Indiana Utility Regulatory Commission
101 W. Washington St., Ste. 1500E
Indianapolis, IN 46204
Attn: Ryan Heater

February 21, 2020

Re: Joint Comments of the Midwest Cogeneration Association and the Combined Heat & Power Alliance; Indiana Utility Regulatory Commission HEA 1278 Energy Study; Response to Draft Scenarios and Related Documents

Dear Commissioners:

The Midwest Cogeneration Association ("MCA"), the Heat is Power Association ("HiP"), and the Combined Heat & Power Alliance ("Alliance") appreciate the opportunity to provide their join comments in this proceeding.

MCA is a non-profit trade association dedicated to promoting clean and energy efficient cogeneration technologies -- Combined Heat and Power (CHP) and Waste Heat-to-Power (WHP) -- in eight Midwest states, including Indiana. HiP is the national trade association for the WHP industry. The CHP Alliance is a non-profit organization that serves as the leading national voice for the deployment of CHP and WHP.

Our members include generation technology manufacturers, distributors, and project developers, as well as owners and operators, of CHP and WHP systems – a number of whom are located in and do business in Indiana.

GENERAL COMMENTS

Indiana Utility Regulatory Commission's (IURC) legislative charge in this proceeding is to conduct a comprehensive study of the statewide impacts that may occur as a result of the transition from traditional electrical generation fuels and resources, such as utility scale centralized power plants, to new and emerging electrical generation resources. As previously stated in MCA's September 9, 2019 comments in this docket, we believe this charge includes consideration of customer-located cogeneration and other behind the meter generation resources as supply-side resources. Further, any study designed to evaluate future generation should

consider the benefit of on-site generation that can off-set the need for new generation resources and relieve distribution system congestion.

We appreciate that the scenarios proposed by the IURC Staff for future SUFG Modeling include scenarios that focus on cogeneration and energy efficiency. In our specific comments below we offer some comments and recommendations on those scenarios. However, as a general comment we note that current and future cogeneration and other behind the meter generation resources do not appear to be recognized in the Indiana State Utility Forecasting Group's 2019 Report, the Indiana University study and modeling, and also may not be included in the modeling in the Lawrence Berkeley National Laboratory's (LBNL) study. We have a concern about how this oversight affects the entire comprehensive study and many of our specific comments are directed at this question.

A. Proposed Scenarios for SUFG Modeling for Report to Energy Policy Task Force

Scenarios Based on SUFG's Base Case. As noted above, the SUFG 2019 Forecast does not recognize the load being served by customer-located cogeneration. As such, it masks the fact that behind the meter cogeneration is a generation resource that Indiana is currently relying upon and should be evaluating as a future resource. The U.S. Department of Energy CHP Database indicates that Indiana businesses, farmers, universities and municipalities are currently generating over 2,300 MW of power at 41 sites across the state. DOE projects that there is another 4,610 MW of CHP/WHP potential in Indiana's commercial and industrial sectors.[1],[2] Nationwide DOE data documents 82 GW of cogeneration capacity representing 12 percent of the nation's electricity production and 8 percent of its power generation capacity, more than most other types of distributed generation.[3] Indiana's cogeneration resources are operating in parallel with utility generation and currently off-set the need for more utility generation. While often not included in utility data, existing cogeneration resources should be included in the SUFG base case and cogeneration should be considered a replacement generation resource in the SUFG modeling of future generation resources and in the other studies and scenarios that utilize the SUFG Forecast as a Base Case.

Distributed Resources, Electric Vehicles and Energy Storage Scenarios. "These scenarios will rely on data and information provided by LBNL as part of the work LBNL is developing to

[1] U.S. Department of Energy. "Combined Heat and Power (CHP) Technical Potential in the United States." March 2016. https://www.energy.gov/sites/prod/files/2016/04/f30/CHP Technical Potential Study 3-31-2016 Final.pdf

[2] We include WHP as a subset in these numbers, but it should be noted that Indiana currently has a combined 185 MW in installed WHP capacity – nearly one-quarter of the total U.S. installed WHP capacity and the largest of any state. These projects are located at steel plants, helping the energy-intensive steel industry cut operating costs. Indiana's remaining WHP technical potential is mostly concentrated in the chemicals, primary metals, food, transportation, and paper sectors. Based on Indiana's share of the total U.S. WHP potential, harnessing this waste heat could result in 5,300+ new highly skilled jobs and save enough energy to power nearly 380,000 homes.

[3] https://www.power-eng.com/2018/04/01/the-new-era-of-chp/#gref

evaluate the potential impact on the distribution systems of increased levels of distributed generation resources being developed."

