



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

December 2, 2019

Re: Indiana Michigan Power's 2018-2019 Integrated Resource Plan

Dear Commissioner Ober:

Indiana Advanced Energy Economy ("Indiana AEE") respectfully submits this letter of comment regarding Indiana Michigan Power's ("I&M")'s 2018-2019 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 I&M held with regard to this IRP and its consideration of the feedback it received. Indiana AEE supports I&M's stated criteria for evaluating various energy pathways over the next 20 years, including cost-effectiveness, planning flexibility, increased resource diversity, and adaptability to risk. Broadly, Indiana AEE applauds I&M's deployment of renewable energy and energy storage as cost-effective and reliable resources. We are especially glad to see the inclusion of microgrid resources in I&M's preferred portfolio.

In our comments, Indiana AEE makes 4 main points: 1) I&M could realize greater savings by deploying more renewable and storage resources and accelerating its development

timeline; 2) It should also do this to account for growing, near-term commercial and industrial demand; 3) Demand side resources, such as energy efficiency and demand response, should be more heavily incorporated into this IRP; and, 4) The Commission should closely scrutinize I&M's plan to invest in combined cycle gas plants instead of cost-effective advanced energy alternatives, especially in 2034 and 2037.

1. Indiana AEE supports a portfolio that increases I&M's use of renewable energy and storage in both the short and long term because it will offer affordable energy to Indiana ratepayers.

Indiana AEE supports an investment approach that more aggressively 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 I&M's preferred portfolio plan to add 1,700 MW of solar, 1,950 MW of wind, and 50 MW of battery storage. As we will cover in further detail below, this approach recognizes that advanced energy resources are the most cost-effective resources available today. These resources meet Indiana's changing energy needs while supporting electric vehicle-related load growth 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, Indiana AEE believes that I&M 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 and deploy such resources on an expedited timeline.

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 coal (\$34/MWh) and nuclear generation (\$29/MWh).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

¹ *Levelized Cost of Energy and Levelized Cost of Storage 2018*. 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.

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 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 300 MW of wind. This capacity will be in addition to the 800 MW of wind energy that NIPSCO solicited earlier this year. But despite serving a similar number of customers I&M's preferred portfolio adds only 1,700 MW of solar, 1,950 MW of wind and 50 MW of energy storage over its 20 year planning horizon. It also does not begin adding solar and wind until 2022. Indiana AEE supports buildout that reflects the current opportunity of advanced energy in Indiana and argues that NIPSCO's planned buildout, timeline, and underlying cost assumptions should serve as baseline for I&M's modeling.

Despite the cost trends in Indiana and strong example set by NIPSCO, I&M does not plan to retire its coal units before the end of their natural leases in its preferred portfolio. I&M also plans for coal to still comprise over 10% of its annual energy by 2038. Indiana AEE strongly encourages the Commission to closely examine I&M's cost assumptions regarding these existing coal resources and advanced energy technologies. Specifically, we question the assumption that the levelized costs of electricity of wind resources will consistently increase after 2024. It is also not clear why large scale solar prices per watt and and energy storage prices per kWh will increase steadily after 2030.

Lastly, energy storage offers numerous benefits to the grid as a key enabling technology to maximize the benefits of wind and solar and to effectively integrate them into the grid. Increased

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.

use of energy storage as a capacity, energy, and ancillary services product can provide numerous benefits including significant consumer and utility savings. 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. For example, a 2018 Indiana AEE report found that adding 139 MW of well-sited battery storage could avoid \$103 million in costs over 10 years. If 329 MW of cost-effective battery storage is added, benefits could reach \$311 million.⁷

2. Large energy users in Indiana demand renewable energy options from utilities because they value an affordable and reliable electricity supply.

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 attractive option for companies seeking to lower costs while protecting against fluctuating fuel prices. Already, 71% 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.⁸ In that letter, these 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 forthcoming report, Indiana AEE will demonstrate that up to 3.6 GW of renewable energy demand from the commercial and industrial sector exists in the state through 2030.⁹ Indiana AEE believes that I&M 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

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

⁸ See letter re: *Hoosier business request that the 21st Century Energy Policy Development Task Force support renewable energy access*. August 20, 2019.

⁹ See *Commercial and Industrial Renewable Energy Demand: Geographic Focus on Indiana*. Aaron Barr. December, 2019. Advanced Energy Economy and Wood Mackenzie.

corporate renewable goals, especially given that I&M is forecasting that its service territory will experience the greatest growth in the industrial class.

In order for Indiana to stay competitive and to attract businesses with renewable energy goals, I&M should begin to 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 that include 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 I&M and other utilities in the state in future filings before the Commission.

