



SOLVING THE PROBLEM

The all-iron redox flow battery (IFB) from Energy Storage Systems, Inc. (ESS) has the potential to provide energy storage at a lower cost relative to typical battery options. The ESS battery uses three main electrolyte components—iron, salt, and water. Unlike other flow battery chemistries, such as vanadium, the electrolyte components in the ESS battery are abundant and cost-effective. According to ESS, the IFB can maintain high round-trip efficiency with negligible degradation for thousands of deep charge/discharge cycles. Combined, these factors create the potential for cost-effective, long-duration energy storage.

THE IMPACT:

Energy storage is a game changer for intermittent renewable energy technologies—and holds substantial promise to transform commercial buildings' relationship with the grid. Coupling on-site photovoltaic (PV) generation with energy storage, for example, can provide a smoother, more dispatchable resource than solar alone. Building owners can use the stored energy to take advantage of time-based utility rates and demand-response opportunities, providing new value streams for themselves and the utility. Stored energy can also be used to power essential operations or facilities during extreme weather events and other power outages. Batteries are one way to store energy for these types of applications. Currently, however, high costs and reliability issues create barriers to widespread adoption of building-integrated batteries.

HOW IN² IS HELPING:

ESS is in need of real-world demonstrations to validate key facets of the technology under a variety of conditions, and assistance developing battery sizing and control strategies for integrated building applications in order to optimize customer payback.

TIER 1: Bench Scale

- Concept development stage
- Develop plans for prototyping & testing
- 3 – 5 years to market

TIER 2: Prototype

- Available for testing & validation
- Plans for development of final product
- Less than 2 years to market

TIER 3: Commercially Ready

- Models available in limited quantity
- Integrated demonstration
- Less than 18 months to market testing

ABOUT THE IN² PROGRAM

IN² is a technology incubator that fosters and accelerates early stage technology companies that provide scalable solutions to reduce the energy impact of buildings. Through a \$30 million program funded by the Wells Fargo Foundation and co-administered by the U.S. Department of Energy's National Renewable Energy Laboratory (NREL), sustainable building technologies are able to evolve and develop, contributing to the overall goal of a Smart and Connected Community that uses energy, water and other resources efficiently, reducing the negative impact on the environment.