> Is cogeneration included in the LBNL's definition of "distributed energy resources" and will it be evaluated under LBNL's scenarios and this scenario? We believe LBNL should assess and model cogeneration as a separate DER rather than under the categories of energy efficiency or demand response. See our comments below in section (C).

High Industrial Cogeneration (or Combined Heat and Power or CHP) Scenario. "Since future industrial self and co-generation is uncertain, a proxy will be used such that CHP completely offsets future growth in electricity consumption. This will be modeled by keeping the industrial load forecast flat across the state's IOUs. Note that SUFG's not-for-profit models are not at the sectoral level, so determining a flat industrial forecast for them is problematic. "

> Our organizations appreciate that the IURC staff has included a cogeneration scenario in the list of scenarios to be modeled by the SUFG. However, we respectfully disagree that future deployment of cogeneration is any more uncertain than future deployment of any other "distributed energy resource" which is being modeled as a part of this study. What is the basis for this statement?
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> This assumption of uncertainty appears to have led to the decision to utilize a proxy for high industrial sector deployment rather than a range of deployment variables as is being used to model several of the other scenarios. A range of variables is also being used to model the penetration of other technologies, such as solar PV and storage, in the underlying studies here. Cogeneration is actually a far more established technology than these other replacement technologies, with many years of data and analysis of technical and economic potential in Indiana.[4] Further, Indiana's neighboring state of Michigan in 2018 completed a CHP Roadmap Study which modeled three projections of CHP deployment from high, medium to low.[5]
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> A primary variable affecting the deployment of cogeneration is the market "spark spread" (the difference between the cost of electricity and the cost of natural gas). Spark spread variables can be modeled over a range just as the range of cost of electricity is a variable used to model the deployment of solar, wind and other replacement generation.
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> Our concern is two-fold: 1) By using a proxy that has no factual basis, the results of this modeling will be inaccurate – either too high or too low – and suspect; and 2) By utilizing a single deployment number, rather than a range, as is being used for other scenarios, this modeling won't reflect the realistic range of deployment dependent on cost variables. We are also concerned that the proxy that is being proposed can't be

[4] U.S. Energy Information Administration. "Indiana Consumption by End-Use Sector." 2017. https://www.eia.gov/state/?sid=IN; U.S. Department of Energy. "Combined Heat and Power (CHP) Installation Database: Indiana." Installations as of December 31, 2018. https://energy.gov/chp-installs; U.S. Department of Energy. "Combined Heat and Power (CHP) Technical Potential in the United States." March 2016. https://www.energy.gov/sites/prod/files/2016/04/f30/CHP Technical Potential Study 3-31-2016 Final.pdf

[5] https://www.michigan.gov/documents/energy/CHP_Roadmap_for_Michigan_Full_Report_final_628532_7.pdf

modeled because SUFG's "not for profit models are not at the sectoral level, so determining a flat industrial forecast for them is problematic." Therefore, we recommend that the SUFG modeling for cogeneration be based on a range of realistic spark spread numbers based on the SUFG's electricity and natural gas price forecasts.

B. Lawrence Berkeley National Laboratory Study

- **Definition of DER**

The LBNL Study definition of "distributed energy resources" (DER) appears to be limited to solar PV, battery storage, EVs, demand response, and energy efficiency. p. 1. Is cogeneration being considered within any of these categories?

In our view, cogeneration should be modeled as a baseload **generation resource**. It can and should be modeled on its own.

- **Additional Data Resources**

The third step in the overview of study methodology states that adoption forecasts for distributed energy resources (DER) will be developed using utility data. p.2. We suggest that this review include additional sources of data on cogeneration, such as U.S. Department of Energy's Indiana CHP database and technical potential projections[6]; U.S. Environmental Protection Agency's data on CHP economics and performance across a range of technologies and generating capacities; and U.S. Energy Information Administration (EIA) data for Indiana's existing power plant portfolio[7]. The Midwest Combined Heat and Power Technical Assistance Partnership located at the University of Illinois at Chicago is another resource that LBNL can call upon for information on cogeneration deployment and potential in Indiana.

- **LBNL Scenarios**

Again, it is unclear whether cogeneration is included in any of the scenarios that LBNL will be modeling. Cogeneration should be expressly and separately modeled.

- **DER Reliability Assessment Framework Overview**

Table 3 indicates LBNL will be assessing the reliability of various DERs. Cogeneration is not currently listed in this Table. Cogeneration's 100% availability and 95+% reliability sets it apart from the other DER in this Table and it should be expressly and separately assessed, rather than grouped under demand response or energy efficiency reliability metrics.

