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

March 31, 2023

Re: AES Indiana's 2022 Integrated Resource Plan

Dear Dr. Borum,

Solar United Neighbors (SUN), Vote Solar (VS), and Citizens Action Coalition of Indiana (CAC) respectfully submit the following comments regarding the 2022 Integrated Resource Plan (IRP or the Plan) from AES Indiana (the Company) on behalf of the thousands of Indiana solar owners and supporters whom we represent.

SUN is a national, grassroots 501(c)3 nonprofit organization dedicated to meeting the needs and interests of solar owners and supporters. Since launching our Indiana program in 2019, we've helped more than 250 families, businesses, and nonprofits around the state install more than 2 MW of small scale solar along with other behind the meter distributed energy resources (DERs) like battery storage and electric vehicle chargers. We envision a clean, affordable, and equitable energy system that directs benefits and control back to local communities, with rooftop solar as the cornerstone.

Vote Solar is an independent 501(c)3 nonprofit working to repower the U.S. with clean energy by making solar power more accessible and affordable

through effective policy advocacy. Vote Solar seeks to promote the development of solar at every scale, from distributed rooftop solar to large utility-scale plants. Vote Solar has over 90,000 members nationally, including over 500 members in Indiana. Vote Solar is not a trade organization nor does it have corporate members.

Citizens Action Coalition of Indiana is a membership organization with approximately 40,000 members in Indiana. CAC advocates on behalf of Indiana residents on issues including energy policy, utility reform, and pollution prevention.

We appreciate the emphasis that the Company placed on meeting customer needs for affordability, reliability, and sustainability throughout the IRP process and in the final report. AES customers and other stakeholders participating in public meetings clearly articulated and reinforced these concerns as top priorities. However, we believe that the final 2022 IRP is missing some critical inputs that could ensure those goals are met for the Company and its customers.

In response to the Plan, our comments will focus on ways that the utility could optimize the distribution grid and incentivize further customer adoption of DERs like solar and batteries.

Allow DG solar and other DERs to be included as resources eligible for selection in modeling

As evidenced by the increasing adoption of DERs shown in Figure 4-4 in the Plan,[1] customer demand for DERs continues to grow. By the end of 2022, nearly 1,300 AES customers were receiving net metering credits, an increase of more

[1] AES Indiana 2022 Integrated Resource Plan, p. 30 - https://www.in.gov/iurc/files/AES-Indiana-2022-IRP-Volume-I.pdf

than 400 over the previous year.[2] While policy barriers like the end of net metering will surely slow adoption of DG solar in the short term, the Company and its customers could benefit from alternative policies that more accurately capture the full value of DG solar to the broader grid.

The conventional utility planning approach for DERs (to the extent they account for DERs at all) is to treat them as an exogenous variable to their capacity expansion modeling. Like weather, or the economy, DER growth is something that "happens to" the utility and needs to be planned around, rather than something that the utility can affect through its own actions and can utilize to meet its customers' requirements. In fact, DERs have unique characteristics, as identified above, which could increase the diversity of the Company's supply portfolio. The conventional approach typically forecasts energy efficiency and distributed solar adoption and then subtracts them from the utility's gross load forecast to establish a net load forecast. The net load forecast is then used, either as the base case or a sensitivity, to model system capacity expansion through supply-side resources offered to the model, subject to user-defined constraints.

While DG solar and other DERs have traditionally been treated as a decrement to load forecasts (or as an increase to load forecasts in the case of EVs) and outside of the control of utilities when they develop resource plans, a growing number of experts are calling for DERs to be included on equal footing with other traditional resources in the planning process. For example, AES Indiana did model additional energy efficiency that could be achieved through Demand-Side Management plans as a demand-side Resource option that could be selected to meet future resource needs in its IRP "on a consistent

[2] IURC 2022 Year End Net Metering Report - https://www.in.gov/iurc/files/2022-Net-Metering-Required-Reporting-Summary.pdf

and comparable basis with supply-side resources,"[3] rather than only considering energy efficiency as an exogenous impact to its load forecast.

