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DURHAM, N.H. -- The University System of New Hampshire Board of Trustees last week authorized the University of New Hampshire to upgrade the current heating plant and related facilities on the Durham campus - a plan that is projected to avoid energy costs of $35 million over the next 20 years.

A $28 million cogeneration plant will be financed through a combination of an internal loan and a capital lease, according to Candace Corvey, UNH vice president for finance and administration. “Most of the cost of this project is in equipment that can be externally financed through a capital lease, thus reducing our need to draw upon scarce internal resources.”

“The plan is essential in order to meet the campus's need for more energy, maximize reliability, promote a cleaner environment and contain costs,” explains Allan Braun, associate vice president for facilities at UNH.

The many benefits that will be realized by UNH in taking a comprehensive approach to heating, cooling, and electrical needs on campus provides a strong example of effective use of limited resources to maximize operating efficiency, says Ed MacKay, vice chancellor and treasurer for the University System of New Hampshire.

“The financing of the utility upgrade plan is an example of the university system's willingness to engage in `self-help' to fund the majority of its capital investment needs,” MacKay explains. “State appropriation support is focused almost exclusively on capital projects that directly impact student learning, such as academic buildings, labs and lecture halls. We leverage our assets to fund other capital projects - using the Health and Education Finance Authority (HEFA) bonds for self-supporting projects such as residence and dining halls; federal grants for research facilities, and; private gifts and operating budgets for ongoing improvements in the physical plant.”

UNH officials say the existing central steam heating plant has reached capacity. Without the cogeneration project, the capital cost of adding future heating capacity through 2016 is estimated to be $17 million. Chilled water requirements necessary for air conditioning for research purposes would add another $7.8 million.

In addition, the electrical requirements at UNH are far outpacing the electrical infrastructure. Two substations are 40 years old, and another will need to be replaced within 10 years. Replacement costs for the substations is $450,000.

Braun says the cogeneration process is highly efficient, because it generates electricity with hot gas turbines that, as a byproduct, produce waste heat. That heat is used to produce steam and chilled water (necessary for air conditioning) at very low cost. This approach provides energy flexibility, as the plant could utilize #6 oil, #2 oil, natural gas, or external electricity depending on the relative cost and availability of each.

He notes the university has been exploring various options for its Utility Master Plan over the past three years. After completion of a comprehensive feasibility study, and many conversations with stakeholders, UNH officials concluded that a cogeneration plant was the best option.

Braun adds that co-generation is environmentally friendly and very safe.

The plant - which would be located beside the current heating plant behind the Service Building - is estimated to cost $22 million to construct and equip. UNH also would build a chiller node (needed for air conditioning) near Philbrook Dining Hall for roughly $6 million in order to provide chilled water to eight surrounding buildings. The plant and the chiller node will be constructed to enable additional generating, chilled water, and heating capacity to be added as the university's physical plant grows.

The plant and the chiller node are expected to be on line and operational by the fall of 2005. The plant will be operated by a private company, EMCOR, under a contract closely managed by UNH. The contract will provide incentives for EMCOR to operate the plant efficiently and effectively.