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## **Invenergy Responses to IRP Stakeholder Workshop #2: Candidate Resources**

Invenergy appreciates the opportunity to provide responses to the Illinois Commerce Commission (“ICC”) in response to IRP Stakeholder Workshops #2 on Candidate Resources. As a company founded and headquartered in Illinois, and the nation's largest privately held developer, owner and operator of clean energy solutions, Invenergy is committed to supporting the state's goals and accelerating cleaner, more reliable, affordable energy. In response to the questions posed after the workshop, Invenergy provides the following responses.

1. Are there specific resource types that are not adequately captured by the proposed categories and should be reflected in the IRP framework?

***Invenergy Response:***

Based on the presentation during the second IRP Stakeholder workshop, E3 is planning to model generation resources throughout MISO and PJM but not outside those RTOs. Invenergy believes that failing to account for resources outside of those RTOs, specifically wind and solar generation from SPP connected to HVDC resources, would be a missed opportunity to benefit the state with generation resources with increased resource adequacy value and cost-savings.

For Illinois, the benefits of increasing the geographic diversity of resources serving load cannot be understated. The value of importing renewable out-of-state resources both from a cost and policy perspective has previously been noted by the Illinois Commerce Commission (“ICC”) in the 2024 Renewable Energy Access Plan (REAP). In the REAP, the ICC specifically stated:

Illinois’ current geographic requirements for renewable supply eligibility mean that Illinois consumers do not have access to other low-cost renewable supply in other states for compliance with the RPS and for competitive IPA solicitations. In the long term, the most cost-effective and balanced 100% clean electricity resource mix will likely need to account for the ability to import clean electricity from other decarbonizing states and export clean energy when Illinois is in surplus.<sup>1</sup>

An increase in resource diversity means a decrease in the vulnerability of the grid to common failures and a more resilient system. As previously noted in our written and in-person comments, geographically diverse generating resources delivered via interregional HVDC (1) are of better quality, depending on the project’s origination point; and (2) will better maintain renewable capacity accreditation (ELCC) over time when compared to resources in Illinois and adjacent states. And, yet these resources are not being considered. Thus, Invenergy believes the modeling assumptions should include the ability to import geographically diverse clean resources from RTOs such as SPP to avoid the need to import carbon emitting resources from out-of-state generators.

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<sup>1</sup> Illinois Renewable Energy Access Plan: Enabling an equitable, reliable, and affordable transition to 100% clean electricity for Illinois, ICC, at p. ix. (May 30, 2024).

2. Are there any resource categories that should be added, removed, or redefined to better reflect meaningful differences in cost, performance, or system value?

*Invenergy Response:*

**Out-of-State Utility Scale Wind and Solar**

Invenergy believes that modeling out-of-state utility scale wind and solar from geographically diverse regions delivered via HVDC transmission lines is essential to offer Illinois a more reliable and cost-effective solution. In addition, these out-of-state renewable resources better align with Illinois' energy policy as opposed to a possible buildout of new out-of-state gas generation as indicated in Slide 20. Renewable resources delivered by interregional HVDC transmission projects, such as the Grain Belt Express ("GBX"), can improve resource adequacy by interconnecting geographically diverse regions which means providing Illinois with access to diverse, non-coincident pools of load and generating resources to meet RA needs. HVDC transmission can be leveraged to meet growing system needs by providing operational and reliability support along with grid-support and ancillary system benefits.

Using MISO's own methodology, PowerGem, an independent consultant, found that GBX's geographic diversity and higher capacity factors from its Kansas wind and solar resources deliver 38% and 6% accredited capacity vs. 16% and 2% respectively from local resources. By connecting SPP and MISO, GBX's transmission capability will offer significant resource adequacy value through non-firm, economic power flows between SPP and MISO, reducing the Planning Reserve Requirement (PRMR). Furthermore, PowerGem found that GBX reduces MISO's PRMR by 937 MW. Thus, Invenergy believes modeling SPP resources such as Kansas wind and solar and other HVDC connected resources would provide meaningful value to Illinois from a resource adequacy, reliability and cost perspective and shift or reduce the need for out-of-state gas.

5. What feedback do you have on the proposed commercial availability timelines shown on Slide 18? Please identify any technology timelines you believe should be revised, why you think it should be revised, and any supporting data or materials you have to support your recommendation.

*Invenergy Response:*

**Nuclear Timelines**

With respect to nuclear resources, Invenergy sees the timeline for Nuclear, New gen III+ reactors, as reasonable. Based on existing SMR project announcements, developers are anticipating a seven-year development timeline. In recent years, each of Ontario Power, TerraPower and TVA have begun developing projects that estimate a seven-year timeline from early site preparations to commercial operation (COD). However, these projects may also need to add extra time to engage in site selection as well as regulatory approvals prior to early site preparations. If an additional one or two years for these pre-development activities are factored in, then an eight- to nine-year timeline would be reasonable based on current information. Also, given the dearth of pre-development activities for SMR projects in IL yet, the longer eight- to nine-year timeline is more realistic.

## LDES Timeline

Depending on the technology, Long Duration Energy Storage development timelines can range from two<sup>2</sup> to eight<sup>3</sup> years. Given this timeline, modeling LDES in the Base Case starting in 2037 is quite conservative. Invenergy believes that some quantity of LDES could come online sooner than 2037 and should be included in the Base Case. However, to better address this issue, it would be beneficial to get additional details on why the model will include LDES in some scenarios starting in 2032 and only include LDES in the base in 2037. For example, getting a better understanding of what “commercial viability” entails and what costs are being assumed would help in assessing what amount of LDES to include in earlier time horizon.

10. If CCS is considered as an added, co-paired technology with natural gas resources in a scenario:
- What is a likely timeframe for when this technology could be reasonably expected to be commercially operational and accessed?

### *Invenergy Response:*

Invenergy believes that if CCS were added as a co-paired technology, a commercially reasonable timeline from beginning development to COD would be six to ten years. However, this timeline is subject to EPA’s ability to get through Class VI permits and state policy bottlenecks, like pipeline bans. Invenergy also strongly encourages Illinois to move quickly if it seeks to encourage CCA with natural gas resources to ensure projects can take advantage of 45Q credits. Project seeking to avail themselves of federal 45Q credits need to safe harbor by 2032. If projects cannot achieve 45Q credits, it may result in more expensive projects.

11. While current policy expects that CCS would fully sequester all carbon emissions to comply with CEJA (i.e. 100% carbon sequestration), a lower percentage of carbon sequestration may be more likely (e.g. 80% or 90% of sequestered carbon, i.e. 10-20% carbon emissions). Please provide a recommendation for a different percentage if 100% carbon sequestration is deemed to not be operationally likely during the term being modeled (2027-2047). If a different percentage is proposed, please support your recommendation.

### *Invenergy Response:*

As an initial matter, Invenergy notes that it is basing its response on an assumption of technical capture ability as of current plant emissions. Based on this, 90% carbon capture is a more defensible percentage as it was EPA 111 uses its benchmark. However, Invenergy would encourage that in considering the impact of CCS and capture rates, Illinois should point to “commercially achievable capture rate” as this will evolve as plants are built and the technology is proven out.

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<sup>2</sup> Google / Form Energy <https://heatmap.news/climate-tech/form-energy-google-deal>; Crusoe/Form Energy <https://www.crusoe.ai/resources/newsroom/form-energy-crusoe-announce-agreement-for-12-gigawatt-hours-of-iron-air-batteries-for-ai-data-centers>.

<sup>3</sup> Willow Rock Energy Storage Center, <https://hydrostor.ca/hydrostor-signs-offtake-agreement-with-california-community-power>