

We're Shaping the Future of Power Solutions



The Trystar Microgrid

Inspired by Our Focus on the Future

When marketers and engineers get together at Trystar for a product ideation session, great ideas emerge, grow, and evolve ... and they can lead down exciting paths. One path led to an idea inspired by Trystar's general concern and interest in reducing carbon emissions: "Why not build our own microgrid?" Another path led to the GridPak™ family of products — renewable energy solutions designed to give customers carbon-free alternatives to diesel and gas generator sets. Both ideas germinated and grew into a mission to pursue carbon-free technologies for Trystar *and* its customers.

A Microgrid by Definition

A microgrid is a self-contained power system that generates and distributes energy locally. Trystar's microgrid consists of solar panels, wind turbines, and the latest battery energy storage system (BESS) technology to store excess energy when the sun isn't shining or the wind isn't blowing. The Faribault manufacturing site is wide-open with no natural or physical obstructions. The solar panels are located on the roof, maximizing exposure to the sun throughout the year. Given the terrain's flat nature, it is also ideal for leveraging wind energy.

An Element in Trystar's Sustainability Journey and a Learning Laboratory

The Trystar microgrid has a dual purpose. The first is to help Trystar pursue its sustainability journey by reducing its carbon footprint. Trystar is committed to doing its part to slow climate change and preserve the natural environment and resources for future generations.

The second purpose is to use the microgrid as a practical laboratory. It allows Trystar to create and validate new sustainable energy systems and solutions. During design, Trystar, the system integrator, and the utility combined to analyze Trystar's energy usage, particularly its peak hours. The latter drove the choice of energy sources that contributed most to sustainability and resiliency. Trystar plans to continue learning from its early experience to scale the system. Strategically growing its microgrid will allow Trystar to rely less on utility power. Eventually, Trystar hopes to sell energy back to the utility for use by other customers.



Renewable Energy that's Intelligently Controlled

The microgrid has a smart energy management system that ensures energy is distributed efficiently and effectively. The system constantly monitors energy production and consumption and adjusts energy flow accordingly. For example, if energy demand is low, the excess energy produced by the solar panels and wind turbines will be stored in the batteries for later use. On the other hand, if energy demand is high, the smart system will prioritize energy delivery to the areas of the factory that require the most energy.

