

**FISCAL YEAR 2023
CAPITAL OUTLAY PROJECT REQUEST**

Institution Name: **CENTRAL MICHIGAN UNIVERSITY**

Project Title: **BROOKS HALL RENOVATION**

Project Focus: Academic Research Administrative/Support

Type of Project: Renovation Addition New Construction

Program Focus of Occupants: **The renovation of Brooks Hall will provide modern spaces that foster greater collaboration among students, faculty, staff and community partners as well as enhance (1) support for students and high-demand academic programs in the sciences, (2) safety and energy efficiency of the building, and (3) research facilities for health and medical research.**

Approximate Square Footage: **128,000**

Total Estimated Cost: **\$29,800,000**

Estimated Start/Completion Dates: **Initial program planning has commenced to ensure an accurate capital outlay submittal. Design will commence upon approval with construction to follow. Estimated completion in 2025.**

Is the Five-Year Plan posted on the institution's public internet site? Yes No

Is the requested project the top priority in the Five-Year Capital Outlay Plan? Yes No

Is the requested project focused on a single, stand-alone facility? Yes No

Please provide detailed, yet appropriately concise responses to the following questions that will enhance our understanding of the requested project:

Describe the project purpose.

The proposed project will convert an outdated building into a modern, safe, energy-efficient facility that supports effective teaching, learning, and research in high-demand fields of science and engineering.

Brooks Hall was constructed in 1964, and its outdated design does not meet today's requirements for teaching, learning, research or laboratory safety in the sciences. Nor does it meet modern standards for energy efficiency. The proposed renovation of Brooks Hall will improve safety for building users, enhance energy efficiency, increase the amount of high-quality research space and provide a centralized location for the College of Science and Engineering's Student Success Center.

The project will include heating, ventilation and air conditioning (HVAC) improvements, as well as modernization to enhance air quality and energy efficiency. These changes in air handling and exhaust will significantly improve safety for students, faculty and staff working in the laboratories.

CMU completed a space utilization in 2021, which demonstrated that laboratory space for the sciences is insufficient. The Brooks Hall renovation will address this requirement, including the need for underclassmen, as it houses the biology courses taken by freshmen studying sciences and students taking science courses as part of their general education requirements, as well as for students pursuing degrees in science and/or health professions. An updated Brooks Hall will be better equipped to engage and foster the science majors and health professionals of tomorrow.

When renovated, Brooks Hall will house:

- Academic programs in astronomy, environmental engineering, environmental science, fermentation science, geology, meteorology and neuroscience, as well as biology courses taken by students pursuing degrees in science and health professions as well as students completing general education requirements.
- Modernized instructional classrooms, instructional laboratories, research laboratories and support spaces including a new vivarium with bioexclusion zones to advance important research in biochemistry, neuroscience, health and medicine, support interdisciplinary programs, grants and contract work.
- A centralized Science and Engineering Student Success Center that will offer services including academic advising, tutoring, success coaching and career services.
- Space for the Office of Laboratory and Field Safety, including a dedicated area for safe handling of chemical wastes.

Describe the scope of the project.

Spaces that will be updated and enhanced by the renovation include instructional classrooms, instructional laboratories, research laboratories, administrative support space for several academic and research programs, and facilities that will enhance laboratory safety including chemical waste handling. Concurrently, the HVAC system will be enhanced to improve safety and energy efficiency of the building. The renovation will create new, dedicated functional spaces for a vivarium and the Science and Engineering Student Success Center. Infrastructure upgrades implemented as part of this project will include:

- An independent mechanical, electrical and plumbing system for the vivarium incorporating variable air volume (VAV) boxes with reheat and a heat reclaim system to optimize energy use.
- A controls upgrade resulting in improved operations, occupant comfort, the ability to schedule spaces and improved energy control.
- Upgraded lighting controls throughout the facility, including areas such as classrooms and offices. In addition, new lighting controls for common spaces such as hallways.
- The addition of LED lighting in key locations throughout the building.
- Window replacement including high-performance glass to enhance energy efficiency.
- Replacement of exterior doors.
- Installation of a backup generator.

This new infrastructure combined with CMU's historical investment in Brooks Hall will result in a building with high quality environmental comfort and an updated HVAC system. CMU's historical investment in infrastructure that provides a foundation for these outcomes include:

- Roof Replacements 2010 to 2017 resulting in all major roof sections maintained under warranty.
- Observatory Dome Replacement in 2013.
- Classroom modernization and several targeted building improvements.
- Installation of a De-Ionizing Water System in 2011.

