Battery Energy Storage System

Wood County Solar Project

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Alliant Energy

Alliant Energy’s Commitment to Clean Energy

Our Clean Energy Vision

By 2030: achieving a **50%** reduction in CO_2 emissions from 2005 levels.

By 2040: eliminating all coal from our generation fleet – **10** years faster than our previous target.

By 2050: meeting an aspirational goal of **net-zero** CO_2 emissions from the electricity we generate.

Additional information can be found in our
Corporate Responsibility Report:
alliantenergy.com/responsibility

Our Clean Energy Blueprint

Increasing affordability, reliability and sustainability

- Roadmap for accelerating our transition to cleaner, renewable energy.
- Strong focus on increasing our use of solar energy, while retiring coal-fired facilities.
- Our path to sustain the economic and environmental health of the communities we serve.

Smart Investment:

Near-term costs to invest in renewables create long term savings for decades

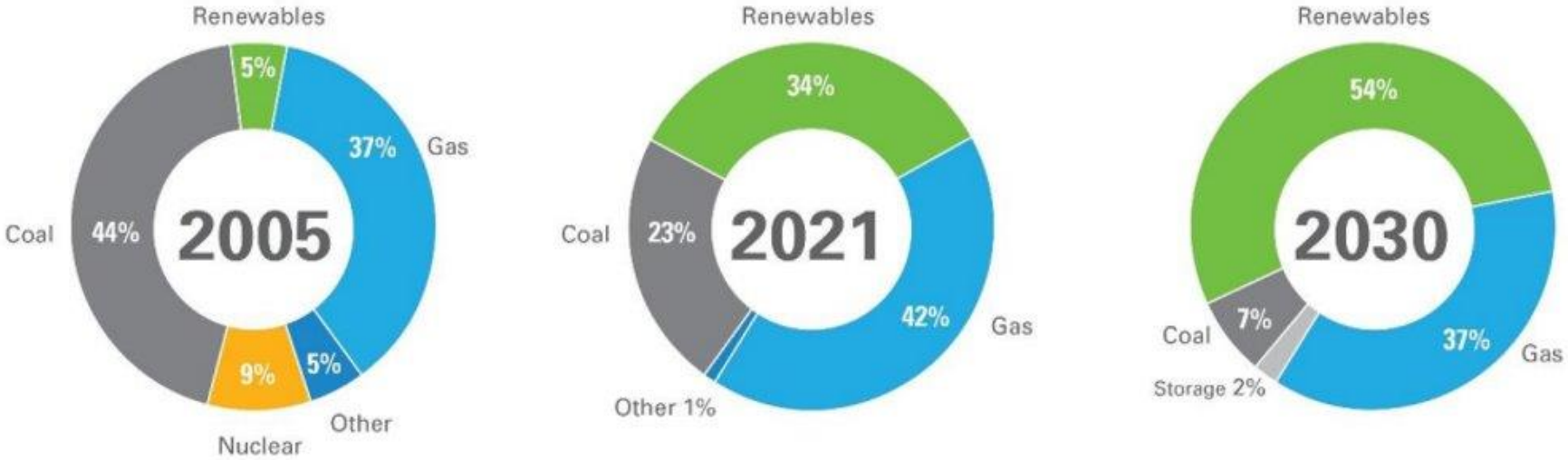
Economic Catalyst:

New solar projects create local jobs, provide steady income for, communities and attract new business to the region

Healthy Environment:

Reducing carbon emissions from fossil fuels protects natural resources

Transitioning to cleaner energy resources



Based on approximate capacity in megawatts as of July 2022 including owned generation resources and utility purchase power agreements. Does not include customer-owned distributed energy resources or Public Utility Regulatory Policies Act (PURPA) resources from non-utility power producers. Actual energy in megawatt-hours to serve customer load will differ from capacity due to participation in regional energy markets. Future projections are subject to change and Alliant Energy undertakes no obligation to update publicly such statements to reflect subsequent events or circumstances.

Project Background

Wood County Solar Project timeline

May 2020

Savion submitted applications to the PSCW to construct the Wood County Solar Project.

Jul. 2021

Following PSCW approval, Alliant Energy acquired the Wood County Solar Project from Savion.

Jul. 2021

Shortly following the acquisition, construction of the Wood County Solar Project started.

