To: Illinois Power Agency, IPA.ContactUs@illinois.gov

From: Members of the Power Sector Committee of the Illinois Clean Jobs Coalition

Re: Comments on Energy Storage Components of the IPA Draft Policy Study

Date: February 12, 2024

The below-signed members of the Illinois Clean Jobs Coalition (ICJC) are pleased to offer the following comments in response to the Illinois Power Agency (IPA) Draft Policy Study (Draft Policy Study) released on January 22, 2024. The ICJC is made up of many environmental advocacy organizations, businesses, community leaders, consumer advocates, environmental justice groups, and faith-based and student organizations working together to improve public health and the environment, protect consumers, and create equitable, clean jobs across the state.

The below-signed members of the ICJC thank the IPA for the opportunity to provide input on the Draft Policy Study and commend the Agency for continuing this important work. We note that these comments only address the parts of the Draft Policy Study that deal with energy storage and SB 1587, although some of the comments may be applicable to the other technologies considered in the Draft Policy Study as well. Topics that are not addressed below should not be construed as evidence of support or opposition.

I. Overview of the Comments

The IPA's Draft Policy Study advances the conversation around the value of energy storage for grid reliability, economics, and emissions reductions. The study's results add to a growing body of evidence that underscores the important role energy storage will play in Illinois' transition to a 100% clean energy future. Energy storage is a critical resource that we need to strengthen our state's power grid, maximize clean energy deployment, increase our clean energy workforce, and reach our climate goals affordably and on time.

While the IPA's Draft Policy Study offers insights into individual proposals, including SB 1587, it does not provide the holistic approach necessary for informed policymaking on a system-wide level. The Draft Policy Study takes a narrow approach that overlooks critical questions essential for shaping Illinois' energy future. Specifically, it does not examine the optimal mix of energy resources needed to meet the state's targets for reliability, affordability, and equity. This narrow scope limits its utility in guiding legislators towards a comprehensive understanding of Illinois' energy system's needs—a critical ingredient in future planning and policy making.

The final Policy Study should seek to more comprehensively evaluate the role of storage in serving Illinois' grid needs. The signed members of the ICJC hope that the final Policy Study will serve as a starting point for the development of a longer term energy storage roadmap, similar to efforts

undertaken by other states, most notably New York.[1] Developing a roadmap would allow the IPA to recommend a clear policy framework grounded in empirical evidence that supports the cost-effective deployment of energy storage in Illinois.

II. Recommendation on Study Approach

The General Assembly directed the IPA to study the potential impact of energy storage in support of Illinois' decarbonization goals, the environment, grid reliability, carbon and other pollutant emissions, resource adequacy, electric rates, environmental justice communities, jobs, and the economy.[2] While the IPA was instructed to evaluate the specific impacts of SB 1587, the agency was given latitude to evaluate additional or alternative approaches to energy storage in its analysis.[3]. In theory, the final Policy Study was intended to provide insights grounded in empirical evidence to support Illinois as it considers specific technology applications, such as energy storage, in charting a successful transition to a 100% clean energy future.

Unfortunately, the IPA's Draft Policy Study focuses on one energy storage policy option, namely the proposal in SB 1587, rather than identifying the optimal deployment of storage necessary to meet Illinois' decarbonization goals. This singular focus fails to evaluate what the Illinois energy system actually *needs* to get to 100% clean energy, missing an important opportunity. In fact, the goal of conducting a comprehensive study is featured prominently in the literature cited in the Draft Policy Study, including in the report "Energy Storage & Decarbonization Analysis for Energy Regulators" by Sandia National Labs.[4] The expert authors highlight that "future work [should] focus on developing an optimization-based method to estimate the optimal generation mix and the amount of energy storage needed."[5]

This same request was mirrored in the initial round of stakeholder comments prior to the Draft Policy Study (submitted on October 20, 2023), where the IPA solicited feedback on the technical and analytical approach to the General Assembly's request. In response, members of the ICJC called on the agency to focus on the primary objective of the Policy Study: to "map out an optimized [resource] portfolio to meet climate goals affordably and reliably, not just analyze individual proposals."[6] In these comments, the signed members of the ICJC reiterate the importance of a more comprehensive approach.

