

SOUTH DAKOTA BOARD OF REGENTS

Budget and Finance

AGENDA ITEM: 7 – L
DATE: March 29-30, 2023

SUBJECT

SDSU McFadden Biostress Revised Preliminary Facility Statement (PFS)

CONTROLLING STATUTE, RULE, OR POLICY

[SDCL § 5-14-1](#) – Classification of Capital Improvements

[SDCL § 5-14-2](#) – Supervision by Bureau of Administration of Capital Improvement
Projects – Payment of Appropriated Funds

[SDCL § 5-14-3](#) – Preparation of Plans and Specifications for Capital Improvements –
State Building Committees – Approval by Board or Commission in Charge of
Institution

[BOR Policy 6:4](#) – Capital Improvements

[BOR Policy 6:6](#) – Maintenance and Repair

BACKGROUND / DISCUSSION

South Dakota State University requests approval of its revised Preliminary Facility Statement (PFS) to plan a multiphase maintenance and repair project for upgrades to the lab exhaust systems of the McFadden Biostress building on campus. The original PFS was approved by the Board of Regents on December 12, 2019. At that time, the project was anticipated to cost \$5,500,000 and would be funded by HEFF.

During the 2023 legislative session, an additional \$18,148,600 in general fund maintenance and repair dollars were allocated to the Board of Regents in the FY23 general bill amendment to address the top deferred maintenance priority for each campus. SDSU identified this project as their highest priority with an estimated cost of \$12,000,000. The revised PFS includes an expanded scope and a match of \$6,000,000 in general fund maintenance and repair with \$6,000,000 of HEFF and Other Funds.

As one of the largest facilities on campus, the McFadden Biostress buildings is also one of SDSU’s largest consumers of energy. The current lab spaces have constant volume exhaust fans for each lab space and fume hood, with no energy recovery system currently in place.

(Continued)

DRAFT MOTION 20230329_7-L:

I move to approve SDSU’s Revised Preliminary Facility Statement for the upgrade and renovation of the lab exhaust systems in the McFadden Biostress building at an estimated cost of \$12,000,000 to be funded by supplemental general funds and a match of HEFF and Other Funds.

The proposed upgrades to the building's exhaust system will provide significant energy savings and operational improvements.

The basis of this project is to address M&R needs and upgrade the system to perform more efficiently and effectively like a modern lab system. This requires the replacement of the lab controls and exhaust system along with the addition of a heat recovery system. The building is 31 years old so the original equipment serving it is at the end of its useful life. There are two air handling units from the original phase of construction that serve lab spaces with these individual exhaust fans. The project will consolidate these into a single lab exhaust system for each air handling unit that will include energy recovery that will transfer energy from the exhausted air into the incoming outside air supplied to the space.

Incorporating an energy recovery system into a 100% outside air lab ventilation system typically results in space conditioning energy savings of 35-45%. In addition to energy savings, upgrades to the exhaust system would include remote monitoring and control, so maintenance personnel will be able to diagnose issues with the lab exhaust systems. The project will include new air valves with better controls, providing a more comfortable and safer environment for occupants. The upgraded monitoring and control systems will provide feedback to maintenance personnel to ensure adequate exhaust and fresh air is being supplied to occupied spaces in the building. The project will also replace the failing ductwork that is part of the laboratory exhaust system.

The roof, which is original to the building, will also need to be replaced as part of this project.

IMPACT AND RECOMMENDATIONS

In addition to the reducing energy consumption on campus, faculty and students will have a modern and consistent indoor environment to support their teaching, learning, and research needs.

ATTACHMENTS

Attachment I – SDSU McFadden Biostress Revised Preliminary Facility Statement

REVISED PRELIMINARY FACILITY STATEMENT
FOR
MCFADDEN BIOSTRESS LAB EXHAUST UPGRADES
SOUTH DAKOTA STATE UNIVERSITY

March 13, 2023

The original Preliminary Facility Statement (approved in December of 2019) included the request for an appointment of a building committee as this multiphase maintenance and repair project for upgrades to the lab exhaust systems at McFadden Biostress was expected to exceed \$5,500,000. SDSU also requested, and was granted, approval for the continuation of West Plains Engineering (WPE) design services through the remainder of the project. WPE was selected through a competitive selection process under statutory requirements and have completed conceptual design services. SDSU requests this project be exempted from the remainder of the Capital Improvement approval process. The project will be competitively bid following the State of South Dakota procurement laws.