This project will renovate 128,000 square feet at an estimated cost of \$29.8 million. Initial program planning has commenced to ensure an accurate capital outlay submittal. Design will commence upon approval with construction to follow. The construction schedule will require close coordination with the College and the Provost's office to ensure instructional laboratory availability does not impact student demand. CMU estimates completion in 2025.

1. How does the project enhance Michigan’s job creation, talent enhancement and economic growth initiatives on a local, regional and/or statewide basis?

Science was cited as a primary area of interest by 37 percent of the CMU new freshman class, and most of those students will take classes in Brooks Hall. The renovated spaces will keep students excited and engaged with science, increasing retention and enrollment in science, technology, and engineering programs. The improved research facilities will allow more students to participate in hands-on research, which provides rich experiential learning and helps students develop skills for success in scientific and technical careers.

Many careers on [Michigan’s Hot 50 jobs](#) list from the Bureau of Labor Market Information and Strategic Initiatives are related to health care. CMU science programs are popular among students choosing to pursue “Hot 50” jobs such as:

- Physician Assistants, with 18 percent anticipated growth in Michigan jobs (through 2028);
- Occupational Therapists, with 7.9 percent growth;
- Physical Therapists, with 7 percent growth;
- Registered Nurses, with 9.8 percent growth;
- Nurse Practitioners, with 16.1 percent growth;
- Speech-Language Pathologists, with 18 percent growth; and
- Health Specialties post-secondary Teachers, with 17.6 percent growth.

Undergraduate major programs in biology and biomedical sciences are in high demand among students who plan to pursue careers in medicine and other health professions, and these students will all benefit from the proposed renovations. Other programs housed in Brooks Hall include astronomy, environmental engineering, environmental science, geology, meteorology and fermentation science. The meteorology major is the only such undergraduate program in Michigan.

The recent addition of an environmental engineering program will benefit greatly from this project. The program will produce graduates with in-demand skills, especially in the area of water quality and management. Demand for entry-level environmental engineers has grown in recent years by 51 percent in Michigan, with more job openings than graduates. In addition, this program is expected to significantly increase the participation of women in engineering, a point of emphasis for the College of Science and Engineering.

A renovated Brooks Hall also will be home to the College of Science and Engineering’s Student Success Center. This center will be a high-profile space dedicated to undergraduate student success and achievement. Services provided include academic advising, career services, internship placements and tutoring. Time spent with advisors is proven to increase retention and persistence, and gives students a focused plan for timely degree completion.

Additionally, new collaborative workspace for students will be included in the project. Research clearly shows that engaged students are more likely to succeed in their studies. This modernized and upgraded space will maximize student engagement with faculty and peers, expand active teaching and learning, and promote collaborative work. This activity is essential to preparing students for the professional world, while increasing performance outcomes such as retention and graduation.

CMU prides itself on serving the students, parents and taxpayers of the state of Michigan. Nearly 90 percent of on-campus CMU students come from Michigan, sharing a natural and deep interest in serving the state’s communities and residents. In fact, about 70 percent of CMU alumni — more than

145,000 — choose to live and work in the state, in turn improving lives, the economy and communities.

CMU has a robust Career Development Center that has built extensive relationships with employers across the state and supports the employment efforts of recent graduates as well as alumni. Employers post more than 40,000 jobs a year through the university's Career Development Center.

2. How does the project enhance the core academic and/or research mission of CMU?

This project request focuses on enhancing the core academic and research missions of CMU.

Academic Programs: The Brooks Hall renovation will provide a modern facility for students in many fields of science. The enhanced and modernized classrooms and laboratories will foster innovative teaching and learning in environmental engineering, environmental science, meteorology, astronomy, geology, fermentation science, and neuroscience, in addition to biology.

Student Success: The renovation includes creation of a dedicated location for the College of Science and Engineering Student Success Center that will house academic advisors as well as space for tutoring and career services. In addition, spaces for students to study and collaborate will be incorporated throughout the building to enhance its academic character and appeal to students. These features will help with recruiting students to STEM disciplines at CMU.

Research: The renovation will enhance research laboratories in environmental science and engineering. Importantly, it also includes a bioexclusion zone vivarium to support critical research in neuroscience and biomedical sciences. This type of vivarium provides greater efficiency in research and mitigates the possibility of exposing animals to other contaminants during research studies. Research performed in current facilities is limited because CMU does not have such a vivarium. These enhancements will increase opportunities for student research as well. Unlike many research universities, CMU is committed to providing opportunities for undergraduate students to engage in original research with faculty mentors. In the last three years, more than 600 science and engineering undergraduate students participated in faculty-led research projects and nearly 100 of those students were co-authors on published scientific papers.