A similar approach could be considered for other types of DERs that could be modeled as supply-side resource options that could help meet future resource needs. Now that the consumer market for DERs like rooftop solar is more mature, tools are available that allow for predictably modeling customer adoption based on market conditions and policies that impact the return on investment.[4]

The Rocky Mountain Institute (RMI) issued a report in 2023 called "Reimagining Resource Planning."[5] In the report, RMI makes several recommendations for how utilities can improve the resource planning process. Among their recommendations, they call for utilities to treat DERs as a resource in planning, touting their benefits for savings and reliability.

At the national level, a 2020 study by Vibrant Clean Energy called "Why Local Solar for All Costs Less: A New Roadmap for the Lowest Cost Grid" showed that increasing penetration of distributed generation reduces total system costs, saving all customers money.[6] It showed that co-optimization of distributed resources on the distribution grid has additional benefits for the larger utility grid beyond capacity and energy. For example, generation interconnected with load on the distribution grid produces higher load factors on the utility scale grid, reduced peak demand, and reduced distribution infrastructure costs.

[3] IRP Vol. I, p. 115.
[4] https://www.sciencedirect.com/science/article/abs/pii/S0960148119319731?via%3Dihub
[5] https://rmi.org/insight/reimagining-resource-planning/
[6] https://www.localsolarforall.org/roadmap

In the Xcel Energy IRP in Minnesota, the Distributed Solar Parties (Vote Solar, Cooperative Energy Futures, the Institute for Local Self Reliance (ILSR), and the Environmental Law & Policy Center) developed a simple but effective model for reliably forecasting customer adoption of rooftop solar based on observed consumer patterns responding to the financial value of investing in solar.[7] The Minnesota Public Utilities Commission directed Xcel to develop methodologies to incorporate distributed generation as a supply side resource in its next IRP. ILSR subsequently released a toolkit to help others replicate that methodology.[8]

More recently in Michigan, the Clean Energy Organizations (consisting of the Environmental Law & Policy Center, the Ecology Center, the Union of Concerned Scientists, and Vote Solar) submitted testimony in DTE Energy's 2022 Integrated Resource Plan.[9] The Clean Energy Organizations proposed a Distributed Generation as a Resource (DGR) model in which distributed generation is offered to the resource planning model as a supply side resource. The DGR model applies the National Renewable Energy Laboratory's (NREL) Distributed Generation Market Demand ("dGen") model[10] to estimate the incremental increased demand that would be expected if an incentive of $500/kilowatt were offered for new distributed generation.

In the DTE case, the results of the dGen model show that the proposed incentive would result in a significant increase in DG adoption (all other things being equal) that would reduce total resource costs, even after the cost of the incentive.

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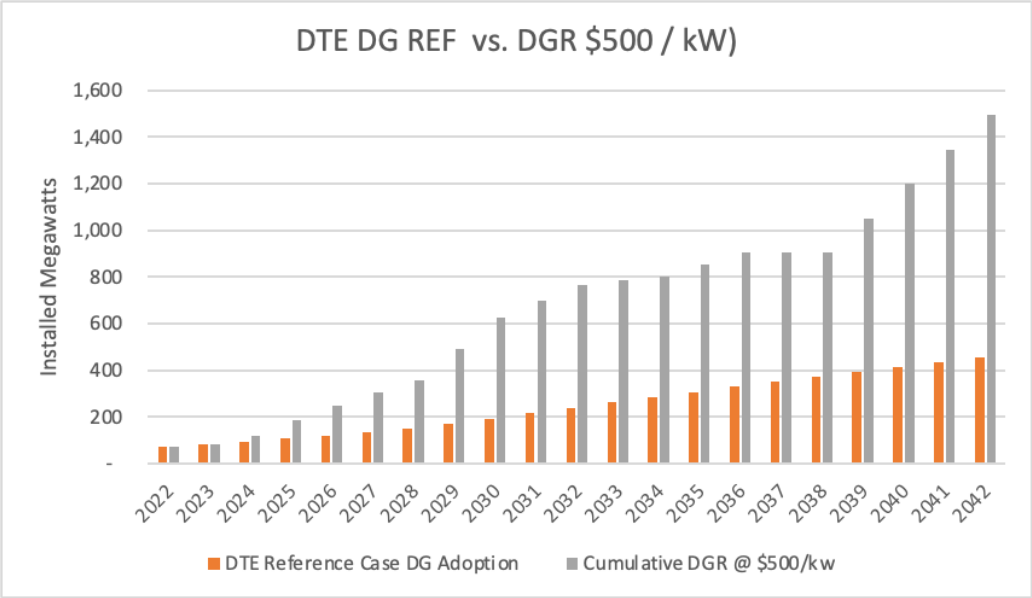
[7] Joint Comments Of Vote Solar, Institute For Local Self Reliance, The Environmental Law & Policy Center, And Cooperative Energy Futures, *In the Matter of Xcel Energy's 2020-2034 Upper Midwest Resource Plan*, PUC Docket No. E002/RP-19-368. February 11, 2021.

