TO: Illinois Power Agency
FROM: Union of Concerned Scientists
DATE: October 20, 2023
RE: Stakeholder Feedback – IPA Policy Study

Energy Storage

b) Is an indexed energy storage credit structure (as proposed in SB 1587, and modeled off the approach presently utilized for large-scale renewable energy projects in the Illinois Renewable Portfolio Standard) an appropriate compensation structure for energy storage? If not, what structures would more efficiently and cost-effectively compensate energy storage projects to incentivize new development? Should that structure vary based on project size?

UCS offers a perspective for the IPA regarding storage as transmission ("SAT"). SAT presents an additional means for storage deployment to meet Illinois policy objectives and grid reliability. The IPA has the opportunity to include examination of SAT in this Policy Study as part of the goals of Senate Bill 1587 and also a more holistic look at how the energy transition in Illinois will depend on the grid infrastructure available.

The energy transition reveals the key role of the transmission system for delivering reliable electric service to consumers. Investment in transmission equipment that makes more transmission available, and non-wires transmission alternatives will be needed in Illinois. We suggest that the IPA consider SAT for meeting Illinois needs related to the energy transition. To the question posed for this Policy Study, we suggest that an indexed energy storage credit structure is not well suited to SAT. We offer the idea that energy storage that is deployed only for transmission reinforcement be compensated with an energy storage strike price that is not further modified by energy market revenues or capacity prices. Instead, the energy storage strike price could be reduced by subtracting payments made by grid operators for a transmission asset.

The utility industry has different approaches for cost-recovery of generation in competitive markets as compared to cost recovery for transmission assets. The capability of storage to serve as either, or both, generation and transmission causes confusion and tension between these cost-recovery mechanisms. Because we see transmission expansion as a key enabler of the energy transition, we describe here the opportunity to deploy storage as a means to expand transmission, and thus address the question of compensation for storage used for transmission expansion and enhancement.

Briefly, the transmission planning for contingencies of disturbances on the transmission system is to rely on additional transmission capability to serve, or "back-up," the transmission system. This is partly a reflection of the limits on transmission planners to select from types of assets as solutions that are not energy-producing generators. Transmission planners basically can only plan new transmission.

The potential for energy storage to respond to transmission contingencies, and thus back-up the transmission system, is moving "from white papers to contracts" as mentioned in recent articles.[1] The

[1] See, e.g., "Australia to replace coal plant with record-busting 850MW battery," https://www.canarymedia.com/articles/energy-storage/australia-to-replace-coal-plant-with-record-busting-850mw-battery. Also https://ir.fluenceenergy.com/news-releases/news-release-details/worlds-largest-storage-transmission-project-announced-fluence.

key measure of this function of storage acting as transmission is the response time, not the duration, of the battery discharge.

MISO has been working through some of the rules and assumptions for using storage as a transmission asset.[2] MISO already provides an avenue for storage resources to be considered and approved as transmission assets through its SATOA (storage as a transmission only asset) process. FERC approval and Business Practice Manual updates have already been achieved and battery storage is now an eligible transmission solution to be considered or brought forward in MISO's annual transmission expansion process.[3] In contrast, PJM has put its efforts to define rules for Storage as a Transmission Asset ("SATA") on hold.[4]

At present, grid operators maintain the distinction between generation uses and transmission uses for storage as well as the associated cost recovery. While there are arguably paths to reduce this distinction, we suggest for the current study that to the extent that a storage asset is dedicated to transmission, a compensation approach for transmission can be discussed.

To maintain the distinction between generation and transmission, the compensation for SAT needs to be sufficient without revenues earned as a generator. An energy storage strike price can be used, along with an offset that reflects revenues from any inclusion of the asset in rates.

HVDC

a) How would the development of a 2,100 MW HVDC line connecting renewable energy resources in Iowa into a delivery point in the PJM market area of Illinois impact the Illinois energy industry?

One thing to note is that, while we do want to fully mature Illinois clean energy industries, having a diverse set of resources to meet electricity needs is critical to cost-effectively maintain reliability, have some level of resilience to extreme weather events and other contingencies, etc. In the base of renewables, geographic diversity is key to having a portfolio of resources that is complimentary in nature. We certainly want to pursue Illinois investments in clean energy, but an HVDC line (underground in the case of SOO Green) bringing 2 GW of renewable energy, along with the dispatchability and ancillary services, would be a key element of a diversified energy portfolio that helps with both reliability and resilience.

iii) How do the projected costs of supporting an HVDC transmission line project compare to other investments that could help meet similar goals?

