

SOUTH DAKOTA BOARD OF REGENTS

Budget and Finance

AGENDA ITEM: 7 – G

DATE: May 8-10, 2018

SUBJECT

SDSU Chiller Upgrade and Cooling Services Preliminary Facility Statement

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

SDSU is submitting its Preliminary Facility Statement related to upgrading the Chiller Plant. The intent of this project is to combine three related maintenance and repair projects for efficiency and maximum productivity. The first project will increase capacity and redundancy in the central chiller plant by adding a fifth 525 nominal ton chiller, estimated at \$1,400,000. The second project will extend the chilled water system to the Intramural Building, estimated at \$540,000. The third project will extend the chilled water system to Wagner Hall and Bailey Rotunda, estimated at \$595,000. Combining the projects will simplify the construction and should reduce design and project management costs.

The fund sources for the project include \$1.4M from rental income from the Auxiliary Housing System. This fund source is being tapped because the chiller plant is currently supporting significant load for residential facilities but they have not contributed to the chiller plant capacity in the past, per SDSU. Currently, Residential Life has nine (9) buildings connected to the chiller plant. Those nine (9) buildings account for 31.6% of the current load. If Residential Life provides the 5th chiller, they will be providing 20% of the total plant capacity but consuming 30% of total plant capacity. There are currently four

(Continued)

DRAFT MOTION 20180508_7-G:

I move to approve SDSU’s Preliminary Facility Statement for the additional high capacity chiller and extensions to reach the intramural buildings, Wagner Hall, and the Bailey Rotunda at an estimated cost of \$2,535,000 to be funded by rent revenues and 2018 and 2019 HEFF M&R. Further, I move that this M&R project be exempted from the capital improvement process requirements.

(4) residence halls without air conditioning in the southeast corner of campus – Binnewies, Young, Mathews and Pierson Halls. Cooling all of those will add approximately 800 tons of new load to the chiller plant.

Total Load as of November 2017 Central Chiller Plant	
Avera North	629
Avera South	656
Central Chiller Plant	35
Dairy Micro	159
Ag Hall	210
South Dakota Art Museum	44
Morrill Hall	356
Old Horticulture	19
Architectural Math & Engineering	140
Thorne, Abbott, Spencer	174
Honors, Shultz, Hyde	404
Ben Rifel	190.5
Brown Hall	200
Larson Commons	70
Total	3286.5
Total Res Life Load above	1038.5
Percentage of Res Life Life Load of Total	31.599%

Additional details of the Preliminary Facility Statement can be reviewed in Attachment I.

IMPACT AND RECOMMENDATIONS

SDSU requests approval of this Preliminary Facility Statement and budget for the project development. SDSU also requests that this project be exempted from further steps in the capital improvement process due to the maintenance and repair nature of the project. This would eliminate the need for a building committee and instead the project would be handled by the Office of the State Engineer (OSE).

The project will be funded with \$1,400,000 from rent revenues from the auxiliary system and \$1,135,000 from HEFF maintenance and repair fees.

ATTACHMENTS

Attachment I – SDSU Chiller Upgrade and Cooling Services PFS

**PRELIMINARY FACILITY STATEMENT
FOR
INSTALL FIFTH CHILLER IN CENTRAL CHILLER PLANT, CONNECT
WAGNER & ROTUNDA TO CHILLER PLANT EXTEND MAIN TO THE
INTRMURAL BUILDING
SOUTH DAKOTA STATE UNIVERSITY
PREPARED: APRIL 12, 2018
BY SDSU FACILITIES AND SERVICES
SDSU WO#18-110421, 18-104834, 18-110546**

South Dakota State University (SDSU) requests approval of this Preliminary Facility Statement and budget for the project development. We also request that this project be exempted from further steps in the capital improvement process.

1. GENERAL PROGRAMMATIC NEEDS TO BE ADDRESSED:

The intent of this project is to combine three related maintenance and repair projects for efficiency and maximum productivity. The first project will increase capacity and redundancy in the central chiller plant by adding a fifth 525 nominal ton chiller, estimated at \$1,400,000. The second project will extend the chilled water system to the Intramural Building, estimated at \$540,000. The third project will extend the chilled water system to Wagner Hall and Bailey Rotunda, estimated at \$595,000. Combining the projects will simplify the construction and should reduce design and project management costs. The chiller currently serving Wagner and Rotunda is original to the building and will be removed along with the cooling tower and associated pumps and equipment. New energy efficient pumps and equipment will be installed in Wagner and Rotunda to deliver the chilled water to the existing air handlers in the buildings from the central chiller plant. The new chiller will provide cooling for these buildings and also have capacity to connect other buildings in the future. The new chiller will provide capacity to meet future cooling demand. This will increase the reliability of the cooling for these buildings, eliminate maintenance on older equipment and provide additional cooling capacity for the campus.

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

This project will provide reliable efficient cooling for classroom buildings serving a large portion of the student body. Intramural, Wagner, and Bailey Rotunda are buildings that house classrooms utilized by many departments across campus. The added capacity in the chiller plant will also be available to cool existing residence halls as the heating and cooling systems in those halls are renovated. Connecting residence halls to the central chiller plant will replace several hundred window air conditioners, improving overall efficiency and campus aesthetics.

3. ADDITIONAL SERVICES TO BE OFFERED:

This project will provide capacity in the main lines for future renovations on residence halls. Residence halls can connect to the chilled water system and get more efficient cooling from the central chiller plant.

4. COMPLIANCE WITH CAMPUS MASTER PLAN:

This project fully complies with campus master plan. It addresses the need to replace aging cooling equipment by connecting to the more efficient Central Chiller Plant. It expands the chilled water distribution system and will allow future buildings and renovated buildings to connect to the chiller plant.

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

Not Applicable.

6. LOCATION:

The location of this project will be in the Central Chiller Plant with direct buried plastic chiller pipes extended to, Wagner Hall, Bailey Rotunda and the Intramural Building.

7. REALLOCATION OF OLD SPACE, IF ANY:

Space in the lower level of Wagner Hall will be reallocated as mechanical space to provide room for the plate and frame heat exchanger, pumps and other mechanical equipment.

8. PROPOSED FUNDING SOURCE/SOURCES:

Total funding available is \$2,535,000. These have been approved and the funding sources are as follows.

- Central Chiller Plant, R0318—40X, \$1,400,000 2018 Rent Revenues
- Intramural, R0318—72X/DEL, \$540,000 2019 HEFF
- Wagner Hall, R0318—36X/DEL, \$595,000 2018 HEFF

The combined value of the three projects exceeds the threshold for a capital improvement project. The PFS has been submitted to comply with BOR policy 6.4. SDSU requests that the combined project be exempted from the remainder of the process due to the maintenance and repair focus of the project.

9. BUDGET FOR DEVELOPMENT OF A FACILITY PROGRAM PLAN:

SDSU will work with OSE to conduct a competitive selection process for the design services needed for the combined project. We estimate the cost for these services is \$66,000.