggressively and expeditiously relies on advanced energy as it will provide the maximum amount of consumer savings to ratepayers. To that end, Indiana AEE recognizes the many benefits of IPL's preferred portfolio plan to add 1,450 MW of solar, 550 MW of wind, and 440 MW of energy storage by 2039, but hopes to see IPL make more of these investments in the near-term. As we will cover in further detail below, this approach recognizes that advanced energy resources are the most cost-effective resources available today and delaying their deployment only delays benefits to consumers. These resources meet Indiana's changing energy needs while supporting forecasted load and peak growth, new electric vehicle-related demand and a more reliable, resilient, and flexible grid. Additionally, these investments will help meet the demand of Indiana's largest energy users, which are asking utilities to invest in more advanced energy resources and to offer programs that allow them to source their energy needs from 100% renewable energy options. However, IPL could realize even more benefits and more cost-effectively meet the needs and wants of its ratepayers by modifying its preferred portfolio to include more renewable energy and storage, especially in the short term.

Market analysis demonstrates that advanced energy resources are the most cost-effective investment. In its latest annual publication showing its levelized cost of energy analysis, Lazard, a financial advisory and asset management firm, showed the continuation of a multi-year trend of falling costs for advanced energy technologies, particularly with regard to utility scale solar. In certain scenarios, renewable energy costs have decreased to the point that wind and solar are now at or below the marginal cost of existing conventional generation. When you take government incentives into account, the cost of building new onshore wind (\$28/MWh) and utility scale solar (\$36/MWh) projects is competitive with the marginal cost of operating coal (\$34/MWh) and nuclear generators (\$29/MWh). Even without subsidies, these resources are competitive, averaging \$41/MWh for new onshore wind and \$37/MWh for new utility scale solar. Costs continue to fall at approximately 7% and 13% per year, respectively.¹

This new economic landscape was evident in 2018 utility regulatory filings across the United States. Examples include but are not limited to: Rocky Mountain Power's approved proposal to retire 3,500 MW of coal in favor of new wind and solar in Idaho;² Consumer Energy Co.'s proposal to retire four coal units in favor of solar and energy storage in Michigan;³ and Xcel's proposal to retire two coal plants in favor of wind, solar, storage, and natural gas assets in Colorado to save approximately \$215 million.⁴

Indiana is no exception. Recent modeling found that over half of the coal plants in Indiana are already no longer cost competitive with nearby wind and solar, and that by 2025, all of Indiana's coal generation will be substantially at risk economically.⁵ For example, in their most recent IRP, the Northern Indiana Public Service Company ("NIPSCO") found that the most cost-effective plan for its ratepayers was to replace traditional coal generation with solar and wind, often paired with storage, while also investing in a mix of demand-side resources. NIPSCO's analysis determined it could save customers over \$4 billion over the next 30 years by eliminating coal entirely by 2028.⁶ Indiana AEE strongly supported NIPSCO's IRP proposal as a cost-effective approach for ratepayers and commends Indiana for becoming a national leader in the deployment of advanced energy resources. Subsequently, NIPSCO announced a request for proposals for 2,300 MW of solar and solar plus storage and 300MW of wind. This capacity is in addition to the 800 MW of wind energy that NIPSCO solicited in 2019.

¹ *Levelized Cost of Energy and Levelized Cost of Storage 2019*. Lazard. November 7, 2019.

² See generally *In the Matter of PacifiCorp DBA Rocky Mountain Power's 2017 Integrated Resource Plan*. Case No. PAC-E-17-03.

³ See generally *In the Matter of the Application of Consumers Energy Company for Approval of its Integrated Resource Plan Pursuant to MCL 460.6t and for other relief*. Case No. U-20165.

⁴ See generally *2016 Electric Resource Plan*. June 6, 2018. CPUC Proceeding No. 16A-0396E.

⁵ *The Coal Cost Crossover: Economic Viability of Existing Coal Compared to New Local Wind and Solar Resources*. Gimon et al. March, 2019. Energy Innovation and Vibrant Clean Energy. Page 10.

⁶ See generally *The Indiana Public Service Company LLC 2018 Integrated Resource Plan*. October 31, 2018.