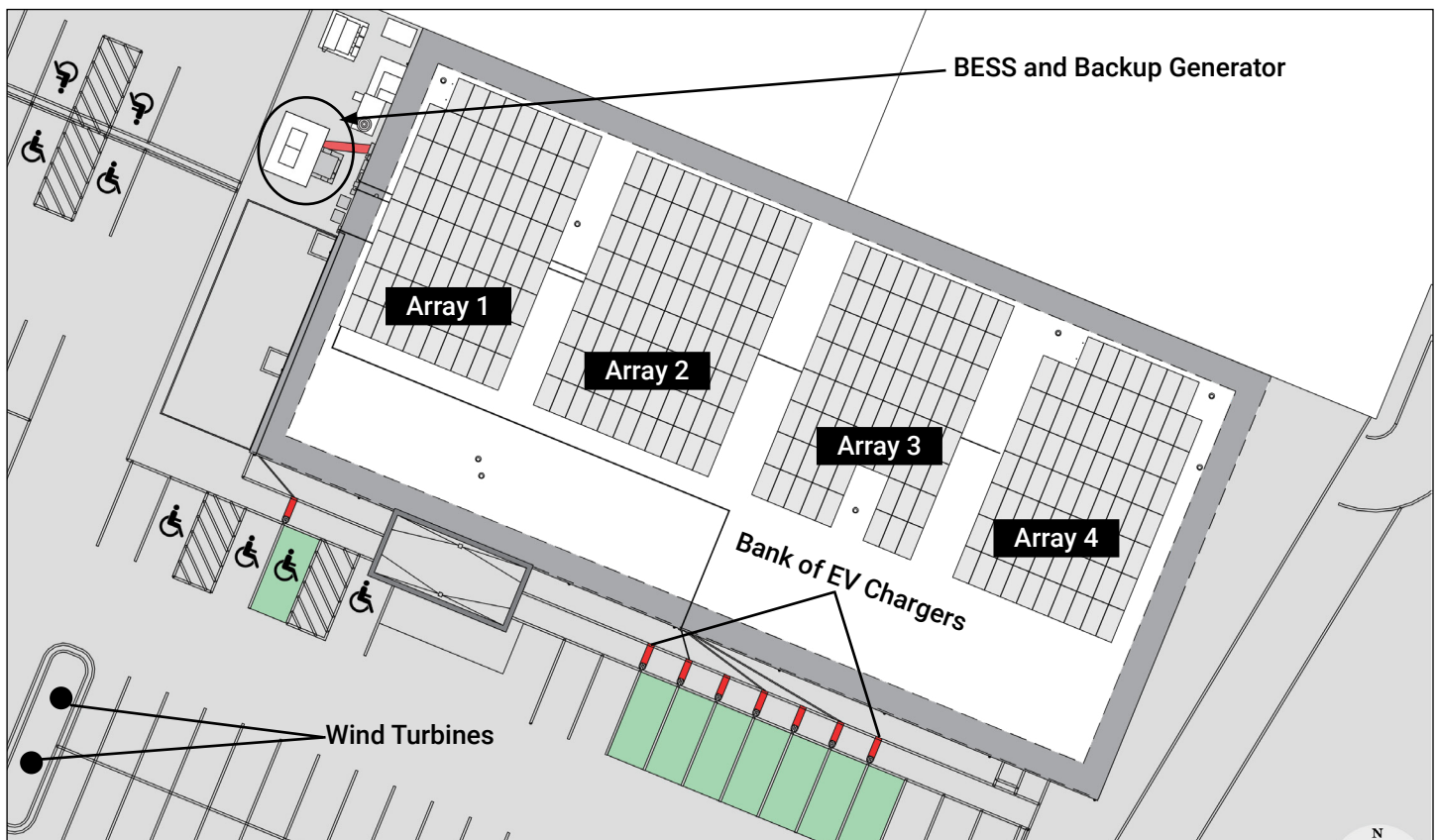
A Source of Pride

The employees at Trystar take pride in the new addition. The microgrid allows Trystar to reduce its carbon footprint, increase its energy independence and resilience, and save costs in the long term. The output of the Trystar microgrid is expected to save 185,000kWh of conventionally-generated power. It's the equivalent of greenhouse gas emissions from 146,859 pounds of burned coal or 303 barrels of oil.

The Scope of Trystar's Microgrid System

- 320 Solar Arrays (172kW Potential)
- 2 – Wind Turbines (7.0kW Potential)
- 1 – 350kW Natural Gas Backup Generator
- 1 – 232kWh Lithium Iron Phosphate BESS
- 8 – 32 Amp EV Charging Stations

In the first year of deployment, Trystar expects a 185,000kWh offset that would otherwise have to be generated by the local utility.



Solar arrays 1-4 are on the roof of the cafeteria portion of the facility and generate 172.8kW of combined potential output.



By the Numbers

To understand the significance of offsetting 185,000kWh of electricity, it helps to have some practical examples. The following was generated by the Greenhouse Gas Equivalencies Calculator, which can be found at the Environmental Protection Agency (EPA) site: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>. The Trystar microgrid is estimated to offset the equivalent of 131 metric tons of CO₂.



Generating 185,000kWh of electricity annually is equivalent to the carbon sequestered by 156 acres of U.S. forests in one year.



Generating 185,000kWh of electricity annually is equivalent to the CO₂ emissions from 6200 homes' electricity use for one day.



It's also equivalent to the CO₂ emissions associated with charging 15,948,112 smartphones.





Generating 185,000kWh of electricity annually is equivalent to CO₂ emissions from burning 146,859 pounds of coal.



And it's equivalent to CO₂ emissions from consuming 14,753 gallons of gas.



It's also equivalent to CO₂ emissions from consuming 303 barrels of oil.



Finally, generating 185,000kWh of electricity annually is equivalent to CO₂ emissions from 29 gasoline-powered passenger vehicles driven for one year.

To learn more about Trystar and the story and collaboration behind its microgrid, please contact our Chief Commercial Officer, Kevin Thayer at: Kevin.Thayer@Trystar.com | +1-507-333-3990.

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