

INFRASTRUCTURE INVESTMENT: MICHIGAN STATE UNIVERSITY DAIRY RESEARCH, TEACHING AND OUTREACH FACILITIES

Outdated infrastructure poses serious setbacks for key economic engine of Michigan

Michigan State University's Dairy Cattle Teaching & Research Center does not meet the current needs of the industry, the animals or the students, staff and faculty. Our ability to deliver on MSU's teaching, research and outreach missions to the Michigan dairy industry, ranked **6th in the U.S. with 11.6 billion pounds of milk produced in 2020**, is severely hampered by the age of the facilities. In addition, a recent electrical fire has shown that the 60-year-old facility is a fire hazard for staff, animals and state property.

Combined expertise at the College of Agriculture and Natural Resources, College of Veterinary Medicine, MSU AgBioResearch and MSU Extension has made MSU a world leader in dairy production expertise. However, that excellence is in jeopardy because of aging facilities in dire need of modernization.

A NEW FACILITY AND INCREASED HERD SIZE (THERE ARE NOT ENOUGH COWS TO CONDUCT CURRENTLY FUNDED PROJECTS) WILL:

- ✓ Identify feasible strategies to promote economic and environmental sustainability.
- ✓ Ensure the highest level of animal care and production with robust data-driven science.
- ✓ Enhance much-needed studies on nutrition, genetics and animal well-being.
- ✓ Create a pipeline of labor by introducing MSU students to modern, relevant dairy operations.
- ✓ Train dairy professionals for the College of Veterinary Medicine curriculum accreditation.



MICHIGAN DAIRY FACTS



supports
111,000+ jobs

\$24 billion Generated annually

IN THE LAST 20 YEARS, MICHIGAN'S DAIRY INDUSTRY HAS EXPERIENCED REMARKABLE GROWTH:



Improved milk processing with a new cheese plant, among the largest in the nation, in St. Johns.



¹ Revenue from sale of agriculture commodities and commodity insurance payments

MICHIGAN DESERVES A NEW FACILITY, DESIGNED FROM THE GROUND UP, TO BE FOCUSED ON MODERN SUSTAINABLE PRACTICES AND A SAFE AND EFFECTIVE VENUE FOR EDUCATING TOMORROW'S DAIRY INDUSTRY LEADERS.

MSU OFFERS DISTINCT ADVANTAGES:

- ✓ Land-grant mission provides critical teaching, research and outreach efforts in unison.
- ✓ World-renown faculty in dairy production, health, and environmental stewardship.
- ✓ Varying climate conditions, water availability and amenable soils throughout the state.

Building a State-of-the-Art Dairy Facility at MSU: Expand Existing Dairy Cattle Teaching & Research Center

Renovation of the existing facilities and new construction at the site, located on South Campus, are preferred by dairy faculty and University leaders due to the **physical proximity to the main campus** for research and teaching use, as well as serving as a visitor and outreach center. This also allows for the ongoing use of some **existing** infrastructure, including a high-capacity anaerobic digester -- an essential part of sustainable manure management on South Campus. The current location maximizes this investment.

A new construction and renovation will allow the current dairy herd to remain in place during construction, supporting critical teaching and research needs in the process.

A combination of new construction and renovation enables expansion of the herd from 200 to 700 cows allowing for already funded research and coursework offerings to continue, and includes the additions of:

- A modern and efficient feed center (replacing the one destroyed by the recent fire)
- New animal housing facilities
- A milking parlor for 700 cows
- Office/lab complexes
- Manure nutrient recovery facilities

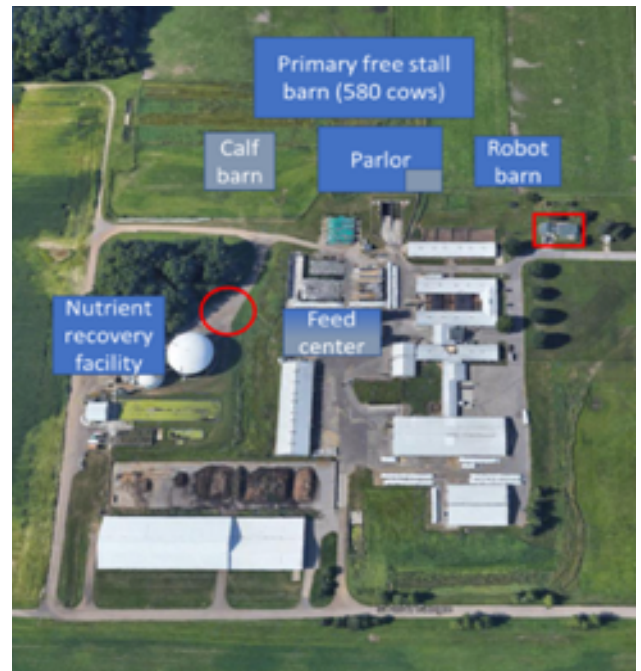
Expanded feed production capacity and nutrient management costs are necessary for this increased herd size to be feasible.

Enhance the type of research, teaching and outreach capacity on South Campus with the addition of:

- A calf management and research barn
- Partial automation of the feed center
- A larger classroom for on-farm instruction of our students and visitors to the facility
- Short-term on-site housing for research team utilization during intensive experiments

Reinvestment in the **Kellogg Biological Station dairy facility** is also proposed to allow continuation of heifer development work conducted there and facilitate complementary work on grazing dairy operations, including environmental impact comparisons between this niche production model and the new state-of-the-art MSU South Campus operation.

- A second anaerobic digester to generate additional renewable natural gas
- Cow-level methane measurement devices at both dairy sites
- Updates to the manager's residence on the South Campus site



Satellite view of the current MSU DCTRC with construction and renovation components.

WE MUST ACT NOW

MSU MUST MAINTAIN ITS STRENGTH IN CUTTING-EDGE SCIENCE AND ADDRESS IMMEDIATE NEEDS OF THE DAIRY INDUSTRY IN PIVOTAL AREAS SUCH AS GENETICS, ANIMAL HEALTH, NUTRITION AND ENVIRONMENTAL SUSTAINABILITY.

Modern facilities and infrastructure will help to increase farming efficiency and profitability. Renovation and new construction of the MSU Dairy Teaching & Research Center infrastructure will support one of Michigan's most important and dynamic industries, and one that impacts nearly every one of the state's 83 counties.

\$45.8 million is requested from the State of Michigan for completion of this project. This investment will position MSU to expand and update its critical research, outreach and teaching capacities and with new infrastructure necessary to address key challenges limiting industry growth and environmental sustainability.

2019 POINT COST ESTIMATES FOR NEW DAIRY FACILITIES (RENOVATION AND NEW CONSTRUCTION)

Infrastructure to address scale, safety, and industry standards Conventional free-stall barn, robotic milking barn, parallel parlor, feed center, and demolition.	\$8,700,000
Operational sustainability planning Expanded feed production capacity, nutrient management operations, and heifer development to grow herd.	\$9,500,000
Environmental sustainability infrastructure Manure nutrient recovery system and data collection infrastructure.	\$6,100,000
Research capacity Automated cow feeding system for freestall research, small research pens, labs, offices, sensors.	\$4,800,000
Contingency (15% of facility cost, excluding operational costs)	\$2,900,000
Milking robots and heifer facilities at KBS, calf barn, classroom, and visitor center at South Campus.	\$5,700,000
Second anaerobic digester, methane measurement system, updated manager housing.	\$8,100,000
Grand Total	\$45,800,000

Updated February 28, 2022