2016 Five-Year Capital Outlay Plan
Michigan Technological University

Attachment B

Institution Name: MICHIGAN TECHNOLOGICAL UNIVERSITY

Project Title: HEALTH SCIENCES AND MEDICAL ENGINEERING BUILDING

Project Focus: X Academic       X Research       Administrative/Support
Type of Project: X Renovation       Addition       X New Construction

Program Focus of Occupants: Health-Related Science and Engineering/Teaching and Research

Approximate Square Footage: 125,000
Total Estimated Costs: $52,000,000
Estimated Start/Completion Dates: 2016/2018

Is the Five-Year Plan posted on the institution’s public internet site? X Yes  No
Is the requested project the top priority in the Five-Year Capital Outlay Plan? X Yes  No
Is the requested project focused on a single, stand-alone facility?  X Yes  No

Describe the project purpose.

The project’s purpose is to strategically support Michigan Tech’s investment in human health research. This building will bring together key faculty primarily from Biomedical Engineering, Kinesiology and Integrated Physiology, Chemistry, and other appropriate disciplines. Laboratories will be integrated where students at all levels can work together in a research-intensive environment in a safe facility constructed to modern standards. This will enable University health-related researchers and educators to work together in a synergistic engineering and science environment to train future practitioners and to develop the future of health treatments, practices, and devices.

Describe the scope of the project.

The proposed project will accommodate health-related science and engineering activities. It involves construction of a new facility with approximately 100,000 square-foot of new space and renovation of approximately 25,000 square-foot at an estimated total cost of $52,000,000.

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

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

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The Michigan STEM Partnership challenged employers across the state to do just one thing to promote understanding of the many career opportunities in STEM fields and the education required by those jobs. Michigan Technological University, a member of the STEM Partnership, is meeting that challenge. With this project Michigan Tech brings together research and education efforts at the STEM nexus to advance human health. While there are several other new medical schools, much of our proposed research and education efforts are intrinsic to engineering and science to support medical and clinical research. An example of the collaboration between clinical and research expertise – and supported by the U.P. Healthcare Network – is the Doctor of Physical Therapy Program, a collaborative effort between Michigan Tech and Central Michigan University.

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

Our core academic and research efforts are already strongly supported by DOD, DOE, NSF as well as by many corporations. This project will allow us to expand our efforts and take better advantage of key areas supported by NIH.

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

As part of the project, our chemical sciences laboratory spaces will see significant improvements in utilities and energy efficiency. The spaces currently occupied by Biomedical Engineering and Kinesiology and Integrative Physiology will be re-purposed for its original uses in Material Science and Engineering and the Student Development Complex

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

Many rooms were retrofitted into laboratories by adding a ventilation system and fume hoods, water and gas lines, and electric power systems. But the additions of the early 1980s have aged, gas and water lines have become fragile and air moving is now not quite satisfactory. The project will mitigate these concerns.

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?

The university uses the ASPIRE program (Accounting for Space, People, Indexes, Research and Equipment) to measure utilization of current space. As mentioned earlier, due to the age of some buildings, research and hands on experiential opportunities are negatively impacted in comparison to benchmarks. This project will provide for updated research and lab space to address this concern, specifically targeting the high needs areas.

6. How does the institution intend to integrate sustainable design principles to enhance the efficiency and operation of the facility?
Michigan Tech is dedicated to sustainable building design and construction. Therefore we will plan for a LEED silver or better rating for this new facility. We will also investigate in the planning phase how the new facility could be self-contained with an independent microgrid with electricity, fuel, water, and air flow inputs as well as heat, wastewater, and waste airflow outputs that produce more energy for the campus than the building itself consumes (net-positive exergy design).

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?

There will be a dedicated fundraising efforts to raise the match. The difference to funds raised and funds necessary for the match will be raised through bonds.

8. If authorized for construction, the state typically provides a maximum of 75% of the total cost for university projects and 50% 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?

No.

9. Will the completed project increase the 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 costs.

Operating costs will increase, primarily due to the new construction. Anticipated costs, including utility projections, custodial, and maintenance are $420,000 annually, and $2,275,000 over a five year period, if the estimated annual costs are adjusted for inflation. Over half of the anticipated annual costs are attributed to utility projections. For funds to support the additional costs see 10.

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

The additional costs for the new building will be covered through indirect cost return from additional research grants and through increased enrollment in the health science and biomedical engineering fields.

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

It will be difficult to deal with the enrollment increases in the health science and biomedical engineering fields and strive to meet our strategic goals for enrollment. We will also be less able to take advantage of funding opportunities in these important and growing fields.

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

There are no good alternatives to this project. The current spaces allocated to the programs in health sciences and biomedical engineering are reaching their capacity. They become inadequate to meet the growth in these areas.