Sep. 2022

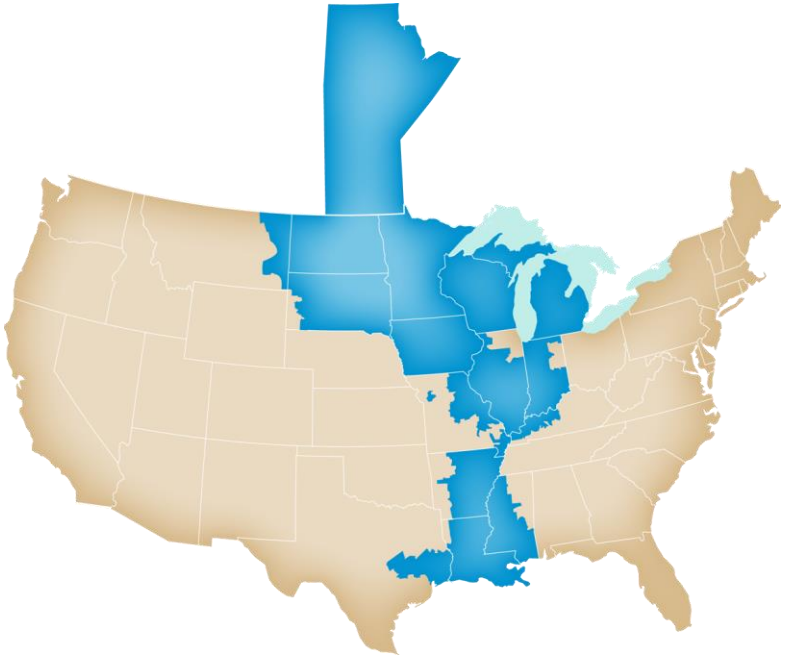
Construction of the Wood County Solar Project was completed & is now operational.

Developer Agreement

- Alliant Energy assumed all responsibility for the terms and conditions outlined in the DA with the Town.
- Provision 21 in the DA outlines the conditions for a potential battery storage installation located at the solar site.
- We always saw battery storage as a potential opportunity but only had long-term plans.

MISO’s switch to seasonal accreditation

- Who is MISO?
  - Midcontinent Independent System Operator (MISO) regulates and operates much of the Midwest’s electric grid.
  - MISO is regulated by the Federal Energy Regulatory Commission (FERC).
- Introduced the new seasonal construct to accredit capacity for generation facilities.
- New construct has nothing to do with solar panel efficiencies.



How we got to battery storage

May 2020

Savion submitted applications to the PSCW to construct the Wood County Solar Project.

July 2021

In July 2021, Alliant Energy acquired the project from Savion. An area was reserved for battery under application.

Nov. 2021

MISO introduced a new seasonal construct to accredit capacity for generation facilities.

Aug. 2022

FERC approved MISO's switch to seasonal accreditation.

Aug. 2022

The Inflation Reduction Act was passed, lowering project costs for our customers.

Sep. 2022

Alliant Energy filed applications for battery storage at two solar sites, including Wood County.

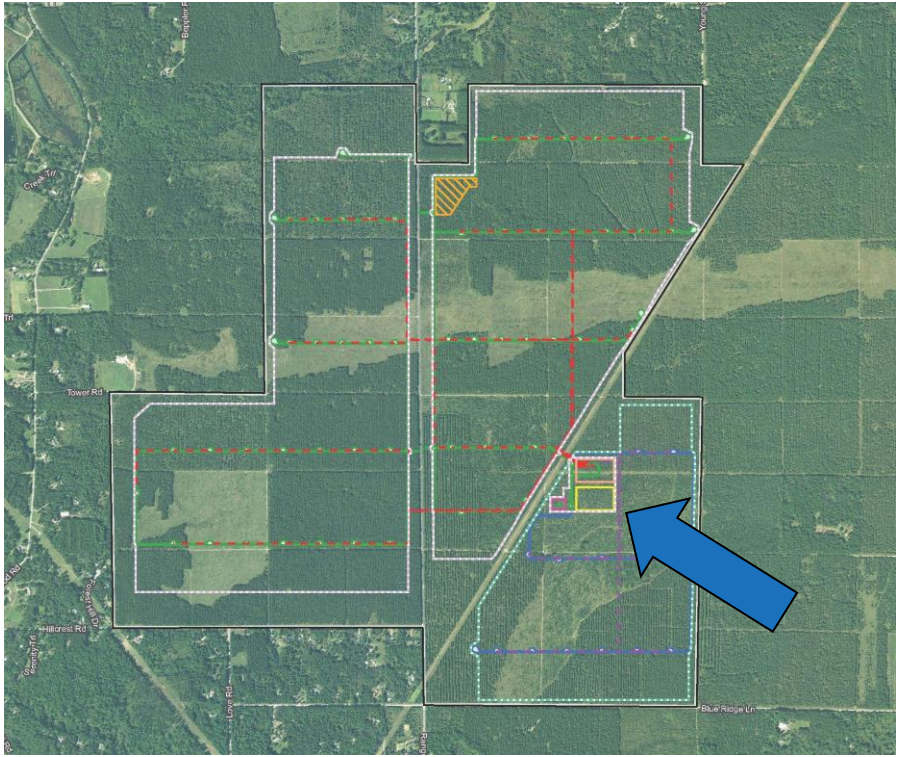
Battery storage offers a solution

- Battery storage charges during times when excess energy is being produced.
- We can then discharge energy when customer use increases, especially in winter months when days are shorter & peak demand is after the sun sets.