Despite the strong example of NIPSCO, IPL only begins to add new wind resources in 2022. It adds 100MW, and then waits until 2028 to add another modest 50MW. IPL first adds new solar resources in 2023 after the solar investment tax credit has phased out. It does not begin to add battery storage until 2027. Indiana AEE believes that by foregoing the opportunity to utilize current financial resources to build more cost-effective, clean energy resources in the next five years, IPL is delaying benefits to its customers. Investing in advanced energy resources in the near-term will pay dividends and allow IPL to imagine a future where it can retire its remaining coal units when they become uneconomic without sacrificing capacity. By the same token, Indiana AEE strongly encourages the Commission to closely examine IPL's cost assumptions regarding maintenance and operation of its coal fleet compared to advanced energy technologies. Even without significant shifts in state or federal policy, cost trends demonstrate that most, if not all, existing coal plants will become uneconomic by 2025.

In its evaluation of advanced energy technologies against traditional generation, IPL should take care to properly account for the numerous benefits that energy storage offers to the grid. Utilities around the country are recognizing the value of battery storage as a cost-effective complement to renewable resources and for its ability to solve complex grid problems. As a key enabling technology, energy storage maximizes the benefits of wind and solar and integrates variable resources effectively into the grid. Increased use of energy storage as a capacity, energy, and ancillary services product can provide numerous benefits including significant consumer and utility savings. For example, pairing renewables with battery storage at key locations throughout a utility's territory can generate noteworthy benefits in added system reliability and transmission and distribution congestion relief. A 2018 Indiana AEE report found that adding 139 MW of well-sited battery storage could avoid \$103 million in costs over 10 years statewide. If 329 MW of cost-effective battery storage is added, benefits could reach \$311 million.⁷ These trends are not unique to Indiana--in early 2019, Arizona Public Service announced that it would procure 850 MW of battery storage to meet peak demand and replace natural gas peaking capacity.⁸

On top of the consumer benefits of advanced energy, Indiana consumers, particularly large energy users, are seeking to have their electricity come from locally-sourced renewable energy. It is not a new trend that the ability to control energy costs and sources is a critical business priority for large commercial and industrial customers. As renewable energy technologies such as wind and solar continue to drop in price, they are increasingly an attractive option for companies seeking to lower costs while protecting against fluctuating fuel prices. Already, 71%

⁷ *Potential for Peak Demand Reduction in Indiana*. Prepared for Indiana Advanced Energy Economy by Demand Side Analytics, LLC. February 2018.

⁸ *APS to install 850 MW of storage, 100 MW of solar in major clean energy buy*. Gavin Bade. Utility Dive, February 2019.

of Fortune 100 companies and 43% of Fortune 500 companies have set ambitious corporate sustainability goals.

As the Commission is aware, nine companies with Indiana operations sent a letter in August 2019 to the 21st Century Energy Policy Development Task Force calling for more renewable energy access through utility programs. These companies included Berry Global, Best Buy, Cummins, Eli Lilly and Company, General Motors, Salesforce, Skjodt-Barrett Foods, Unilever, and Walmart.⁹ In that letter, the companies noted that demand for renewable energy by large energy users has resulted in significant market activity; since 2013, voluntary renewable energy procurement by businesses has driven over 15 gigawatts (GW) of new, large-scale renewable energy projects—enough to meet the annual electricity needs of approximately 3 million households. However, of the 15 GW of corporate renewable procurement across the nation, under 2 GW (less than 15%) has been procured through utility offerings.

In a recently released report, Indiana AEE demonstrates that up to 3.6 GW of renewable energy demand from the commercial and industrial sector exists in the state through 2030. This could bring up to \$5.78 billion dollars in investment to Indiana, and spur the creation of up to 25,000 jobs.¹⁰ Indiana AEE believes that IPL should revise its renewable energy buildout projections upward in order to adequately account for large commercial and industrial demand as driven by existing and future corporate renewable goals.

In order for Indiana to stay competitive and to attract these businesses with renewable energy goals to the state, utilities should offer options to customers that allow companies to contract for or purchase the output of renewable energy directly through their local utility. With properly structured utility offerings, Indiana has an opportunity to be a national leader in meeting C&I demand for renewable energy sources, while meeting other important policy goals for the state including providing low-cost energy options, enabling economic growth, and encouraging cleaner energy resources. Indiana AEE strongly supports the introduction of utility offerings, often referred to as ‘renewable energy’ or ‘green’ tariffs, by IPL and other utilities in the state in future filings before the Commission. Indiana AEE also encourages the Commission to take a neutral position on the ownership structure of the resources to ensure that renewable power purchase agreements (“PPAs”) are considered, as was done in the NIPSCO RFP.