The proposed facility will foster greater collaboration among faculty, staff, students, and community partners. Early interdisciplinary research in the classroom often burgeons into student opportunities serving around the state, partnering in field work with the Great Lakes Restoration Initiative to advance important research on the health of plants, animals, and water quality in approximately 1,000 Great Lakes coastal wetlands. Hundreds of government and environmental groups in the United States and Canada have requested data from the wetlands monitoring program. Students, through a strong academic foundation built with faculty and peers in the courses and labs in Brooks Hall, can build advanced experiences and will go on to be the next generation of scientists, engineers, and health professionals. The ability to offer students these types of experiences is in fulfillment of CMU's mission of fostering personal and intellectual growth to prepare students for productive careers, meaningful lives, and responsible citizenship in a global society.

3. How does the project support investment in or adaptive re-purposing of existing facilities and infrastructure?

This project will revitalize a structurally sound 57-year-old building completing the modernization of its infrastructure and support systems. This renovation will improve the environmental quality of the building and increase the energy efficiency of systems. The renovation will enhance laboratory safety, including chemical waste handling.

10/28/2021

The overall goal is to enhance the space to meet the needs of students and researchers today and in the future. The skills students attain in Brooks Hall are the foundation of their academic knowledge in the fields of science. Their time spent in Brooks plays a critical role in helping them grow personally and intellectually as they decide on a career path, often in science, medicine and other health professions.

The renovation will far better utilize the existing space. Master planning efforts identified efficiencies to be gained in this building, while also allowing for better laboratory space with cutting-edge technology critical for scientific research, as well as support space for students, researchers and academic programs. This renovated facility also will allow for a centralized bioexclusion zone vivarium for research in medicine and neuroscience.

4. Does the project address or mitigate any current health/safety deficiencies relative to existing facilities? If yes, please explain.

Yes. The current building was constructed in 1964 and the laboratory space was built to meet standards in place at that time. The design process will eliminate inefficiencies in the building's mechanical systems and implement optimal improvements. The new space will meet increasingly stringent regulations, including those for expanded ADA compliance. Infrastructure upgrades will include all necessary environmental work.

Brooks Hall requires additional space to more safely process chemical and hazardous waste for disposal. Such activity is currently carried out in the chemistry stockroom, which has a very small hood and limited bench space. A suitable dedicated room for waste processing will move this activity away from the current preparation/storage areas and foot traffic.

5. How does the institution measure utilization of its existing facilities, and how does it compare relative to established benchmarks for educational facilities? How does the project help to improve the utilization of existing space and infrastructure, or conversely how does current utilization support the need for additional space and infrastructure?

In 2021, CMU completed an exhaustive campus master planning process. A major part of this process was the completion of a space utilization study. The study utilized national standards as prescribed by the Postsecondary Education Facilities Inventory and Classification Manual as well as the Space Utilization Guidelines of the State of Michigan Major Project Design Manual. These standards place an emphasis on safety and share best practices related to facilities. The analysis found that CMU is operating at capacity in many buildings, including in Brooks Hall. Instructional laboratories in Brooks Hall host more courses and students than any other labs on campus.

The planned renovation will convert poor-quality and outdated laboratories into modern research space with cutting-edge technology. This renovation will allow for high-level research that requires additional hood space and air handling, and will create flexibility in scheduling laboratory space across campus. These improvements serve to broaden the opportunities available to undergraduate students for hands-on research and learning opportunities, a common benefit that students cite in the reasons they have chosen to attend CMU.

CMU's Academic Planning and Analysis (AP&A) department analyzes usage of space across campus as well. This information is critical in planning course sections and locations as well as the overall utilization of space. In a recent pre-pandemic study, AP&A found that laboratories in Brooks Hall hosted 146 course sections (many of which meet numerous times per week) and 2,183 unique students in the 2018-2019 academic year, the most of any laboratory spaces on campus. The teaching laboratories in Brooks Hall are heavily utilized throughout the week and it is important to note that

this laboratory space is necessary for the delivery of our programs. The renovation will improve the utility of these facilities by allowing a wider variety of experiments and observations to be conducted safely by science and engineering students.

6. How does the institution intend to integrate sustainable design principles to enhance the efficiency and operations of the facility?