[8] https://ilsr.org/wp-content/uploads/2022/08/Rooftop-Solar-Adoption-Model-2022.pdf

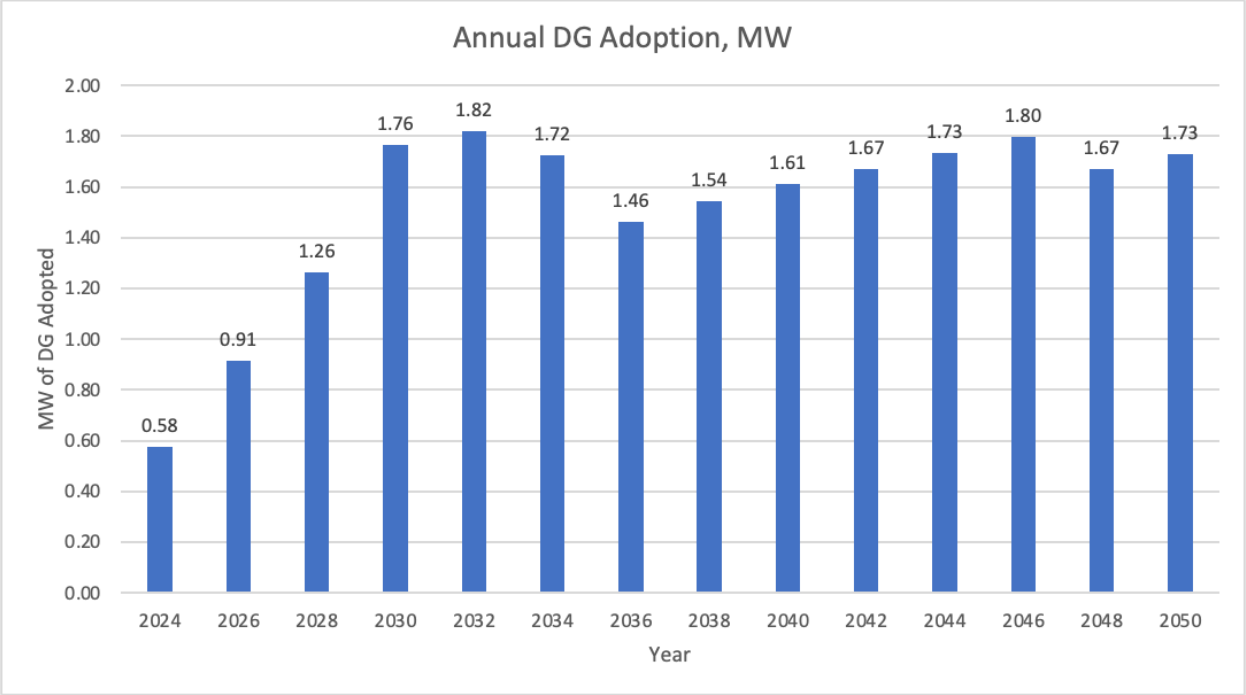
[9] MPSC Docket U-21193.

