

May 10, 2017

MEMORANDUM

TO: State Board of Regents

FROM: David L. Buhler

SUBJECT: University of Utah – Non-State Funded Energy Efficiency Project Approval

Issue

As required by Regent Policy R702, *Non-State Funded Projects* the University of Utah requests authorization to proceed with a non-state funded project to upgrade the energy efficiency of Health Sciences buildings and expand utility capacity of the chilled water system.

Background

Regent policy R702 requires the Board to review capital development or improvement projects requiring State Building Board or Legislative approval. State statute (63A-5-104) delegates authority to the State Building Board to approve capital projects without legislative approval if the requesting institution does not use state funding sources for the design, construction, operation, or maintenance of the facility. The University of Utah proposes to use institutional funds to finance energy efficiency improvements and expand chilled water infrastructure capacity.

The project will reduce energy consumption and costs in 18 facilities primarily located on the Health Sciences campus. Energy efficiency improvements include the upgrade of laboratory fume hoods, the improvement of evaporative cooling systems, a new high efficiency boiler plant, LED lighting retrofitting, and an increase of the chilled water supply used for central cooling. The anticipated cost of the project is \$30,000,000 funded with institutional funds that will be repaid through energy savings. Current energy cost projections anticipate a ten-year payback. No state appropriated funds will be used in the design or construction of this project and the project will not result in additional future operation and maintenance costs.

Additional information about the project is provided in the attached letter from the University and summary of anticipated energy improvement projects. Representatives from the University will be present at the meeting to provide additional information and respond to questions from the Board.

Commissioner's Recommendation

The Commissioner recommends that the Board authorize the University of Utah to present this proposal to the Utah State Building Board for final approval.

David L. Buhler
Commissioner of Higher Education

DLB/KLH/RPA
Attachments

May 2, 2017

Mr. David Buhler
Commissioner
Board of Regents Building, The Gateway
60 South 400 West
Salt Lake City, Utah 84101-1284

Dear Commissioner Buhler:

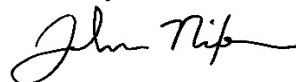
The University of Utah requests approval to proceed with energy efficiency improvements that will reduce energy costs and emissions for at least 18 buildings addressing both heating and cooling systems. The improvements will address evaporative cooling, fume hood upgrades, HVAC controls, energy management systems, installation of high efficiency boilers, and improvements in the chilled water delivery system. A summary of potential energy improvements is attached with those shaded in green and yellow being the most likely ones to be pursued. An investment grade audit will be completed by the end of May which will guide final decisions on which specific improvements are cost effective.

The total estimated cost of this project is \$30 million. The project will be funded from existing institutional reserves and working capital balances which will be repaid within ten years from the resulting utility savings. Savings will be collected from the sources of funds that otherwise would have paid for the higher energy consumption. No state funds will be used for this project cost and the project will not result in any increased costs for future O&M or improvements. This work is consistent with the University's approved master plan. In addition to numerous smaller energy efficiency projects, this is the next major phase of energy upgrades at the University following the recent completion of an \$8 million energy upgrade to science buildings that was authorized in 2014 under our Better Buildings Challenge initiative.

We are seeking approval by the University's Board of Trustees on May 9. We will withdraw this request if Trustee approval is not received. We request that this be presented to the Board of Regents for approval during the May 19, 2017 meeting.

Thanks, as always, for your consideration and support.

Sincerely,



John E. Nixon

C: David W. Pershing Dr. Kimberly Henrie
Patricia A. Ross Richard P. Amon



U of U Campus Energy Efficiency Project Preliminary Facility Improvement Measure (FIM) Matrix

3/29/2017



FIM Category / Name	FIM Description	381 - Skaggs Research	582 - Pharmacy	588 - Nursing	589 - Eccles Health Sciences Library	533 - Health Sciences	530 - Genetics	530 - Wintrobe	531 - Medical Research	570 - Polymers	565 - Medical Sciences	585 - Radio Biology Lab	586 - Radio Biology Lab	587 - Comparative Medicine Lab	512 - Research Medicine Center	555 - Research Admin	521 - Huntsman Cancer Institute	550 - School of Medicine	523 - Moran Eye Center	522 - West Pavilion	525 - Patient Care	529 - Emergency Center	526 - Hospital Generating Plant	532 - HSC Boiler Plant	535 - Dumke	556 - Huntsman Cancer Hospital	701 - Student Tower #1	702 - Student Tower #2
		Research & Academic														Shared		Hospital / In-Patient Care					Aux					
Evaporative Cooling Measures																												
Supply Air Direct Evap Cooling	Add or increase evap cooling capability on supply air to buildings. Recommission existing systems to work better with other stages of cooling and improve maintenance.					X			X	X								X			X						X	
Indirect Evap Cooling	Improve effectiveness of cooling tower cooling at 570 by adding dedicated pre-cool coils, install a new, open-cell cooling tower in 565 to improve effectiveness, consider connecting 533 to a nearby cooling tower and installing pre-cool coils.					X			X	X																		
Evap Pre-Cooling of Exhaust Air	Utilize evap cooling to drive exhaust air temperatures lower before the exhaust heat recovery coil to increase effectiveness of heat recovery extend the hours heat recovery can run					X																						
Fume Hood Improvement Measures																												
Install New Variable Volume (VAV) Lab Controls	Install new venturi type supply air, exhaust and fume hood variable air volume controls with occupancy control. Balance labs to appropriate pressure differential and air change rate.					X			X																			
Add Occupancy Control Recommission Existing VAV Lab Controls	Recommission lab controls to ensure appropriate pressure differential and air change rate. Add occupancy sensors to reduce air-change rate and shut off lights when labs are unoccupied.	X	X			X				X							X	X								X		
Chilled Water Plant Capacity and Operability Measures																												
Increase Chilled Water Supply Temperature	Allow the plant to meet the loads of the buildings with a higher chilled water supply temperature (CHWST) by cleaning dirty coils, replacing coils that were selected at too low of a CHWST and bypassing building-level heat exchangers. CC=clean coils, NC=new coils, HX=bypass HX	HX		CC		CC	CC	NC			CC	NC	CC							CC	CC	CC	HX			HX	CC	
Decouple Operating Rooms From Plant	Install water source heat pumps on AHUs that serve operating rooms to allow those spaces to meet loads without altering the operation of the entire plant.																X			X							X	
New Control Valves	Install new, smart control valves which will allow for precision control of chilled water coils and provide feedback on the energy coils are using.	X		X	X	X	X	X		X	X				X		X	X	X	X	X	X				X		
ACC Boiler Project																												
Hospital Boiler Project	New high efficiency condensing boiler plant & steam boilers. Optimization of existing facility equipment connected to plant.																		X	X	X							
Lighting Measures																												
LED Lighting Retrofit and Controls	Retrofit/Replace existing fluorescent lighting with LED retrofit solutions.		X	X	X	X	X	X		X	X	X	X	X	X	X		X	X				X			X		
Active Energy Management																												
Active Energy Management	The concerted deployment of monitoring-based technologies and on-site building-system experts to drive continuous improvements during the development, design, construction, and operations of campus facilities.	X	X	X	X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X			X	X	X	
Notes:		Budget Savings Debt Repayment 20 Year NPV														\$30,000,000 Varies by year <10 Years \$30,000,000		Likely Considering Not Likely De-Commissioned		<table border="1"> <tr><td>X</td></tr> <tr><td>X</td></tr> <tr><td>X</td></tr> <tr><td></td></tr> </table>					X	X	X	
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Confidential and Proprietary