The project will be built utilizing design standards that incorporate sustainable technology and practices ensuring that proven energy and environmental improvements will be implemented across all aspects of the design and construction of this project.

Primary components of sustainable design for the Brooks Hall project include:

- Energy recovery will be implemented resulting in significant energy savings over the existing hoods, which currently operate on individualized fans with 100 percent outside air.
- A control upgrade resulting in improved operations, occupant comfort, the ability to schedule spaces and improved energy control.
- Upgraded lighting controls throughout the facility, including areas such as classrooms and offices. In addition, new lighting controls for common spaces such as hallways.
- The addition of LED lighting in key locations throughout the building.
- Installation of high-performance glass on external windows. The current windows are single pane glass.
- Enhanced commissioning is a standard practice for CMU.
- Sustainable design principles will be used in the design and construction of the project. The project will be reported and measured using the LEED Green Building Rating System, in accordance with the DTMB Capital Outlay Design Manual.

7. Are match resources currently available for the project? If yes, what is the source of the match resources? If no, identify the intended source and the estimated timeline for securing said resources?

Yes, CMU plans to use currently available university construction reserves for this project. CMU is also working to secure additional private/foundation gifts and industry partners to offset the construction costs of the renovation, which is one of the university's master plan priorities. CMU is committed to this project and looks forward to working with the state to provide our students with modernized facilities to enhance their opportunities for success in high demand fields of science and engineering, while also fulfilling employer needs across the state.

8. If authorized for construction, the state typically provides a maximum of 75 percent of the total cost for university projects and 50 percent of the total cost for community college projects. Does the institution intend to commit additional resources that would reduce the state share from the amounts indicated? If so, by what amount?

CMU intends to fund the project at the required 25 percent match, with the maximum 75 percent requested from the state. CMU is committed to making additional investments in adjacent spaces not currently included in the project scope.

9. Will the completed project increase operating costs to the institution? If yes, please provide an estimated cost (annually, and over a five-year period) and indicate whether the institution has identified available funds to support the additional cost.

No, the project goal is that CMU will be able to lower operating costs for the building through sustainable design, LEED practices, and good engineering principles such as energy recovery and control improvements.

10. What impact, if any, will the project have on tuition costs?

This project will not impact tuition rates. CMU maintains its commitment to low annual tuition increases. Our average undergraduate tuition rate is the lowest among Carnegie classified research intensive public universities in the state of Michigan.

11. If this project is not authorized, what are the impacts to the institution and its students?

This project is essential to the continued success of CMU students, faculty and staff who utilize the facility. The current, outdated spaces of this facility are heavily utilized, but faculty and student research is limited by the capabilities of the current facility. This project is critically important to enhance the space to meet the needs of students today and in the future. Without this renovation, research and laboratory space (including vivarium space) will continue to be limited, minimizing student and faculty research.

To continue to be competitive in the higher education marketplace, Central must continue to evolve its facilities to attract students and provide them high-level educational opportunities. These students are looking for not only state-of-the-art facilities and technology, but also research opportunities they can't find elsewhere.

As CMU's president, Bob Davies, says, "macro issues of the increasingly rapid advancement in technology, communication, sciences — in particular biomedicine, globalization and issues of sustainability (climate, economic and cultural) — are impacting higher education in intense and important ways." To this point, in order to respond to these advancements, Central must be innovative in not only its programming but also its facilities.

12. What alternatives to this project were considered? Why is the requested project preferable to those alternatives?

CMU's Board of Trustees approved a 10-year campus master plan and capital projects list following an extensive, campus wide review of options and alternatives. The 10-year list was developed by a cross-campus team of faculty and staff based on input from thousands of on-campus and community stakeholders.

The Brooks Hall renovation is a top priority on that list, based on safety needs, student demand, laboratory usage, scholarly research opportunities and state needs. Thirty-seven percent of CMU new freshmen cite science as a primary area of interest. This project was chosen due to student demand and the extensive need to update the facility to meet the learning space requirements of students today and in the future.

Several other projects were considered including the renovation of Pearce Hall, which opened in 1967. Pearce Hall serves many students in their first two years of coursework and is the home of programs such as mathematics, computer science, and world languages and cultures. While both facilities need substantial renovations, Brooks Hall was chosen due to high demand in the sciences, significant research opportunities that are limited by the availability and quality of laboratory space, and the job demands of employers. As such, this proposed capital outlay project will further Central's and Michigan's leadership in the sciences.