Project Details

Wood County Battery Storage

- Located at the Wood County Solar Project site (town of Saratoga)
- 75MW – enough energy to power over 80,000 Wisconsin homes for four hours
- Approximately 4.6-acre battery site
- Completion expected by the end of 2024



Expected timeline

Sept. 2022

Reopened the Wood County Solar Project CA application.

Sept. 2023

The PSCW's review process can take up to a year.

Sept. 2023

Upon approval from the PSCW, we expect to begin construction by the end of 2023

Sept. 2024

We anticipate construction to be complete by fall 2024.

Why Wood County?

- Battery storage is ideal due to the existing infrastructure
- Wood County Solar site
  - Battery can take advantage of excess solar power on sunny days
- Included in existing Developer Agreement

Photos of 100-megawatt battery site

Alliant Energy’s battery portfolio

- Wisconsin
  - Sauk City 16 kW
  - Portage 5 MW
  - Boaz 400kW; anticipated in service early 2023
  - Wood Co. proposed 75 MW
  - Grant Co. proposed 100 MW
- Iowa
  - Wellman 672 kW
  - Marshalltown 250 kW
  - Decorah 2.5 MW
  - Cedar Rapids 5 MW

Alliant Energy’s battery storage system in Boaz, Wisconsin

- *We view all of our renewable energy facilities as candidates for battery storage.*

How Battery Storage Works

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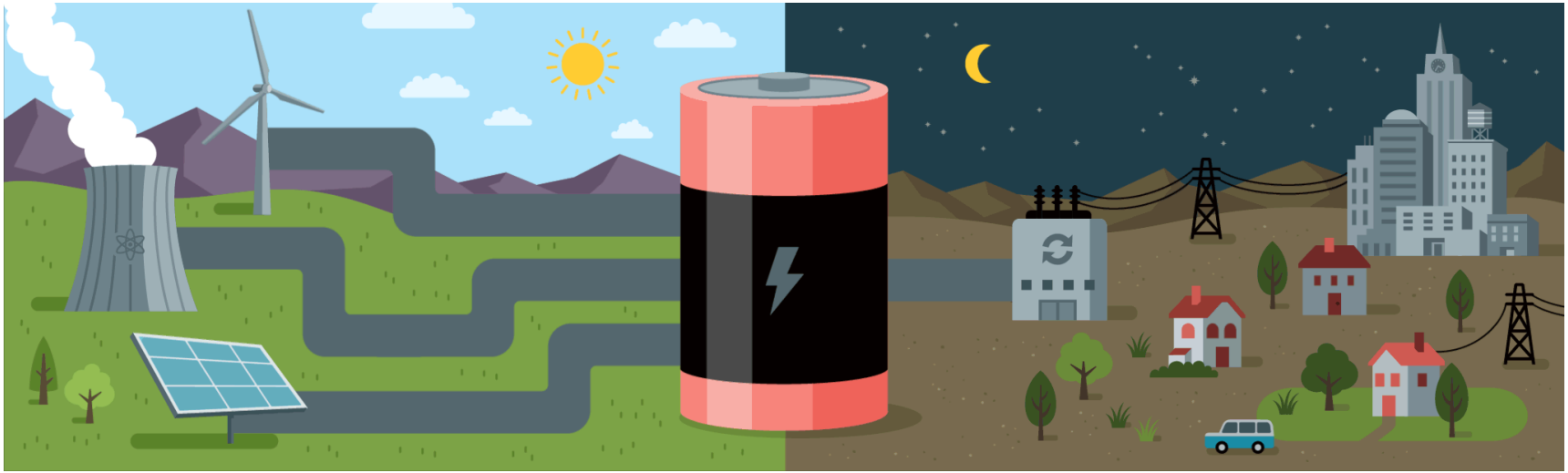
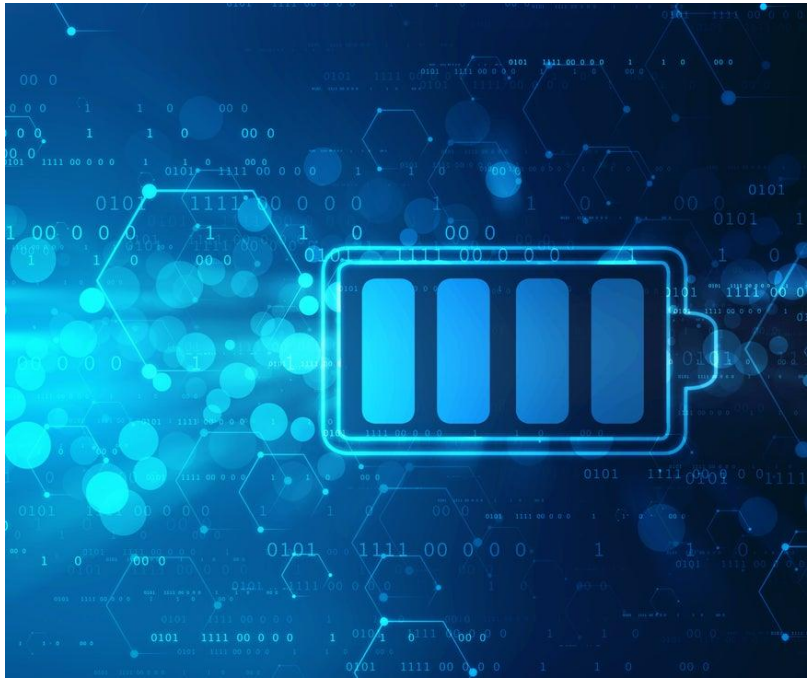
What is battery storage and how does it work?