[10] https://www.nrel.gov/analysis/dgen/about-dgen.html



Source: Kenworthy Direct Testimony in U-21193, pg. 35.

Applying the same dGen model (but without any incentive structure) to Indiana produces an estimate that Indiana would see an average annual DG residential adoption rate of 1.52 MW statewide starting in 2024. These initial model results do not include any new state-based DG policies; rather, this run only captured the market supply and demand of Indiana, as predicted by NREL, and as such are likely conservative. If given more time, dGen can be used to predict the commercial and industrial DG adoption rates (as well as refine the residential DG prediction that is shown below).



The Company indicates an interest in monitoring emerging technologies for inclusion in future resource plans. But DERs like rooftop solar and batteries are already here. By more fully integrating DERs into the planning process as resources that can be modeled and selected in the preferred portfolio, the Company will unlock previously untapped value for its customers and new tools that will help provide more affordable, reliable, and sustainable electricity service.

Incentivising customers to adopt DERs can lower system costs while increasing resilience

A growing body of evidence shows that a local and clean grid is the most cost effective way to deliver power reliably while meeting sustainability goals. According to the 2020 Vibrant Clean Energy report mentioned previously, investing in local solar and storage nationally would save nearly $500 Billion

nationally by 2050 compared to a business as usual model aiming to hit clean energy targets.[11]

However, we don't have to rely on national figures to make the case that the adoption of local solar and storage can save money for AES customers. In June 2020, the Energy Analysis and Environmental Impacts Division of Lawrence Berkeley National Laboratory (LBNL) completed a report for the 21st Century Energy Policy Development Task Force titled "Indiana 21st Century Energy Policy: Emerging Technologies on the Electricity Distribution System Impact on Rates, Reliability, and Resilience."[12] Researchers from LBNL modeled the economic and reliability impact of DER adoption under a variety of scenarios. The modeling used data from utilities around the state as the basis of their analysis. In their findings, the "High PV and Storage" scenario resulted in the greatest annual cost reduction relative to their modeled baseline, saving $265.5 million statewide in 2025.[13] The "High PV" scenario performed slightly better in 2040, saving $549.2 million statewide compared to $544.1 million for High PV and Storage that year.[14] These significant savings came while maintaining or slightly improving system reliability.[15] The report also speculates that: "It is possible that larger system-wide benefits could be achieved if customer-sited batteries could discharge power back to the grid under direction from utility operations staff."[16]

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[11] https://static1.squarespace.com/static/5f4637895cfc8d77860d0dbc/t/5fd39999439c7c5ec221499b/1607702942515/Local+Solar+Roadmap+White+Paper+as+PPT+FINAL.pdf

[12] https://www.in.gov/iurc/files/2020-Report-to-the-21st-Century-Energy-Policy-Development-Task-Force.updated-min.pdf starting on page 133

[13] Ibid Table ES-1

[14] Ibid

[15] Ibid Table ES-4

[16] Ibid p. 144

Based on the LBNL model, the Company should pursue significant customer adoption of both PV and storage above their current levels. While the Company currently has fewer than 1% of customers with PV and presumably a much smaller percentage of customers with storage resources, the High PV scenario used by LBNL assumed 15% of customers with PV by 2040 and the High Storage scenario assumed 1% of customers with storage by 2040.[17]

In order to achieve these levels of PV and storage adoption, the Company should consider incentives for customers who install distributed solar, as well as alternative compensation that more fairly values the electricity solar customers share with their neighbors on the grid. Reasonable incentives and fair compensation for the value of energy exports is the most cost-effective way to reliably bring new clean, distributed resources to the grid and benefit all AES customers.

Further integrating distribution level planning into the IRP process to optimize the grid for increased DER adoption

In Section 4 of the Plan, the Company explains changes and advances to its approach to distribution system planning.

We're encouraged by the Company's inclusion of several areas for improvement in distribution level planning for consideration in its next IRP. Better coordinating planning efforts between the distribution system, transmission system, and generation resources is essential for meeting the utility's goals of affordability, reliability, and sustainability.