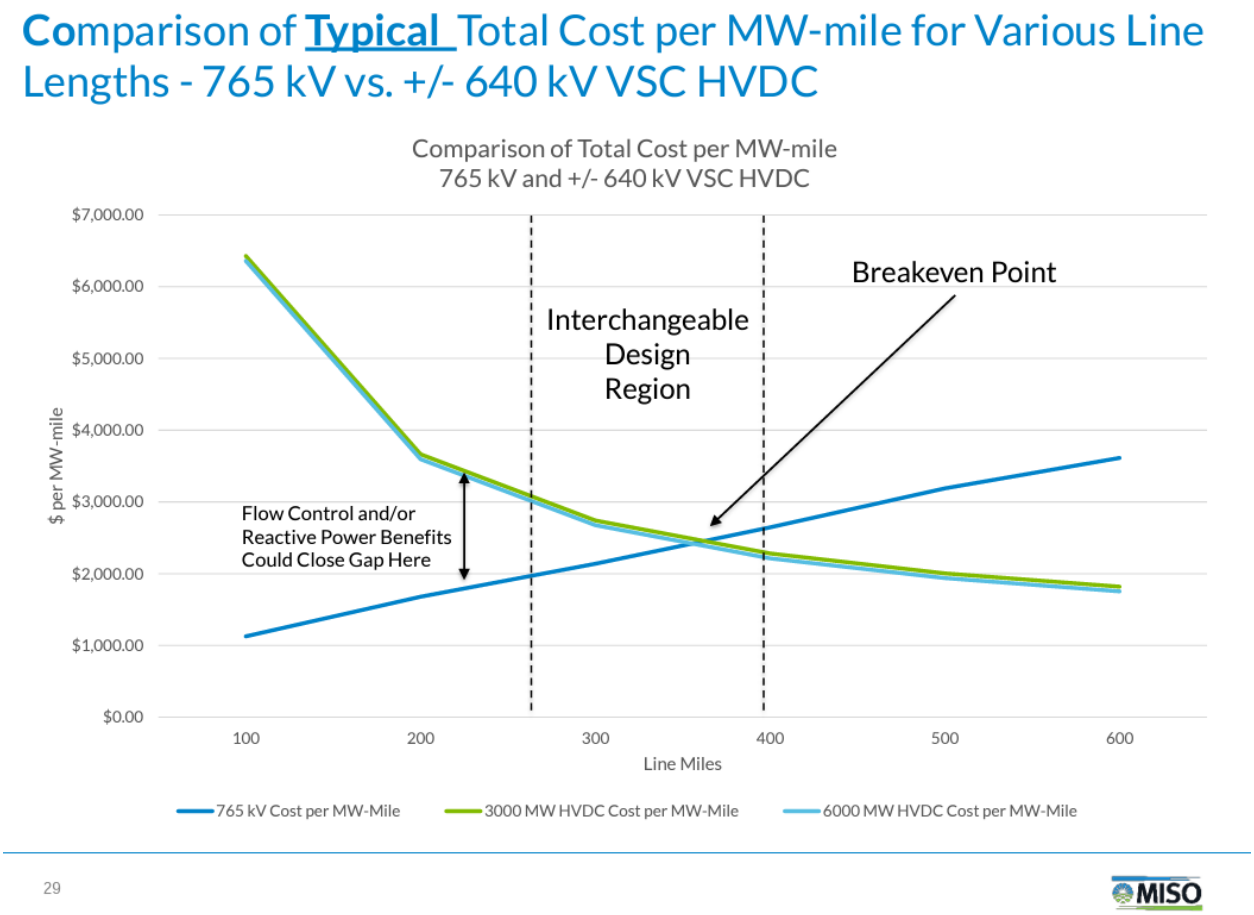
On a per-mile basis, HVDC technologies are more expensive than traditional AC alternatives. However, because of the significantly higher efficiency of HVDC technology in moving energy over long distances,

[2] Electric Storage As a Transmission Solution In the MTEP Reliability Planning Process. MISO. January 2019. https://cdn.misoenergy.org/20190109%20PAC%20Item%2003c%20Storage%20as%20a%20Transmission%20Asset%20Phase%20I%20Proposal%20(PAC%20004)307822.pdf

[3] See Storage As Transmission Only Asset, Business Practices Manuals 027 & 029 Revisions https://cdn.misoenergy.org/20211110%20PAC%20Item%2003e%20Storage%20As%20Transmission-Only%20Asset%20(SATOA)%20BPM-027%20and%2029%20Revisions%20Presentation602560.pdf

[4] PJM Issues Tracking. https://www.pjm.com/committees-and-groups/issue-tracking/issue-tracking-details.aspx?Issue=%7bB435C39B-D4BB-4C3C-ADA9-8EFBC0E52246%7d

there is a threshold—taking into account distance and relative line losses over distance—where HVDC technology is a more cost-effective solution. See the following slide from MISO:



Source: https://cdn.misoenergy.org/20230308%20PAC%20Item%2007%20Discussion%20of%20765%20kV%20and%20HVDC628088.pdf

c) Should Illinois support merchant transmission projects outside of the traditional RTO/ISO transmission development process? What other nontraditional interstate transmission development processes should Illinois consider?

Illinois should support cost-effective, responsibly sited merchant transmission projects that can demonstrate a tangible benefit to Illinois communities.

> **i) What are the policy implications for Illinois from development of a merchant transmission project that does not take place through the regular PJM and MISO transmission development processes?**

There shouldn't be any policy implications. Illinois is a sovereign body that can do what it chooses. There are processes and protocols in place at PJM and MISO to enable merchant or independently developed transmission projects to interconnect to the PJM or MISO system, but decision-making still rests with Illinois. The policy implication is that Illinois will need to commit—through sound regulatory structure

and resources for proper analysis—to ensuring approved projects are furthering Illinois clean energy and environmental justice ambitions in a cost-effective manner.

(1) Is this a potentially faster and/or lower cost approach to increasing the supply of renewable energy in Illinois?

We believe it is faster. We can't necessarily answer if it is lower-cost but believe it potentially could be.

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Respectfully,

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