⁹ See letter re: *Hoosier business request that the 21st Century Energy Policy Development Task Force support renewable energy access*. August 20, 2019.

¹⁰ See *Commercial and Industrial Renewable Energy Demand: Geographic Focus on Indiana*. Aaron Barr. January, 2020. Advanced Energy Economy and Wood Mackenzie.

Based on lessons learned from other states, Indiana AEE recommends the following six steps to meet the economic and environmental requirements for utility-delivered renewable energy production options and the renewable energy needs of companies in Indiana:

- 1. Seek advice and input from customers, industry, and other states**, including nearby states such as Michigan, Kentucky, and Missouri that are among the 15 states that have developed utility renewable energy programs;
- 2. Determine which approaches align best with state and utility circumstances**, taking into account how existing utility rates are structured, the presence or absence of an organized wholesale market, load growth and system resource needs, and the cost-effectiveness of various renewable energy sources, including energy from a PPA;
- 3. Account for the varying needs of different customers, including nonparticipants**, acknowledging that there is no one-size-fits-all solution for every customer and ensuring that the program is fair, transparent, and cost-based to protect both participating and non-participating customers;
- 4. Adopt replicable best practices**, as described in detail below;
- 5. Guide customers through the decision and enrollment process** to ensure that customers have all the data and information they need to make informed decisions; and
- 6. Review, iterate, and improve** by providing annual updates to regulators, soliciting feedback from customers, and making improvements as needed.

These six steps allow a utility to take into account the specific circumstances of its service territory while applying universally applicable best practices and lessons learned. By following these recommendations, each utility will arrive at a slightly different answer—but whatever the final solution, these steps are intended to ensure that the utility can meet corporate and industrial (C&I) customers' renewable energy needs and preferences while maximizing the benefits to all customers.

As mentioned above, Indiana AEE has reviewed and engaged with numerous renewable energy tariff offerings across the United States. We have developed a series of best practices and recommend the following:

1. Select the most appropriate rate design from the several models available, taking into account existing rate structures and customer needs;
2. Start with an initial offering large enough to enable commercial and industrial customers to make meaningful progress towards their renewable energy goals while including a clear mechanism for expanding the program;
3. Ensure that all commercial and industrial customers are eligible to participate in at least one program;

4. Rely on competitive procurements to select resources and meet program needs while giving customers the option to source projects directly;
5. Give customers a range of term options, including mid-range (10-15 years);
6. Transfer RECs to customers or retire them on the customer's behalf;
7. Adopt reasonable and cost-based administrative fees; and
8. Include clean, fair and flexible termination provisions that allow for transfers to different accounts.

2. Indiana AEE appreciates that IPL has incorporated energy efficiency, demand response, and electric vehicles into this IRP, but could deploy these resources more aggressively to benefit consumers, especially underutilized C&I demand response.

While Indiana AEE strongly supports more investment in wind, solar, and batteries, we acknowledge that demand side resources are still the most cost-effective energy option for Indiana ratepayers. Indiana AEE believes that the proposed IRP underestimates this potential by only adding 293MW of demand side management resources by 2039.

A suite of demand side resources offers better use of existing resources, improved reliability, and avoided need for investments in generation resources. Right now, energy efficiency is the most cost-effective way to meet energy demand. As IPL predicts very slow increases in annual energy demand, demand side management can significantly reduce the need for new generation that directly substitutes, megawatt for megawatt, its retiring capacity. Indiana AEE commends IPL for its 2018 Demand Side Management (“DSM”) Market Potential Study and work on energy efficiency and demand response to date. Current energy efficiency programs have already produced approximately 56.9 MW of demand savings benefits. IPL can boast MISO capacity credit of 38.6MW of air conditioning load management and 15.3 MW of Conservation Voltage Reduction. And, with over 49,500 residential customers and 430 businesses using load control switches or smart thermostats (totaling approximately 31.6MW of current demand reductions), IPL is ahead of the curve. Still, more work can be done to maximize this potential.