The benefit of batteries

- The ability to capture and store energy and release it when it’s needed improves the overall efficiency of renewable energy sources.
- Increased system resiliency and helps to diversify our generation portfolio.
- Flexibility avoids customer costs that would typically be required to replace existing equipment or construct additional lines and poles or add other generation resources.



How battery storage works

- Segment will be featured on PowerHouse TV show which airs in six broadcast television markets in Iowa and Wisconsin.
- https://www.powerhousetv.com/

Battery Storage Safety

Alliant Energy

Multiple layers of protection

- HybridOS Site Controller
  - Able to detect potentially dangerous situations
  - Relays information from the BMS (Battery Management System)
  - Operates on top of the BMS
- Battery Management System
  - Monitors temperatures, voltages, and heat/smoke detection
  - Isolates battery modules and DC contactors
  - Can activate fire suppression
- Integrated Fire Panel
  - Remote (site) indication of fire for first responders
- LFP chemistry to lower potential for thermal runaway
  - Safety well established with EV market use of batteries
  - Higher temperature to initiate thermal runaway
  - Lower heat release rate in thermal runaway

Battery storage components – Cell

- Laser-sealed aluminum housing
- Voltage + temperature monitoring system
- 0.16 liters/5.4 ounces of electrolyte

Battery storage components – Module

- Heavy-duty cases
- Temperature + voltage sensors

Battery storage components – Rack

- Houses fuses
- Disconnect technology
- Voltage current + temperature monitoring system

Battery storage components – Container

- Redundant HVAC systems
- Fire suppression equipment
- Smoke + temperature detection
- Insulation with 1-hour fire barrier

System Software & Safety

- Manages the safe dispatch of energy to and from the facility
- Temperature, voltage and over current faults
- Automatic power disconnects

- Safety standards:
  - NFPA/NEC 70 – Article 706
  - NFPA 855
  - NFPA 68
  - NFPA 69
  - UL 9540
  - UL 9540A

Common Concerns

Are there any impacts to groundwater?

- Battery storage does not generate any airborne or water pollution.
- Unlike lead-acid batteries which contain liquid acid and can be a hazard when performing service and/or if batteries fail or leak, lithium-ion batteries are completely sealed.
- Battery storage cabinets or containers will be constructed on either concrete slabs or piers within a gravel pad area.

Will the batteries catch on fire?

- Our facility will include both on-site sensors and off-site monitoring. The system will respond instantaneously to any anomalies in battery operation, temperature, or potential fire.
  - Each cabinet or container is also equipped with a fire suppression system that automatically deploys in the event of a fire.
  - Support from local EMS would be limited to ensuring the fire does not spread beyond the battery cabinets/containers.
  - We will work with local EMS to educate and coordinate emergency response procedures.

Is battery storage loud?

- The typical noise level from an operating battery storage site is equivalent to a residential home HVAC unit
  - When standing next to the container

Will the batteries emit any radiation?

- Similar to the alkaline-based “AA” batteries you have at home, our lithium-ion batteries store chemical energy and do not emit any radiation.
  - While low-level electromagnetic fields (EMFs) are created by the operation of monitoring and distribution equipment, EMF levels will be near zero at the fence line.

What about stray voltage?

- Properly designed and grounded batteries will have no stray voltage.

What are the end of life plans for the battery?

- We develop decommissioning plans for all of our generation facilities, including battery storage.
- We will look to recycle or identify secondary markets for battery equipment at the end of the project life.
- These batteries do not contain any toxic materials such as mercury, cadmium or lead.

Q&A