The Draft Policy Study does not include proposed recommendations from the IPA to the General Assembly but states that the final version will include them based on stakeholder feedback. Ideally, the final Policy Study will serve as a starting point for the development of a longer term energy storage roadmap, similar to efforts undertaken by other states, most notably New York. Creating a roadmap is a logical next step to advance energy storage and other clean energy policies in Illinois,

[1] https://www.nyserda.ny.gov/energy-storage: New York's 6 GW Energy Storage Roadmap [PDF]
[2] 20 ILCS 3855/1-129(c).
[3] 20 ILCS 3855/1-129(g)
[4] https://www.sandia.gov/app/uploads/sites/163/2024/01/SAND2023-10226.pdf
[5] Page 32, https://www.sandia.gov/app/uploads/sites/163/2024/01/SAND2023-10226.pdf
[6] Page 1, https://ipa.illinois.gov/content/dam/soi/en/web/ipa/documents/illinois-clean-jobs-coalition-20231031.pdf

that builds on the learnings and information from the ICC's 2022 energy storage report, the utility multi-year integrated grid plans, and this Draft Policy Study.

To meet this objective, we suggest that the IPA recommend to the General Assembly that Illinois develop a long-term energy storage roadmap, created by the IPA to be reviewed and approved by the Illinois Commerce Commission. This is a key next step in planning for the future, helping set guidelines for the capacity, duration, and general locational characteristics of storage resources that Illinois needs to transition to a 100% clean energy system. The roadmap should utilize a capacity expansion optimization model to estimate the energy storage resources that the state needs to meet its clean energy and emission reduction goals. Developing a roadmap would allow the IPA to recommend a comprehensive policy framework, including proposing energy storage targets and evaluating specific policies or programs designed to help Illinois reach those targets.

III. Specific Comments and Recommendations on the Draft Policy Study

The Draft Policy Study also has several limitations that are worthy of note. As mentioned above, the Draft Policy Study was not designed to answer the most important questions for Illinois' future. In this section, we identified challenges with the existing modeling exercises presented in the Draft Policy Study. Most saliently, the individual modeling exercises lack transparency and consistency with CEJA's mandates, causing them to risk undervaluing the contribution of energy storage to reliability, resilience, and Illinois' clean energy transition. We emphasize the importance of aligning policy recommendations with the state's clean energy goals.

A. **The inputs to the models are inconsistent across the individual modeling exercises. The individual modeling exercises also make assumptions inconsistent with CEJA.** The separate modeling studies are not built on consistent assumptions, which limits the IPA's ability to draw broader conclusions about the impacts of a given storage policy across all different outcomes.

> **Recommendation:** In the final Policy Study, it would be useful to provide more transparent descriptions of the inputs and assumptions each model is built on. Future work should ensure that individual modeling studies employ consistent assumptions. Overall, in order to better assess the model inputs and assumptions, the IPA should direct consultants to use modeling tools with open-source code and open-source licenses. Additionally, the IPA should encourage consultants to publish their inputs and results in a public repository (such as on GitHub or GitLab) following version control and energy modeling best practices.[7]

B. **The GE MARS study describes reliability in a supply mix that does not account for generator emissions limitations established in CEJA.** While this does not invalidate the resulting reliability value of storage, it does reduce the utility of the results for policy

[7] https://www.sciencedirect.com/science/article/abs/pii/S0306261917302192

oriented around planning for a future that includes CEJA. Further, these assumptions likely contribute to underestimating the reliability value of storage on Illinois' future system.

> **Recommendation**: The IPA should clearly state this in the final report and direct future work to better understand the real reliability and resource adequacy contribution of storage on a system that accounts for CEJA.

C. **The Entrust report employs current system impact study models that do not account for changes to the future resource mix expected under CEJA.** While the study might be a useful exercise that sheds light on the *current* viability of storage asset interconnection, it does not contribute to helping understand the value of storage as a replacement resource to support future retirements. It is also important to highlight that there will likely be significant variation in the real locations of future storage assets compared to those modeled, meaning their associated network upgrades may have drastically different contributions to grid resilience. Overall, considering the pace at which the grid is changing, studying the status quo is of little value and could undervalue the way storage interconnection upgrades contribute to grid resilience.

