



Iowa Environmental Council

# IOWA ENERGY STORAGE FACT SHEET

May, 2021

As Iowa continues the transition to clean energy resources, the ability to store renewable generation for use when the sun does not shine and the wind does not blow will be essential for achieving a carbon-free electrical grid. Storage makes a more resilient energy system, minimizing the impacts from events like the August 10, 2020 derecho. With expanding storage technology and the rapidly declining costs of storage, more utility, commercial and personal applications are being realized in Iowa.

## ENERGY STORAGE IN IOWA IS GROWING

- Iowa currently has approximately 6.9 MW of utility-scale battery storage. [1]
- As of May 17, 2021, 5625 MW of battery storage was in the MISO interconnection queue, with 415 MW proposed for Iowa. [2]
- Green Hydrogen, hydrogen produced through electrolysis using renewable electricity, is being explored in Iowa as a potential energy storage technology providing long-term storage potential. [3]

## ENERGY STORAGE CAN STRENGTHEN IOWA'S ECONOMY

- Storing surplus wind energy is estimated to result in \$25.6 million annually in increased revenue to wind plant owners, further improving the economics of wind energy in Iowa and holding down electric rates. [4]
- Between 2020 and 2035, the battery storage supply chain in Iowa is projected to result in 298 to 595 jobs and state gross domestic product impacts of \$13 million to \$24 million per year. [5]
- There was over 60 million metric tons of hydrogen generated globally in 2018 valued at over \$100 billion dollars. This is expected to increase to 300 million metric tons by 2030. [6]

## ENERGY STORAGE COSTS ARE DECLINING

- While the 2019 Levelized Cost of Energy benchmark for lithium-ion battery storage hit \$189 per megawatt-hour (MWh), already threatening coal and gas and representing a fall of 76% since 2012, the figure had dropped even further to \$102 per MWh when combined with solar. [7]
- Between 2019 and 2020 the unsubsidized cost of storage plummeted by an additional 30% to \$132 per MWh and was as low as \$81 per MWh when combined with solar. [8]

## IOWA HAS THE POTENTIAL TO BE AN ENERGY STORAGE LEADER

- Iowa is a renewable energy leader, positioning itself to be an energy storage leader.
- Iowa is one of the best U.S. States in terms of renewable hydrogen potential because of access to low-cost solar and wind power, and it is one of the best U.S. States in terms of future hydrogen demand for carbon free energy, renewable fuels, and ammonia production.

## IOWA ENERGY INNOVATION

- **Maharishi International University Fairfield**- The 1.1 megawatt solar power plant is the first solar installation to combine active tracking technology and vanadium-flow battery energy storage in the U.S. Robust vanadium flow battery technology is high-performing and does not degrade over time. Installed in 2018, this is one of the most technologically advanced solar installations in the nation. [9]
- **Agri-Industrial Plastics Company Fairfield** – The 517 kW roof-mounted solar array that works in tandem with a 212 kW Tesla Powerwall lithium ion battery energy storage system. During the day, the solar panels generate energy that charges the Powerwall. The battery system runs on an artificially-intelligent control system to automatically discharge at times of high energy usage (or peak demand) to avoid or reduce costly demand charges. [10]
- **Alliant Energy Wellman utility-scale battery** - the 650-kilowatt, 2.7-megawatt-hour battery avoided the rebuild of the local energy grid, and can power 650 nearby homes for four hours. [11]
- **Alliant Energy Marshalltown Solar Garden** - the pilot project combines solar power and a battery to generate, store and deliver electricity to customers. The 2.55-MW AC solar system in Marshalltown can power nearly 400 homes. With full sun, the solar panels can also fully charge the 548kWh battery within two hours. When discharged, the battery can power nearly 200 homes for two hours. [12]
- **Alliant Energy Decorah** - the 2.5-megawatt, 2.922-megawatt-hour, \$2.5 million battery added critical capacity for additional customer-owned solar at a fraction of the costs to upgrade the grid in the community. [13]
- **MidAmerican Energy Knoxville** – the 1-megawatt battery storage facility uses lithium iron phosphate batteries providing 4-megawatt-hours of storage capacity, or enough electricity to power nearly 900 average Iowa homes for up to four hours. [14]
- **Ideal Energy** – With the support of the Iowa Economic Development Authority, Ideal Energy is exploring partnerships to develop commercial-scale renewable hydrogen pilot projects. The Midwest's wind and solar energy resources can provide the power to create hydrogen, and the region's agricultural economy means there is no shortage of demand for hydrogen products, like ammonia, urea, and other ammonia-based fertilizers. [15]

## SOURCES

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