- A. GENERAL PROGRAMMATIC NEEDS TO BE ADDRESSED: McFadden Biostress is one of SDSU's largest consumers of energy as it is one of the largest facilities on campus and includes a significant amount of lab space. The current lab spaces have constant volume, individual exhaust fans for each lab space and fume hood, with no energy recovery system. The combination of these creates an opportunity for significant energy savings and operational improvements through an exhaust upgrade project.

The basis of this project is to address M&R needs and upgrade the system to perform more efficiently and effectively like a modern lab system. This requires the replacement of the lab controls and exhaust system along with the addition of heat recovery. The building is 30 years old so the original equipment serving it is at the end of its useful life. There are two air handling units from the original phase of construction that serve lab spaces with these individual exhaust fans. The project will consolidate these into a single lab exhaust system for each air handling unit that will include energy recovery that will transfer energy from the exhausted air into the incoming outside air supplied to the space. Incorporating an energy recovery system into a 100% outside air lab ventilation system typically results in space conditioning energy savings of 35-45%. This will result in significant energy savings for the building and in turn the entire campus. The existing systems also do not have any remote monitoring or control, so maintenance personnel are not able to easily and quickly diagnose issues with the lab systems. This project will also replace the lab air

valves which control the airflow in and out of the space. New valves will have better controls, providing a more comfortable and safer environment for occupants. An upgraded, modern system will have direct communication with the building automation system, allowing maintenance personnel to monitor and control these spaces remotely to ensure temperatures and ventilation rates are being maintained.

A third air handling unit currently serves the office and classroom spaces in the building. This unit has a large ventilation load with no energy recovery so an energy recovery system will be explored for this unit as well. Though not as great as a lab ventilation system, there is potential for significant energy savings with this unit as well. The variable air volume boxes and controls of this system were upgraded during a previous phase so the needs in this area have been met.

The roof is original to the building and needs to be replaced, the removal of approximately 70 roof mounted fans and modifying those roof penetrations will require significant roofing work so full roof replacement is recommended.

B. ANALYSIS OF THE STUDENT BODY OR CONSTITUENTS TO BE SERVED:

Faculty and students will have more consistent indoor environments to support their teaching, learning, and research needs. They will also experience improved service from maintenance personnel due to the upgraded controls.

C. ADDITIONAL SERVICES TO BE OFFERED:

Various other control-type upgrades will be implemented where feasible with this project as well. Replacing pneumatic controls with electronic controls and incorporating modern energy-saving control sequences will all be explored with this project.

D. COMPLIANCE WITH CAMPUS MASTER PLAN:

The lab exhaust upgrades project at McFadden Biostress aligns with the campus master plan by reducing campus energy consumption and in turn lowering the average energy consumption per square foot across campus.

E. ANALYSIS OF NEEDS ASSESSMENT BASED ON THE FACILITIES UTILIZATION REPORT:

Facilities Utilization Report is not applicable to a lab exhaust upgrade project.

F. LOCATION:

The lab exhaust upgrades are located within the existing McFadden Biostress facility on the SDSU campus.

G. REALLOCATION OF OLD SPACE, IF ANY:

No reallocation of space will occur during this project.

H. PROPOSED FUNDING SOURCE/SOURCES:

As this is a maintenance and repair project for an academic facility, the project would be funded from a combination of FY23 Supplemental General Funds and Higher Education Facility Funds. Total cost estimates are anticipated to be nearly \$12,000,000. The University is submitting the project as a capital improvement per requirements of BOR Policy 6.4. The scope and priorities noted above will be matched to the funding. The University requests the West Plains Engineering be retained for full design services.

I. BUDGET FOR DEVELOPMENT OF A FACILITY PROGRAM PLAN:

West Plains Engineering, an engineering firm which specializes in lab exhaust systems, has been selected to develop the schematic design for the project. The estimated cost for schematic design and design development services for this project is approximately \$200,000. The funding source for these services provided to date and future services is HEFF #3H1903.

End of Preliminary Facility Statement