We look forward to seeing more detail about the steps the Company will take to optimize both their distribution level planning and the distribution system itself for greater adoption of DERs. We hope to see the results of the

[17] Ibid Table 2.2

Company's work to build tools and deploy platforms that enable the implementation of programs that deploy non-wires alternative concepts in the near future to increase system resilience and bring down customer costs. Some of the approaches mentioned in the Plan, including upgrading and streamlining the interconnection process and building out a smarter grid are positive steps in the right direction. But without specific timelines and a more concrete understanding of how these process changes will lead to actual deployment of DERs that benefit all AES customers, there's more work to be done.

One important aspect and value of distribution system planning is articulating and planning for the electric grid we want to have 10, 20, or 30 years from now. Utility distribution system plans to one degree or another describe strategic visions for safe, reliable, and affordable grids. In addition, many strategic plans for modernizing and decarbonizing the grid depend on increased electrification of vehicles and buildings in the coming decades. This increased electrification will result in significantly increased load and require additional capacity and capabilities from the distribution grid.

As the value of this opportunity grows, so does the importance of aligning distribution system, transmission and resource planning. The integration of high levels of distribution grid-connected resources, including distributed solar PV, while co-optimizing those resources with bulk system generation in order to minimize costs and maintain reliability, requires further enhancements to the Company's current approach to distribution system planning.

Anticipating a highly distributed and decentralized future, and in order to ensure that DER provide optimal value to the power system, the Company should take the following actions as a part of the alignment of its resource and distribution planning processes:

- Set DER deployment targets consistent with current IRP high adoption scenarios. The Company should explain, in its forthcoming integrated distribution plan (IDP), how its distribution plan will put the Company on track to meet or exceed the level of DER deployment in its approved IRP.
- Conduct advanced forecasting to better project the levels of DER deployment at a feeder level, leveraging the capabilities of its advanced planning tools to identify opportunities and needs at a granular level.
- Proactively plan investments in hosting capacity and other necessary system capacity to allow distributed generation and electric vehicle additions consistent with DER deployment targets. The Company should use DER and electrification analysis in load and potential studies to plan distribution system investments necessary to increase hosting capacity on circuits where it expects increasing distributed generation deployment, or where adding DER would provide grid value.
- Improve Non-wires Alternative analysis, including market solicitations for deferral opportunities to make sure the Company can take advantage of DERs to address discrete distribution system costs and meet energy and capacity needs. As a part of its Integrated Distribution Planning effort, the Company should screen its planned distribution projects to determine whether those projects might be avoided or deferred by "non-wires alternatives."
- Plan for aggregated DERs to provide system value including energy/capacity during peak hours. Several utilities and states are exploring the use of aggregated DERs as "virtual power plants" to provide an array of bulk and distribution system services. In California, the Staff of the Public Utilities Commission has proposed a pilot DER tariff that would allow the utilities to leverage aggregated customer and third-party owned resources that respond to dispatch signals communicated by the utility. The Company should explore similar customer DER programs in its forthcoming Integrated Distribution Plan

as a tool to avoid or defer traditional distribution upgrades and complement targeted procurements associated with the Company's non-wires alternatives analysis.

We also see an opportunity for the Company to explicitly integrate the federal government's Justice40 Initiative into its planning goals.[18] The Company should consider how historically disadvantaged communities will benefit from greater DER access and supportive infrastructure. Ensuring that at least 40% of these investments flow to disadvantaged communities will help fulfill the Company's responsibility to empower all AES customers to participate in and benefit from a clean, affordable, and equitable electric system.

SUN, Vote Solar, and CAC look forward to working with the Company and other stakeholders in future IRP processes to ensure that AES customers are able to fully realize the benefits of a clean, affordable, and equitable electric grid through accelerated deployment of DERs on an optimized distribution system.

Respectfully Submitted,

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[18] https://www.energy.gov/diversity/justice40-initiative

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