Special Contemporary Issues -

MPSC ID H1: Explore the design and feasibility of piloting energy storage projects with the specific objective of enhancing system reliability and increasing capacity accreditation of renewable energy resources. Discuss the opportunities and benefits facilitated by inclusion of the explored technology and detail any identified limitations.

Evergy is following Form Energy's Cambridge Energy Storage Project. Below are details on this pilot:

Project Overview

Form Energy, in partnership with Great River Energy, has initiated the Cambridge Energy Storage Project in Cambridge, Minnesota. This pilot project involves a 1.5 MW / 150 MWh iron-air battery designed to store energy for up to 100 hours, significantly surpassing traditional lithium-ion batteries.

Key Highlights

- Groundbreaking: The project officially broke ground on August 15, 2024.
- Technology: The iron-air battery technology uses iron, one of the most abundant and cost-effective materials, to store energy.
- Manufacturing: The batteries will be manufactured at Form Energy's Form Factory in Weirton, West Virginia.
- Deployment: The project aims to be operational by late 2025.

Analysis

The Cambridge Energy Storage Project is a significant step towards addressing the challenge of long-duration energy storage. By storing excess energy generated during periods of high production and releasing it during peak demand or low renewable energy output, the system aims to enhance grid stability and reliability. This technology could also be crucial during emergencies when other resources might be unavailable.

Next Steps

- Evaluation: Great River Energy will evaluate the technology over the next several years to determine effective methods for storing and dispatching energy.
- Potential Expansion: Depending on the results of the evaluation, there may be potential for expanding the use of this technology in the future.

- Manufacturing Scale-Up: Form Energy plans to scale up manufacturing at Form Factory to meet the anticipated demand for iron-air batteries.

Regarding limitation to the technology piloted during this project, information at greatriverenergy.com stated:

The Cambridge Energy Storage Project in Cambridge, Minnesota, is an innovative collaboration between Great River Energy and Form Energy. It aims to revolutionize energy storage with Form Energy's iron-air battery technology, which can store energy for up to 100 hours. However, like any pioneering technology, it has some limitations:

1. **Scale and Capacity**: The project is currently a 1.5-megawatt pilot. Scaling up this technology to meet broader grid demands will require significant investment and infrastructure development.
2. **Technology Maturity**: As a first-of-its-kind commercial deployment, the iron-air battery technology is still in its early stages. Long-term performance and reliability data are yet to be fully established.
3. **Manufacturing and Supply Chain**: Producing these batteries at scale will require robust manufacturing capabilities and a reliable supply chain for materials, which are still being developed.
4. **Integration with Existing Grid**: Integrating this new technology into the existing grid infrastructure poses challenges, including compatibility with current systems and regulatory hurdles.
5. **Cost**: The initial costs of developing and deploying this technology are high, and it will take time to achieve cost parity with more established energy storage solutions.

Despite these limitations, the project represents a significant step forward in energy storage technology and has the potential to greatly enhance grid resilience and renewable energy integration.