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[6] U.S. Department of Energy. "Combined Heat and Power (CHP) Installation Database: Indiana." Installations as of December 31, 2018. https://energy.gov/chp-installs

[7] U.S. Energy Information Administration. "Indiana Consumption by End-Use Sector." 2017. https://www.eia.gov/state/?sid=IN

C. Indiana University Study: "Economic, Fiscal, and Social Impacts of the Transition of Electricity Generation Resources in Indiana"

- **Report Elements**

  The description of the IU Study indicates that it will look at the state and local economic potential of natural gas, wind and solar as replacement generation. Id. p. 1. Will this analysis include the greater energy efficiency of cogeneration utilizing natural gas or other fuels? Both behind the meter and utility owned? If not, why not?

- **Economic Impact Analysis**

  The IMPLAN model appears to be focused on coal plant closures. Id. p. 3. Will the IU Study also model the inter-industry relationships within the region and increases in employment associated with plants that manufacture or utilize replacement generation technologies? E.g., increases in employment at plants that manufacture cogeneration engines such as Caterpillar's Lafayette, Indiana plant or at Indiana steel mills that generate portions of their own power?

  Will the IU Study include consideration of increases in employment that result from the private sector redirecting capital saved due to reduced electricity prices to increase production capacity? Will it capture the economic benefit and related employment impact due to the use of cogeneration?

  The IU Study description appears to state that the IMPLAN Model does not capture employment changes associated with the price of electricity. This would seem to be a major flaw in this model.

- **Economic, Fiscal and Social Analysis- Replacement Generation – Natural Gas, Wind, and Solar Activity**

  IU is limiting its analysis of economic, fiscal and social impacts of replacement generation to "natural gas, wind and solar." Id. p. 5. On its face, this does not appear to include an analysis of the impact of behind-the-meter or utility-owned cogeneration and the greater efficiency of on-site cogeneration compared to centralized combined cycle plants. How are the economic, fiscal and social impacts of cogeneration as replacement generation being considered in the IU Study?

  We are also concerned that this analysis of replacement generation may not be as rigorous as the modeling performed on the impact of coal plant closures. The description states that "the results for this activity will be nominal; no modelling or statistical testing will be performed."

Has IU has considered other models for capturing the impact of replacement generation? The Michigan Energy Office released its Michigan CHP Roadmap Report in 2018 which utilized the "State Tool for Electricity Emissions Reduction (STEER)" model to assess, measure, and determine the cost and value of CHP as one of multiple resources in Michigan's future energy mix.[8] Could the STEER model provide a methodology for analyzing the state and local economic potential of cogeneration and other replacement generation in Indiana?

Michigan and Indiana are not only neighboring states, they are both states with large commercial and industrial sectors with high potential for cogeneration. Utilizing the STEER model, Michigan considered "the net value of CHP to the economy by considering the cost of installing and operating various CHP systems, the value of the heat produced by CHP measured as the cost of supplying heat in the least-cost way other than CHP, and the value of electricity produced by the CHP system measured as the marginal cost of producing electricity absent the CHP system."

The Michigan CHP Roadmap also considered the "CHP Supply Chain" and ripple effects throughout the state and local economies. Indiana, as the home state of Cummins, Inc., a major cogeneration engine manufacturer, as well as Caterpillar's largest cogeneration engine manufacturing plant in Lafayette, should fare even better in cogeneration-related manufacturing and supply chain employment than Michigan.

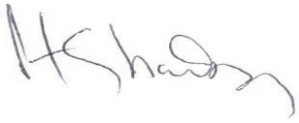
The Michigan CHP Roadmap modeled three scenarios for cogeneration deployment. As an example of the information generated for each case, the mid-level "reference scenario" in the Michigan modeling yielded the following: "the economic potential for CHP in Michigan is about 1,014 MW electric generation capacity with direct investment of about $865.6 million, annual direct O&M activity of about $67.6 million, annual economic profit of about $109.5 million, annual fuel cost savings of $94.7 million, and annual air emissions reductions of 662 tons CO2 per year, 379 tons NOx per year, and 39 tons SOx per year." Michigan CHP Roadmap, p. 10

Use of the STEER model or a similar model could generate the information necessary to allow cogeneration to be compared to existing and replacement generation alternatives in Indiana.

MCA, HiP and the CHP Alliance appreciate this opportunity to provide input on these important questions. We look forward to continuing to engage with the Commission and other stakeholders in this proceeding. Please contact Patricia Sharkey at 312.981.0404 or psharkey@e-lawcounsel.com with any questions regarding these comments.

[8] https://www.michigan.gov/documents/energy/CHP_Roadmap_for_Michigan_Full_Report_final_628532_7.pdf

Respectfully submitted,



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