

**APPROVED**  
**MARCH 13, 2018**

Item #V-7  
March 13, 2018

**PUBLIC UNIVERSITY  
NON-INSTRUCTIONAL CAPITAL PROJECT APPROVAL**

**Submitted for:** Action.

**Summary:** This item recommends approval of the following public university non-instructional capital project:

**Northern Illinois University**

East and West Heating Plant – Boiler Assessment      \$16,000,000  
and Phase I Replacement of Existing Steam System

**Action Requested:** That the Illinois Board of Higher Education approve the non-instructional capital project for Northern Illinois University to begin the replacement of boilers.



STATE OF ILLINOIS  
ILLINOIS BOARD OF HIGHER EDUCATION

**PUBLIC UNIVERSITY  
NON-INSTRUCTIONAL CAPITAL PROJECT APPROVAL**

Northern Illinois University (NIU) is seeking Illinois Board of Higher Education (IBHE) approval of the projects presented in this item in order to proceed. This item provides details regarding the projects' scope, cost and funding source, campus input, and schedule.

<u>Institution/Project</u>	<u>Total Estimated Cost</u>
1.) Northern Illinois University: East and West Heating Plant – Boiler Assessment and Phase I Replacement of Existing Steam System	\$16,000,000

**Statutory Citation and Requirement:**

110 ILCS 205/8 of the Board of Higher Education Act outlines procedures for annual budget and capital development and approvals among the Illinois Board of Higher Education, Illinois Community College Board, and the public universities. Guidelines for university non-instructional capital items are referenced as follows:

*“Each State university must submit its plan for capital improvements of non-instructional facilities to the Board for approval before final recommendations are made if the total cost of the project as approved by the institution’s board is in excess of \$2 million. Non-instructional uses shall include but not be limited to dormitories, union buildings, field houses, stadium, other recreational facilities and parking lots. The Board shall determine whether or not any project submitted for approval is consistent with the master plan for higher education and with instructional buildings that are provided for therein. If the project is found by a majority of the Board not to be consistent, such capital improvement shall not be constructed.”*

Project Background and Scope

The University is seeking IBHE approval to proceed with a non-instructional capital improvement project to replace, update, and upgrade existing antiquated and obsolete steam production systems and equipment located in the East Heating Plant (approximately 18,000 GSF constructed in 1948) and the West Heating Plant (approximately 19,500 GSF constructed in 1962). The project includes replacing aging, obsolete boilers, controls, valves, and piping distribution systems. The project is located on the main campus of NIU in DeKalb, Illinois.

The project includes constructing a new Heating Plant building that will house new energy efficient natural gas fired steam boilers, controls, valves and all related piping, and equipment. The new facility will be located near the exiting West Heating Plant and have enough steam capacity to replace all of the existing equipment currently housed in the two buildings, the East Heating Plant and the West Heating Plant. The project will be completed in phases to ensure

proper integration into the current piping system, ensuring redundant capacity for a heating system that will reliably service the entire campus.

The existing boilers will be removed and the current space will be allocated to other mechanical systems, equipment, and storage needs.

Estimated Project Schedule:

- Qualification Based Selection of the A/E Design Team: Spring 2018;
- Design Development and Construction Documentation: Summer 2018 through summer 2019;
- Air Permitting: Summer 2018 through summer 2019; and
- Construction: Summer 2020 through summer 2022

Project Rationale

A complete engineering assessment of the existing boiler, steam system capacity of the central heating system for the Main Campus in DeKalb, Illinois was recently completed. The primary purpose of this effort was to inform and guide the University with key decisions for planning the long-term systematic cost efficient improvements and upgrade or replacement of the existing systems.

The University operates two central heating plants, West Heating Plant (WHP) and East Heating Plant (EHP). A total of nine existing boilers are installed at the two facilities (one unit is currently not operational). The eight remaining boilers have a combined sustainable output of approximately 370,000 pph. As a result of reduced budgets, the current staffing level permits operation of only one heating plant at a time. The EHP has the larger capacity and is used during the higher load winter heating season. The WHP has smaller boilers and is operated during the summer low load season.

All the boilers are nearing the end of normal useful life. Two boilers are 48 years old; the remainder are 50 to 55 years old. The EHP is limited on four sides for expansion. Demolition of existing equipment to make space for new equipment is also not a realistic option. Space is so limited, even with the old equipment removed, there is insufficient space to get the new boilers into the building. The WHP also has limitations with the existing building but there is space around the facility and options are available for the installation of new boilers at that location.

The recommendation for Phase 1 is to build a new WHP facility approximately 11,250 GSF immediately adjacent or annexed to the existing facility and to install two new 75,000 pph boilers with the appropriate support equipment. The building will be designed for expansion. Future IBHE approval requests will be made for Phase 2 and Phase 3. Currently the concept for Phase 2 would be to increase the steam capacity by another 75,000 pph with either a third boiler or a combined heat and power (CHP) facility producing approximately 3.5 MW of electricity and 75,000 pph of steam. Final build-out, Phase 3, would add a fourth 75,000 pph boiler.

Project Cost and Financing

Preliminary project financing for Phase 1 Design and Construction is detailed below. This funding scenario is preliminary and subject to change. It will be more carefully analyzed and amended/adjusted as needed when the engineering effort for Phase 1 develops final budget estimates.

Preliminary Phase 1 Design and Construction:

- Institutional – Bond Reserve;
- Institutional – Utility Stabilization Reserve; and
- Institutional – Appropriated/Income Funds.

Estimated Total: \$16,000,000

No new student fee will be added to fund this project.

Increase in operating costs are not anticipated but may occur temporarily when transitioning to the new boilers. This may result in a temporary and slight increase in the O&M budget. If required, Bond Reserves will be used to supplement the budget.

Constituency Input/Decision-Making

Due to the age of the existing centralized steam boiler system and recent major repair costs, the Chief Financial Officer requested that Associate Vice President, for Facilities Management and Campus Services engage a qualified consultant to assess the entire steam heating system and make recommendations on the repair, modification and/or replacement of the central heating system.

Boiler replacement and repairs have been on the Northern RAMP priorities lists for a number of years. Some funding is included for boiler work in the recently approved Fiscal Year 2019 capital funding recommendations under capital renewal. NIU Boiler replacement has been considered such a critical need it also was included on the list of projects deemed to have reached the point of being a risk to health and safety or to ongoing maintenance. Had the state provided regular, ongoing funding for capital maintenance this project likely would already have been addressed.

**Recommendation**

Staff has reviewed the project presented in this item and found it to be in accordance with the Board's *Noninstructional Capital Project Guidelines*, approved by the Illinois Board of Higher Education in August 2002, and administrative rules. The project is consistent with the mission and scope of the institution; provide needed additional, replacement, or more efficiently utilized space; and are economically feasible, as required by administrative rules.

The staff recommends adoption of the following resolution:

*The Illinois Board of Higher Education hereby approves the noninstructional capital project included in this item.*

