Stakeholder Committee Questions to Entergy Arkansas LLC (EAL) regarding its 2024 IRP: Submitted Aug 12, 2024

Q1. RE: EAL's 2024 IRP Stakeholder Kickoff Meeting Presentation (January 30 2024), p. 45, EAL's Renewable and Storage Resource cost assumptions.

a. Please provide the basis for all installed capital cost assumptions listed in the subparts of this question, including supporting workpapers, spreadsheets, financial models, procurement bids, consultant reports used for cost derivation, particularly breaking out or itemizing transmission costs and tariffs from generation procurement:

i. utility scale solar at $1,866/kW,

ii. hybrid solar + BESS at $2,950/kW

iii. on-shore wind MISO South at $2,010/kW

iv. on-shore wind SPP at $1,988 /kW

Response: See EAL's **responses to Question Nos. 60 and 61 to the Third Set of Questions by** the **Stakeholder Group submitted by** AEEC/AG.

b. Please indicate the locations for the MISO South and SPP wind projects and the basis for feasibility.

Response: **The resources are not site specific, but rather a generalized assumption for the cost to install** the resource within the MISO South footprint, or for the "on-shore wind SPP", in SPP.

c. Please explain provide the basis for the levelized cost of electricity listed in the subparts of this question, including supporting workpapers, spreadsheets, financial models, procurement bids, consultant reports used for cost derivation, particularly breaking out or itemizing transmission costs and tariffs from generation procurement:

i. utility scale solar at $63/MWh

ii. hybrid solar + BESS at $n/a

iii. on-shore wind MISO South at $58/MWh

iv. on-shore wind SPP at $141/MWh

d. Please explain why the levelized cost of electricity for on-shore wind from SPP at $141/MWh is two and half times the levelized cost of electricity from MISO South at $58/MWh, including supporting workpapers, spreadsheets, financial models, procurement bids, consultant reports used for cost derivation, particularly breaking out or itemizing transmission costs and tariffs from generation procurement, to show the cost comparison.

Response to (c) and (d): See EAL's **response to Question No. 1 above and Question No. 89** to the Third **Set of Questions by the Stakeholder Group submitted by** AEEC/AG. An LCOE was not run for the hybrid solar + BESS resource as **storage just moves MWh from one time to another**, and thus there is no actual 'output' of energy; therefore, it is undefined.

Q2. RE: Transmission

a. Please provide total transmission capacities for all transmission interconnections between Arkansas and MISO Central/ North, and between Arkansas and SPP, mostly particularly including for the multiple 500 kV transmission paths between Happy Valley/ Pleasant Hill to Fort Smith substations, and from Dell Power Station through to Missouri, together with total transmission capacities for lower voltage paths. If rated transmission capacity is seasonal or otherwise varies over 8760 hours per year, please provide the hourly or seasonal breakdown.

Response: See EAL's response to **Question No. 86 to the First Set of Questions by** the Stakeholder Group.

b. Has EAL investigated or implemented dynamic line rating to increase the total transmission capacities for the transmission paths of part a.? If so, please describe the outcome of the investigation, including any workpapers and status of any implementation. If not, please explain why not.

Response: See EAL's response to Part a.

c. Please provide the most recent three years of hourly power flows through the transmission interconnections of part

Response: See EAL's response to Part a.

Q3.

In the EAL Portfolio 2A-CC results (slide 39) it shows a snapshot of the "MISO Market" but does not have any MW's included for the "Battery Hybrid". Although, when looking at the MISO queue there are currently 49 active Hybrid projects totaling over 10,000MW. Is there a reason that none of those were included in this summary? Does the model assume that none of those will get built?

Response: **The identified items were not included in the summary b**ecause (1) there is a significant **timing and cost uncertainty associated with many queue projects**; (2) the queue **composition does not** reflect MISO's **transition to a seasonal capacity construct**; and (3) generator replacement projects do not show up in the queue, the capacity expansion modeling does not use the projects currently in the MISO **interconnection queue as an input**, except to the extent that such projects were **under construction** at **the time of the development of the underlying database provided by the software vendor.** Based on the current market price of new **resources and the implementation of the** recent MISO seasonal construct, hybrid resources were not able to meet the planning requirements for both winter and summer as economically as thermal resources.

Q4

Slide 68 shows that installed cost of utility scale solar has decreased 6% for a "New" 100 MW facility ($1,763/kWac) compared to an "Old" 100 MW facility ($1,866/kWac). It also shows that the levelized cost of energy is $63/MWh for both "Old" and "New" utility scale solar facilities.

- Can you clarify what "Old" and "New" mean within the context of this slide? For example, is there a specific placed-in-service date EAL uses to distinguish between old and new facilities? Since these are relative terms some clarification would be helpful.
- Can you explain why the levelized cost of utility scale solar stayed the same ($63/MWh) even though the installed cost went down 6%? What factor is counteracting the 6% cost decrease?

Response:

"Old" means values shown in January kickoff IRP slides, **and "New" means updated values reflecting** changes outlined in slide 7.

The levelized cost of **utility scale solar stayed the same ($63/MWh) because even though the installed** costs went down, the **fi**xed O&M costs increased from approximately $13.37/kW-yr. (2024$) to $17.07/kW-**yr. (2024$) in addition to a decrease in the generic capacity factor from 2**6.13 percent to 25.87 percent.