In the commercial and industrial sector alone, an AEE report from February 2018 showed that day ahead demand response programs in Indiana could create up to \$485 million in a medium avoided cost scenario to \$1.6 billion in a high avoided cost scenario in net benefits over the next 10 years.¹¹ For residential demand response, the potential lies within the ability of a utility to scale down air conditioning and water heater use when energy demand is especially high. Approximately 85% of Indiana residents have central air conditioning, and use of central air conditioning accounts for over 20% of peak load. Significant savings exist if IPL can ramp up

¹¹ *Potential for Peak Demand Reduction in Indiana*. Prepared for Indiana Advanced Energy Economy by Demand Side Analytics, LLC. February 2018.

this program to reach 214,000 enrollees and 230 MW (under half of its customers): AEE estimates that over 10 years, the net benefits, which factor in the costs associated with the widespread adoption of connected thermostats, are predicted to be \$73 million in a medium avoided cost scenario.¹²

On the C&I demand response front, IPL does not consider or model it as a resource in its IRP despite the known savings that C&I demand response can offer by providing a cost-effective peaking capacity resource. While C&I curtailable rate options were included in IPL's DSM market potential study and were shown to be cost-effective, IPL does not provide an explanation for why they were excluded in the IRP modeling. IPL's market potential study also does not clarify why a low avoided cost threshold of \$39/kW per year – far below the true cost of replacement capacity and the avoided cost threshold that IPL's peer utilities within MISO use when evaluating DSM programs – was used to evaluate DR cost-effectiveness, despite IPL having an identified need for new capacity in its IRP. Even with that limitation, the market potential study found 94 MW of C&I DR potential under its “Realistic Achievable Potential” results by 2023, using an extremely low incentive rate of just \$21/kW per year. As such, Indiana AEE encourages IPL to develop opportunities to deploy additional C&I DR to help meet or offset its modeled capacity needs. This is consistent with action being taken by utilities throughout MISO to develop new DR program or tariff options for their C&I customers.¹³ Given that IPL's current C&I DR penetration is only 0.03%, well below its Indiana utility peers in which penetration ranges from 3-17%, there is clear potential for DR to reduce peak demand and drive capacity savings throughout IPL's territory. Businesses in neighboring utility territories and states are already benefiting from access to robust DR opportunities, and IPL should prioritize augmenting its current offerings to unlock its full DR potential.

Indiana AEE appreciates IPL's intentions to replace 350,000 residential and small commercial energy meters over the next five years and use its improved advanced metering infrastructure (“AMI”) data to better model demand side management, energy efficiency and demand response shapes and better assess the value of peak reduction and load shifting. Especially in light of the IURC's recent approval of IPL revAMP, a \$1.2 billion grid modernization plan with \$55.9 million over the next seven years dedicated to meter replacement, IPL should maximize customer value by fully taking advantage of newly installed AMI to better integrate distributed energy resources and further develop energy efficiency and behavioral demand response programs. To the extent that the approved line item for \$248.1 million for substation assets replacement over seven years will go towards equipment to support new capacity, IPL should instead first consider demand side resources as cost-effective alternatives.

¹² *Id.*

¹³ For example, see recent commitments from Consumers Energy, Ameren Missouri, and Entergy Louisiana to create or expand their C&I demand response offerings.

Programs that shave peak loads or shift demand to off-peak hours have proven to be a low cost strategy to save electric ratepayers money. Indeed, AEE's February 2018 report showed that pursuing cost-effective peak demand reduction strategies along with energy storage would produce net benefits for electric ratepayers (total savings minus costs) ranging from \$448 million to \$2.3 billion over 10 years.¹⁴ Recent studies from the Lawrence Berkeley National Lab have found that even passive peak impacts from energy efficiency programs can be substantial. Even without programs designed to target savings at particular times of day, the Lab estimates that the savings-weighted Program Administrator Cost of Saving Peak Demand (PA CSPD) averages \$1,483/kilowatt (kW) and varies more than four-fold (\$568/kW to \$2,353/kW) depending on the program type.¹⁵ Meter-based pay-for-performance program designs, particularly when enabled by advanced metering infrastructure, can provide direct incentives and track the outcomes from the time value of the interventions, with impacts that could be significantly increased. Numerous positive outcomes are enabled by using the time-sensitive value of efficiency but most importantly identifying the optimal amount of energy efficiency for a reliable electricity system at least cost (e.g., reduced reserve margins and system revenue requirements).¹⁶

Lastly, Indiana AEE appreciates IPL's work to date forecasting electric vehicle ("EV") load growth and analyzing its potential impacts on the distribution system. Despite adoption rates in the Indianapolis area that have been slower than once anticipated, Indiana AEE agrees that rapid scaling of the EV market globally (e.g., the U.S. light-duty EV market has growth at 39% CAGR since 2011) and rapid technological and cost improvements (e.g., lithium ion battery prices have dropped 87% since 2010) create conditions whereby adoption in IPL's service territory is likely to meet or exceed the company's forecasts (i.e., 200,000 EVs with approximately 32 MW of demand by 2040). As such, it is appropriate to begin careful distribution system planning today.

