BEFORE THE PUBLIC SERVICE COMMISSION OF THE STATE OF MISSOURI

In the Matter of the 2025 Triennial Compliance Filing Pursuant to 20 CSR 4240-22 of The Empire District Electric Company d/b/a Liberty	)))	Case No. EO-2024-0280

COMMENTS OF RENEW MISSOURI ADVOCATES

COMES NOW, Renew Missouri Advocates d/b/a Renew Missouri ("Renew Missouri") and offers the below comments in response to the 2025 Integrated Resource Plan Triennial Report ("IRP") of The Empire District Electric Company d/b/a Liberty (herein referred to as "Liberty" or "the Company," respectively).

The below comments were prepared by Renew Missouri staff and reflect our organization's reactions to and opinions on the Company's most recent IRP Report and materials.

All communications and inquiries regarding the below comments, and any other communications to Renew Missouri relevant to this case, should be directed to the following individuals:

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Renew Missouri appreciates the opportunity to share these comments and welcomes further discussion.

Comments of Renew Missouri

I. Introduction

The Company's recently filed IRP relies on cost assumptions already outdated and understate the risks and true economics of several resource options. Lazard's updated Levelized Cost of Energy ("LCOE") analysis, released in June after the IRP was finalized and included as Attachment A, provides more accurate estimates that materially affect the IRP's conclusions. The most notable changes are in the projected costs of natural gas and nuclear resources. The Company's assumed 2025 combined cycle natural gas cost of $56/MWh has nearly doubled in updated projections, making gas resources significantly less favorable than presented.[1]

By contrast, Lazard's updated data confirms the growing competitiveness of renewable energy paired with storage. While the IRP acknowledges the role of utility-scale solar and evaluates storage technologies in isolation, it does not adequately analyze solar-plus-storage as a resource option. Updated LCOE and Levelized Cost of Capacity ("LCOC") values show solar-plus-storage can meet energy and capacity needs at significantly lower and less volatile costs than gas resources.

The IRP's Preferred Plan takes modest steps toward integrating solar and storage, including additions of 175 MW of solar by 2028 and future battery storage projects. However, the IRP delays meaningful storage deployment until 2043, overlooking near-term opportunities to enhance system reliability, reduce costs, and gain operational experience with utility-scale batteries. Distributed storage also offers system benefits such as congestion relief, outage prevention, and deferral of grid upgrades, particularly when targeted to vulnerable customers or high-cost areas.

Finally, the Company's demand-side portfolio could be strengthened through programs like PAYS® (Pay As You Save), which can overcome upfront cost barriers and help customers lower

[1]Missouri Public Service Commission, Empire District Electric Company d/b/a Liberty-Empire. (2025, April 1). *Supply-side resource analysis* (Vol. 4; File No. EO-2024-0280). Table 4-12 on p. 51.

usage, reduce bills, and increase comfort. As the IRP acknowledges, targeted distributed energy resources and financing programs can create both system and customer benefits, while also rebuilding trust and community relationships.

Taken together, the updated cost data and emerging opportunities in solar, storage, and demand-side programs demonstrate the need to revise the IRP's assumptions and accelerate investment in cleaner, more cost-effective resources. Doing so would better protect customers from fuel price volatility, reduce long-term costs, and enhance reliability across the system.

II. Levelized Cost of Energy

The updated Lazard LCOE was published after the IRP, and provides more accurate cost estimates that should be included in the next update. With significantly different changes, it would be worthwhile to update some of the LCOE estimates included in the IRP with the updated values as part of any application for a certificate of convenience and necessity of generation resulting from the chosen preferred plan. To start with, the Gas Combined Cycle price listed in Table 4-12[2] from the Company is now outdated and the costs are now less favorable when looking at the updated LCOE. The Company has a 2025 price of $56/MWh (likely a number from earlier this year), while the updated figures are expected to be now almost twice this price.[3] The forecasted pricing beyond 2025 will also need to be adjusted in the IRP to reflect current market conditions.