> **Recommendation:** The IPA should direct future work to focus on understanding how energy storage can resolve transmission violations or reliability problems triggered by fossil plant retirements per CEJA. Future work should compare the impact of different scenarios, encompassing the use of storage at existing points of interconnection including at retiring generation sites, the replacement of renewable capacity, and increased transmission.

D. **The Aurora production cost model report states that the retirements within Illinois' PJM territory mandated in CEJA are accounted for within the model based on PJM deactivation lists. However, PJM deactivation lists do not reflect future fossil retirements expected under CEJA.** Based on the information provided in the Draft Policy Study, the firm resource retirements are based on PJM deactivation lists.[8] This does not reflect what is anticipated under CEJA for this region. Further, the limited reduction in CO2 emissions after 2026 in the PJM ComEd region suggests that the model does not fully account for the retirements mandated in CEJA either.[9]

> **Recommendation:** The IPA should correct the generator retirements in Illinois' PJM region to reflect the generator retirements expected under CEJA. The IPA should also strive to be more transparent about the resulting supply mix in the Aurora model in Illinois, specifically, by providing a chart or table with the model's final Illinois resource capacity mix.

[8] Page 8, Appendix E
[9] Page 29, Appendix E

E. **The Aurora production cost model report states that the retirements within Illinois' MISO territory mandated in CEJA are accounted for within the model based on MISO's Series 1A Future modeling.[10] However, MISO Future 1A does not account for all the fossil retirements expected under CEJA.** Based on the information provided in the Draft Policy Study, the firm resource retirements are based on MISO Future 1A.[11] However, MISO Future 1A does not reflect the complete retirement capacity expected under CEJA. In Future 1A, MISO only models 2,123 MW of Illinois (Zone 4) coal power retirements by 2027 (and no further change) and 564 MW of Illinois (Zone 4) gas generation retirements by 2032 (and no further change).[12] This is at odds with a statement made within the same MISO Future 1A report, which says that the CEJA zero-emission dates for generators were incorporated into Future 1A modeling, as it underrepresents the capacity of fossil fuel retirements expected.[13] It is not clear whether the Aurora production cost model corrected for this discrepancy, because the only information provided in the Aurora report about the resulting supply mix is the sharp cliff in emissions observed in 2042, which does not reflect the expected cadence of generator closures mandated in CEJA either.[14]

> **Recommendation:** The IPA should correct the generator retirements in Illinois' MISO region to better reflect the cadence and capacity of generator retirements expected under CEJA. The IPA should also be more transparent about the resulting supply mix in the Aurora model, providing a chart with the model's final Illinois resource capacity mix.

F. **In the Aurora production cost model, it is not clear why MISO Futures 2 or 3 were not chosen in the study or what effects those scenarios might have had on the overall Aurora modeling results.** Future 2A is more likely to be representative of the future that policymakers need to be planning for, as Future 1A is already being proven overly conservative in several of its assumptions. Utilizing Future 1A has likely resulted in significantly under-representing the value of energy storage.

MISO is currently using Future 2A as its core scenario for transmission planning purposes and is only using Future 1A as a "low bookend" for robustness testing of the transmission solutions that come out of its study of Future 2A.[15] Nearly all of the resources assumed in Future 1A are already planned (i.e., in existing integrated resource plans or have interconnection agreements in place).[16] Accordingly, Future 1A essentially represents the "do/build nothing" scenario in terms of evaluating a future resource mix—a highly

