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CMAA Construction Management Association of America

Member Communication Experience

Heartland Community College Agriculture Complex

CMAA Sustainability Project Spotlight submitted by: Michael Lundeen, Legat Architects, Project Manager/Director of Higher Education

Project Team

- **OWNER:** Heartland Community College
- **AE:** Legat Architects
- **BUILDER:** River City Construction

Project Statistics

- **USE:** Agriculture education and training
- **SIZE:** 29,500 square feet
- **CONSTRUCTION VALUE:** $23 million
- **CERTIFICATION(S):** On track to achieve net-zero certification

What is the most exciting sustainable feature of your project?

It is on track to become Illinois' first net-zero community college building.

The building is designed to produce more energy than it uses. Projections show that a nearly 20,000-square-foot solar panel array will produce 354,700 kilowatt hours (kWh) of power annually. The building is designed to only use 241,000 kWh each year.

Additionally, a ground-source heat pump (geothermal) system reduces the building's toll on mechanical systems.

What was the biggest challenge your team faced and how did you overcome it?

Net-zero projects require extensive testing, post-build paperwork, and fine tuning to ensure HVAC and other building systems function as designed. The design and construction teams worked together to learn about the nuances of net-zero design and post-construction commissioning. Legat engaged a commissioning partner at the project's onset and coordinated an intensive post-construction testing effort.

What was the most interesting sustainable feature that didn't make it into the final project?

Water collection/reuse. The project includes a large roof with a gutter system near the greenhouse. Early designs included a collection system for watering test plots or use within the greenhouse. The college and design team decided to focus on building energy use for the project and potentially add back the water collection at a later time.

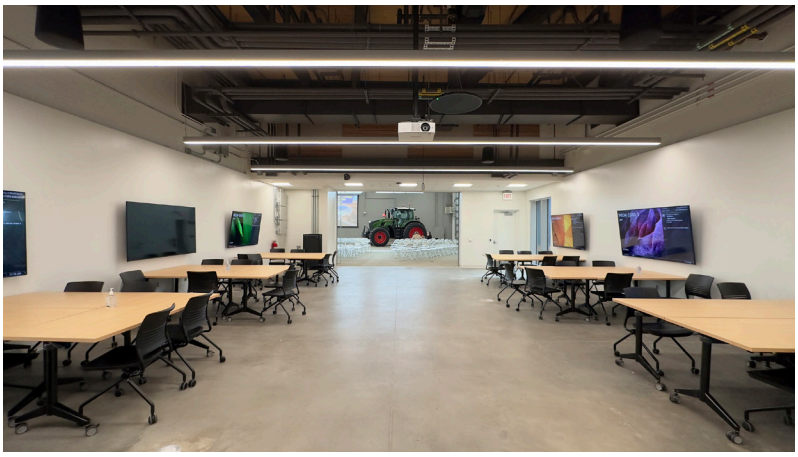
What impacts will this project have on the environment and community?

This project is seeking Net-Zero Energy certification for the project and some of the most exciting features focus on:

- Detailed building form and orientation investigation of 16 different options
- Design solution that consumes as little energy as possible
- Layout that encourages cross-disciplinary collaboration
- Community education and hands-on experience opportunities
- Super-insulated building envelope
- Energy-efficient mechanical systems
- Geothermal system
- Radiant heating and cooling floors
- Rooftop photovoltaics that produce almost 50% more energy than the building uses

Rendering of lobby including monitor with college news and facility energy usage

Roof top photovoltaics produce enough energy year round to power the building. The production greenhouses to the right allow students to study crop issues including plant growth, water, and weeds.



The Precision AG classroom allows students to collaborate on the programming and repair of drones for use in analyzing agriculture fields to increase crop production. The Flex Lab beyond will allow programmable planters to roll into the classroom for study and repair.

About the Project

CMAA has created the Sustainability Project Spotlight as a regular focus given to member projects nationwide that are building the way to a better future.

Heartland Community College Agricultural Complex – The 29,500-square-foot building integrates technology throughout, from the rooftop photovoltaic (solar) array to the accommodations for precision agriculture — helping educators prepare students for the high-tech agricultural jobs of tomorrow. The building design stems from intensive energy modeling, passive solar principles, and solar compartmentalization, while the site design highlights stormwater management and flexibility of outdoor education and reflects the college's focus on regenerative agriculture.

The CMAA Sustainability Subcommittee is actively seeking to spotlight your projects! Please email us at communications@cmaanet.org with a project name and person to contact.