Similarly, the nuclear price estimate should be much higher and at a minimum would come in around $141/MWh.[4] Even this may be an overly optimistic pricing estimate; recent large-scale nuclear projects in the United States - such as Vogtle Units 3 and 4 and the cancelled V.C. Summer expansion - have experienced severe cost overruns, regulatory and construction delays, and in

[2] Id.
[3] Lazard Inc. (2025, June 16). *Levelized Cost of Energy+ (LCOE+), Version 18.0*, p. 8.
[4] Id.

some cases complete abandonment.[5] The Company could see a price as high as $220-228/MWh for new nuclear builds.[6] The assumption that a smaller reactor or modular unit will inherently be cheaper is flawed as the industry is not near scale at this point in time,[7] which increases development time and cost. Early adopters should expect to grapple with the higher final cost estimates,[8] which will be markedly higher than the estimates included in the IRP.

Under the supply side resource projections, the Company evaluated a range of technologies and project types for various forms of energy and capacity generation projects. This evaluation even included a range of different storage technologies to be considered. While the 2025 LCOE does include both solar and natural gas options, it does not include the inclusion of battery storage systems with solar and this should be evaluated in future IRPs.

The Company's LCOC values for utility scale solar are around $150/kW per year and for distributed PV, they are around $250/kW per year.[9] When paired with battery storage, the capacity benefits are expected to increase and provide a dispatchable form of energy and capacity. Therefore, it would be beneficial for the Company to incorporate recent LCOE estimates from Lazard to see how utility scale battery storage and solar systems can meet the capacity and energy requirements, at a lower cost, with less volatile fuel pricing.

Lazard's LCOE for utility scale storage, even without future tax credits, is around $81-$174/kW per year. for a two-hour 100 MW battery.[10] Similarly, for an equally-sized four-hour

[5] Bowen, M., Ponangi, R. T., & Evans, A. (2023, July 31). *Vogtle Unit 3 has started commercial operations. What's next for the AP1000?* Center on Global Energy Policy.
[6] Lazard Inc. (2025, June 16). *Levelized Cost of Energy+ (LCOE+), Version 18.0*, p. 8
[7] Ramana, M. V. (2024, January 31). *The collapse of NuScale's project should spell the end for small modular nuclear reactors.* Utility Dive.
[8] McDermott, J. (2025, May 20). *First US utility seeks permit for a small nuclear reactor*. AP News.
[9] Missouri Public Service Commission, Empire District Electric Company d/b/a Liberty-Empire. (2025, April 1). *Executive Summary*(Vol. 1; File No. EO-2024-0280). Figure 1-8 on p. 30.
[10] Lazard Inc. (2025, June 16). *Levelized Cost of Energy+ (LCOE+), Version 18.0*, p.20.

battery, the unsubsidized cost would land from $145-$319/kW per year.[11] This is significantly lower than the $450/kW per year price for Reciprocating Internal Combustion Engine (RICE) or ~$500/kW-yr. price for Distributed RICE and Aeroderivative Combustion Turbine natural gas projects. Additionally, the Combustion Turbine Frame natural gas project would have the highest level of capacity with the highest energy cost. While it is great that the IRP included information on battery storage, it is unfortunate the Company did not evaluate solar + storage to look at the overall LCOE and LCOC of this alternative in the modeling in the IRP.

III. Battery Storage and Distributed Energy Resources (DER)

The IRP's Preferred Plan does include utility-scale solar as a long-term resource with the planned additions of ~175 MW of solar by 2028 and an addition of two 150 MW solar projects in 2035 and 2041. The IRP's analysis finds that the four-hour lithium-ion batteries are cost-competitive on a capacity basis to provide peak capacity and ancillary services to the Company. While this is encouraging to see a reference to of battery storage in the preferred plan, a larger hybrid project with the target date of 2043 would enhance the capabilities of both the solar facilities and the battery storage. Pairing these planned solar additions with storage will enhance capacity and we encourage the Company to more aggressively pursue solar+storage projects whenever possible. The IRP's cost screening shows four-hour batteries can provide capacity at costs on par with traditional generation while adding resiliency and grid benefits.[12] We encourage the Company to accelerate their storage deployment prior to the 2043 date to capture reliability benefits sooner as storage costs continue to fall and will grow the Company's familiarity in utilizing storage in their portfolio.