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[10] Which "includes the most conservative modeling approach to decarbonization but incorporates the latest generation changes contemplated in utility Integrated Resource Plans ("IRPs"). *See*, *e.g.*, Draft Policy Study at 195-96.
[11] Page 8, Appendix E
[12] Page 71 of MISO Futures Report: Series 1A, https://cdn.misoenergy.org/Series1A_Futures_Report630735.pdf
[13] Pages 12-13 of MISO Futures Report: Series 1A, https://cdn.misoenergy.org/Series1A_Futures_Report630735.pdf
[14] Page 29, Appendix E
[15] https://cdn.misoenergy.org/20240126%20LRTP%20Workshop%20Item%2005%20Tranche%202%20Robustness%20Testing%20Low-End%20Bookend631474.pdf
[16] Slide 8 of LRTP Tranche 2 Robustness Testing: Low-End Bookend, https://cdn.misoenergy.org/20240126%20LRTP%20Workshop%20Item%2005%20Tranche%202%20Robustness%20Testing%20Low-End%20Bookend631474.pdf

improbable scenario over the next decade or two. This is further evidenced by the recent nature of MISO's interconnection queue, which has experienced a remarkable surge in clean energy interconnection requests.[17]

With respect to load growth assumptions, MISO has acknowledged that Future 1A load assumptions are likely overly conservative.[18] A December 2022 report by McKinsey & Company to the MISO Board of Directors strongly supports the use of Future 2A as the core scenario representing the most likely system conditions over the planning horizon.

> **Recommendation**: In the final Policy Study, the IPA should examine and address the implications of how Future 1 does not adequately reflect future MISO grid conditions and likely undervalues storage. Further, the IPA should strongly consider using MISO Future 2A as its core scenario instead.

G. **The Aurora production cost model does not provide sufficient information regarding resource capacity in Illinois.** For example, in the base scenario, the report adds 5,600 MW of capacity from Illinois Shines through 2030.[19] It is important to clearly provide the model's estimates for storage adoption in the base scenario, especially if more storage (beyond the Illinois Shines input) would be selected through 2050.

> **Recommendation**: The IPA should provide Illinois-specific storage capacity predictions from the Aurora model, both in the base scenario and two storage policy scenarios.

H. **The Aurora production cost model report does not compare the base case scenario with the storage policy scenario**. In the IPA's two storage scenarios, we would have liked to see the storage costs compared to the base scenario storage costs to better understand how much more costly the storage policy scenarios are when compared to the base case.

> **Recommendation:** The IPA should present a storage cost comparison between the base scenario and storage policy scenarios as a table or graph to make the costs more transparent to stakeholders and policymakers.

I. **While the GE MARS model shows an improvement in reliability attributable to storage, the study is not designed to predict what the real reliability of the Illinois system in 2030 or 2040 will be.** When interpreting the results of the GE MARS study regarding storage, the draft study inadvertently states that the results of the LOLE model can be used as a prediction for the future Illinois system. It is critical that the IPA clearly state the distinction between estimating the reliability value of storage on a test system and predicting the real reliability of Illinois' future energy system.

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[17] https://cdn.misoenergy.org/GIQ%20Web%20Overview272899.pdf
[18] Slide 26 of MISO LRTP Sensitivities Overview, https://cdn.misoenergy.org/20231002%20LRTP%20Workshop%20Item%2003%20Sensitivities630348.pdf
[19] Page 17, Appendix E

Recommendation: The final Policy Study should emphasize that the LOLE exercise is designed to shed light on the reliability value of storage resources, but it is not designed to predict the real reliability of Illinois' system in 2030 or 2040.

IV. Conclusion

The IPA's Draft Policy Study has the potential to meaningfully advance the conversation around the value of energy storage for grid reliability, economics, and emissions reductions. The study's results add to a growing body of evidence that underscores the important role energy storage will play in Illinois' transition to a 100% clean energy future. Energy storage is undoubtedly a critical resource that we need to strengthen our state's power grid, maximize clean energy deployment, supercharge our clean energy workforce, and reach our climate goals affordably and on time.

We emphasize the importance of ensuring that policy recommendations are grounded in empirical evidence, align with the state's broader clean energy goals, and prioritize affordability, reliability, decarbonization, and equity. The ICJC signatories below make the recommendations above to aid in the development of a comprehensive energy storage policy framework that is designed with Illinois' ambitious decarbonization targets in mind.

Thank you for your consideration,

Members of the Illinois Clean Jobs Coalition (ICJC)

- Union of Concerned Scientists
- Vote Solar
- Climate Reality Project - Chicago Metro
- Environmental Defense Fund
- Natural Resources Defense Council
- Prairie Rivers Network
- Illinois Environmental Council
- Sierra Club Illinois