Importantly, these utility-delivered renewable energy product options must also meet economic and environmental requirements. Indiana AEE recommends the following six steps to meet the renewable energy needs of companies in Indiana based on lessons from other states:

- 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;
- 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.

3. Indiana AEE supports more use of demand-side resources as the most cost-effective energy option for Indiana ratepayers.

While Indiana AEE strongly supports more investment in wind, solar, batteries and microgrid technologies, 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 planning to add only 180 MW of energy efficiency and demand response capacity by 2038 in its preferred portfolio (to its 18 MW of energy efficiency and 272 MW of demand response today). Even in the High Renewable portfolio that I&M considered, only 295 MW of demand side resources were added. I&M has a significant opportunity to invest in more demand-side resources to benefit its ratepayers by expanding the standard suite of programs that can serve as grid resources and including meter-based pay-for-performance procurements.

A suite of demand side resources offers better use of existing resources, improved reliability, and avoided need for new investments in generation. Right now, energy efficiency is the most cost-effective way to meet energy demand. I&M acknowledges the significant role energy efficiency will play in its IRP— it estimates that energy efficiency will reduce residential, commercial and industrial lighting load in total by over 5% by 2033. Given that I&M predicts energy and peak demand decreases over the next 20 years, Indiana AEE believes that I&M can and should further develop its energy efficiency portfolio to significantly reduce the need for new generation to replace retiring capacity.

The economic potential of demand response comes primarily from the avoided costs of expensive system upgrades and generation capacity development needed to meet peak load. AEE issued a report in February 2018 that showed that day ahead commercial and industrial demand response programs 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.¹⁰ I&M already has a commercial and industrial demand response program, but over 200 MW (more than two-thirds of its total capacity, representing 6.7% of peak demand) comes from just three large customers. Compared to its peers, I&M lags behind. NIPSCO has 530 MW of non-residential demand response capacity, or 16.8% of its peak demand, and Duke Energy Indiana has 694 MW, or 10.5% of peak demand.¹¹

For residential demand response, I&M's demand response program has just 2,400 participants, representing a load reduction capability of only 2.9MW. In early 2018, Duke Energy Indiana's program of 54,000 residential customers comprises 61MW of load reduction capacity, and IPL's program of 50,000; 45 MW. Vectren, with less than a third of the residential customers of I&M, has a program with 23,000 participants and 19MW of load reduction capability. Over the 20 year planning horizon of this IRP, connected thermostats will become commonplace and more customers can be incentivized to take advantage of these programs. Significant savings exist if I&M ramps up this program to reach 214,000 enrollees and 230 MW (approximately 53% of its residential 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 or \$344 million in a high avoided cost scenario.¹²

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 report showed that pursuing cost-effective peak demand reduction strategies would produce net benefits for electric ratepayers (total savings minus costs) ranging from \$448 million to \$2.3 billion over 10 years.¹³

Passive peak impacts from energy efficiency programs can be particularly substantial. Even without programs designed to target savings at particular times of day, a recent study from the Lawrence Berkeley National 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.¹⁴ Meter-based pay-for-performance program designs, particularly when enabled with advanced metering infrastructure, can provide direct incentives and track the outcomes from the time value of the interventions,

¹⁰ *Potential for Peak Demand Reduction in Indiana*. Prepared for Indiana Advanced Energy Economy by Demand Side Analytics, LLC. February 2018.

¹¹ *Id.*

¹² *Id.*

¹³ *Id.*

¹⁴ *Peak Demand Impacts From Electricity Efficiency Programs*. Frick et al. 2019.

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).¹⁵

4. 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 I&M's proposal to build new combined cycle gas power plants in 2028, 2034, and 2037. While we recognize that capacity must be added to I&M'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 plan, 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.¹⁶

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 I&M's plans for new combined cycle gas plant investments.

Lastly, Indiana AEE appreciates I&M's acknowledgement of its need to be flexible throughout the 20 year horizon of this IRP. I&M will need to react to new technologies and new state and federal regulations, which may lead to it adjusting its resource acquisition mix. Still, Indiana AEE believes that even now the most cost-effective, reliable and flexible approach includes more deployment of renewable resources, battery storage, energy efficiency and demand response. By

¹⁵*Time-Sensitive Value of Efficiency: Use Cases in Electricity Sector Planning and Programs*. Frick, Natalie Mims, and Lisa C Schwartz. 2019.

¹⁶ *Indiana Utility Regulatory Commission Cause No. 45052*. April 24, 2019. Page 28.

recognizing the potential of these technologies in the short-term, I&M 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,

Caryl A. Auslander
Program Director
Indiana Advanced Energy Economy