[11] Id.
[12] Missouri Public Service Commission, Empire District Electric Company d/b/a Liberty-Empire. (2025, April 1). *Supply-side resource analysis* (Vol. 4; File No. EO-2024-0280). Table 4-21 on p. 72.

It would be prudent for the Company to look at gaining experience working with a utility-scale battery over this decade - instead of the next - especially when looking at the addition of only a single megawatt battery. The Company modeled effective load-carrying capabilities for wind, solar, and storage under future SPP rules and ran SERVM reliability simulations on the portfolios. Gaining hands-on experience with a utility scale battery would further help the Company navigate the capacity challenges of renewable resources and to see if in reality it is working as forecasted. Battery storage can uniquely help bolster the reliability of utility-scale renewable projects, but we should not overlook the benefits it can bring at the distributed level.

Battery storage can support local reliability to prevent outages and defer grid upgrades when looking at financials benefits separately from added reliability and capacity with solar integration at the distributed level.[13] The Company acknowledges this in the IRP:

> Positioning a distributed energy resource in an area with historically high congestion or delivery costs could benefit Liberty-Empire's system and customers by injecting energy at the load site rather than transmitting it across various delivery systems. While determining the exact value of such benefits is complex, it can be estimated by quantifying the ability of distributed energy resources to defer certain distribution system upgrade costs.[14]

We support these efforts and encourage continued integration of storage to enhance grid resilience and to potentially target vulnerable customers in hard-to-reach areas or those with medical needs that require uninterrupted access to electricity. When evaluating the types of incentives the Company could offer to customers for a targeted DER program, it makes sense to look at on-bill financing as a pathway to financing distributed storage.

IV. PAYS

[13] Missouri Public Service Commission, Empire District Electric Company d/b/a Liberty-Empire. (2025, April 1). *Integrated Resource Plan and Risk Analysis* (Vol. 6; File No. EO-2024-0280). p. 187.
[14] Missouri Public Service Commission, Empire District Electric Company d/b/a Liberty-Empire. (2025, April 1). *Supply-side resource analysis* (Vol. 4; File No. EO-2024-0280). p, 40.

The Company has already listed Pay As You Save ("PAYS®") on Table 1-3 – Demand-Side Programs by State as one of the programs that is currently offered in Missouri and Arkansas. While the Company is not currently offering a PAYS program, we would be supportive of this program being offered to customers as it would provide an additional program to help customers reduce their usage. Even though the Company's overall MEEIA portfolio was rejected, the Company could still offer a cost-effective standalone PAYS® program to create financial benefits for all stakeholders. This would also help offset rising demand and offer customers an additional form of relief after the recent billing issues. This type of a program can be used to strengthen customer trust and repair community relationships for the Company. Offering a program to help customers get access to immediate bill relief, increasing comfort, and doing so with a personalized approach could go a long way in rebuilding public trust. Furthermore, when looking at the residential intensity by End Use and Segment provided by the Company under Figure 5-6,[15] the largest areas across all customer use cases were from heating and cooling, followed by appliances. All of these categories could be addressed through a PAYS® or like-minded program. The program is also uniquely able to overcome upfront cost barriers for low-income households.

[15] Missouri Public Service Commission, Empire District Electric Company d/b/a Liberty-Empire. (2025, April 1). *Demand-Side Resource Analysis* (Vol. 5; File No. EO-2024-0280). Figure 5-6, p.18.