Utilities around the country are doing innovative work in response to rising EV adoption. Numerous studies demonstrate that EV adoption can lead to substantial ratepayer benefits and those benefits are maximized when common sense steps are taken to encourage vehicle charging patterns that benefit the grid (e.g., off-peak charging). Indiana AEE would like to see IPL adopt EV best practices throughout its functions and encourages the company to work with the IURC to develop robust EV programs. *EV 101: A Regulatory Plan for America's Electric Transportation Future* provides utility regulators with a guide to making regulatory choices, which include establishing appropriate roles and responsibilities to optimizing rate design and improving planning.¹⁷

¹⁴ *Id.*

¹⁵ *Peak Demand Impacts From Electricity Efficiency Programs*. Frick et al. 2019.

¹⁶ *Time-Sensitive Value of Efficiency: Use Cases in Electricity Sector Planning and Programs*. Frick, Natalie Mims, and Lisa C Schwartz. 2019.

¹⁷ *EVs 101: A Regulatory Plan for America's Electric Transportation Future*. Advanced Energy Economy. September 2018.

Taking an active role in the deployment of EV charging infrastructure allows a utility to use intimate knowledge of its own system to best plan for and manage new demand. IPL should work closely with charging equipment providers to make sure that deployment maximizes the benefits that EVs can provide to the grid and to ensure successful integration of new load.

3. Proposals to invest in combined cycle gas plants, particularly in 2030 and beyond, should be scrutinized closely against more cost-effective advanced energy resources.

Indiana AEE is concerned about the cost-effectiveness of IPL's proposal to build new combined cycle gas power plants in 2034. While we recognize that capacity must be added to IPL's portfolio to compensate for the loss of retiring traditional power plants, there are more cost-effective alternatives, which help to avoid the potential economic risk towards ratepayers that large scale gas plants turn into stranded assets over the long-run. There is already precedent in Indiana to reject investment decisions that rely on large-scale investments when more cost-effective alternatives exist in the market. In the Indiana Utility Regulatory Commission's decision to reject Vectren's recent proposal to replace coal generation with an 850 MW combined cycle natural gas plant, the Commission cited avoidable financial risk to consumers and a rapidly changing technological landscape:

...We conclude that Vectren South's risk analysis does not adequately consider the relative risk of other methods for providing reliable, efficient, and economical electric service. The proposed large scale single resource investment for a utility of Vectren South's size does not present an outcome which reasonably minimizes the potential risk that customers could sometime in the future be saddled with an uneconomic investment or serve to foster utility and customer flexibility in an environment of rapid technological innovation.¹⁸

The Commission then directed Vectren to consider combinations of less expensive advanced energy alternatives. Indiana AEE supports the Commission's caution in approving new traditional generation resources and agrees that significant cost saving opportunity exists in a varied portfolio that relies on a mix of wind, solar, energy storage, and demand-side resources. The Commission should similarly consider advanced energy alternatives when reviewing IPL's plans for new combined cycle gas plant investments.

Lastly, Indiana AEE appreciates IPL's acknowledgement of its need to be flexible throughout the 20 year horizon of this IRP. IPL will need to react to new technologies and new state and federal regulations. Still, Indiana AEE believes that even now the most cost-effective, reliable and

¹⁸ *Indiana Utility Regulatory Commission Cause No. 45052*. April 24, 2019. Page 28.

flexible approach includes more deployment of renewable resources, battery storage, energy efficiency and demand response. By recognizing the potential of these technologies in the short-term, IPL may be able to take costly peaking generation plants offline sooner and avoid expensive investments in soon-to-be obsolete infrastructure, benefitting the ratepayers and the burgeoning advanced energy industry within the state.

Respectfully submitted,

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