PURDUE
UNIVERSITY

OFFICE OF THE EXECUTIVE VICE PRESIDENT FOR
BUSINESS AND FINANCE, TREASURER

September 13, 2012

The Honorable Mitchell E. Daniels, Jr.
Governor of the State of Indiana
State House
Indianapolis, IN 46204

Dear Governor Daniels:

At its meeting on October 12, 2012, the Purdue University Board of Trustees is expected to approve the project, "Thermal Energy Storage Tank Installation" on the Purdue University West Lafayette Campus.

The Comprehensive Energy Master Plan identified a shortage of chilled water production capacity. This project will be our first step in addressing this production shortage. The scope is to install an approximately 5 million gallon steel chilled water storage tank that will provide additional capacity by offsetting the peak demand requirements. Additionally, the tank can be charged at night when the electricity prices are less expensive, using the existing chillers in the Satellite Chiller Plant and Wade Utility Plant.

The estimated cost of this project is $16,800,000, to be funded from Infrastructure Reserve funds.

Subject to approval by the Purdue University Board of Trustees, review by the Commission for Higher Education and recommendation by the State Budget Committee and the Budget Agency, we request your approval to proceed with this project. Attached are the completed forms which the Commission has prescribed for its review of such projects. We will be happy to answer any questions you or your staff may have or to provide any additional information you may wish.

Sincerely,

A. V. Diaz
Executive Vice President for
Business and Finance, Treasurer

bjm

Attachments

c: Jason Dudich, Associate Commissioner and Chief Financial Officer
Adam Horst, State Budget Director
Mary Catherine Gaisbauer, Comptroller
Kevin Green, Assistant Director of Capital Planning

PROJECT SUMMARY AND DESCRIPTION
THERMAL ENERGY STORAGE TANK INSTALLATION

Institution:	Purdue University	**Budget Agency Project No.:**	B-1-13-1-07
Campus:	West Lafayette	**Institutional Priority:**	N/A
Previously approved by General Assembly:	No	**Previously recommended by CHE:**	No
Part of the Institution's Long-term Capital Plan:	Yes		

Project Summary Description:

The Comprehensive Energy Master Plan (CEMP) identified a shortage of chilled water production capacity. This project will be our first step in addressing this production shortage. The scope is to install an approximately 5 million gallon steel chilled water storage tank that will provide additional capacity by offsetting the peak demand requirements. Additionally, the tank can be charged at night when the electricity prices are less expensive, using the existing chillers in the Satellite Chiller Plant and Wade Utility Plant.

Summary of the impact on the educational attainment of students at the institution:

This project supports the comprehensive energy master plan (CEMP) developed for the West Lafayette campus. This plan was undertaken to identify and meet the long-term energy needs on the West Lafayette campus over the coming years. The resulting comprehensive energy master plan accommodates the current and planned growth in the campus physical plant. Additionally, the revised plan is cost efficient and has improved environmental and regulatory impacts.

Project Size:	N/A	GSF	N/A	ASF	N/A ASF/GSF
Net change in overall campus space:	N/A	GSF	N/A	ASF	

Total cost of the project (1):	$ 16,800,000 *	**Cost per ASF/GSF:** N/A GSF; N/A ASF
Funding Source(s) for project (2):	$ 16,800,000	- Infrastructure Reserve, derived from year end balances and new recurring funds - F&A Cost Recovery, balance as of 7/31/12 is $20,424,805
Estimated annual debt payment (4):	N/A	
Are all funds for the project secured:	Yes	
Estimated annual change in cost of building operations based on the project:	$ 154,760	
Estimated annual repair and rehabilitation investment (3):	$ 252,000	**Based on total project cost**

(1) Projects should include all costs associated with the project (structure, A&E, infrastructure, consulting, FF&E, etc.)

(2) Be consistent in the naming of funds to be used for projects. If bonding, note Bonding Authority Year (1965, 1929, 1927, etc.)

(3) Estimate the amount of funding the institution would need to set aside annually to address R&R needs for the project. CHE suggests 1.5% of total construction cost

(4) If issuing debt, determine annual payment based on 20 years at 5.75% interest rate

- If project is a lease-purchase or lease, adjust accordingly. Note the total cost of the lease in the project cost, and annual payments in project description

*** Cost is based on 2015 projections**

PROJECT DETAILED DESCRIPTION - ADDITIONAL INFORMATION

THERMAL ENERGY STORAGE TANK INSTALLATION

Institution:	Purdue University	**Budget Agency Project No.:**	B-1-13-1-07
Campus:	West Lafayette	**Institutional Priority:**	N/A

Description of Project

The Comprehensive Energy Master Plan (CEMP) identified a shortage of chilled water production capacity. This project will be our first step in addressing this production shortage. The scope is to install an approximately 5 million gallon steel chilled water storage tank that will provide additional capacity by offsetting the peak demand requirements. Additionally, the tank can be charged at night when the electricity prices are less expensive, using the existing chillers in the Satellite Chiller Plant and Wade Utility Plant. The overarching goal of the CEMP was to assess the current status of Purdue's operations and develop a solid plan for the near-term that is aligned with future long-term campus energy requirements.

The CEMP looked at multiple alternates to the thermal energy storage tank, including building a new satellite chiller plant or changing operations at the current facilities. The thermal energy storage tank was the most cost effective, short term solution that also adds a very valuable asset to the chilled water system. The addition of a second Satellite Chiller Plant with three 2700-ton chillers alternative would require approximately 80% more capital funding to accomplish.

Need and Purpose of the Program

These projects are essential to support new construction on campus: Herrick Lab, Bindley Addition, Recreational Sports, Health and Human Sciences Research Facility, Drug Discovery Facility, Center for Student Excellence and Leadership, and Vawter Field Housing plus the projects identified in the Ten-Year Capital Plan.

With Purdue's strategic plans to significantly increase research, an economically sound and prudent approach is to add chilled water capacity to our district energy systems. Failure to add chilled water capacity will result in curtailment of chilled water to existing buildings and may limit planned expansion of building space that supports the academic and research mission of the university.

Space Utilization

This project does not impact existing space that is planned for academic buildings. The current project site is on the hillside just west of an existing electrical substation or just northwest of the softball field. This site is on the edge of campus near an existing electrical substation and a satellite chiller plant. It was strategically placed on the north end of campus for two main reasons:

1. This is where the chilled water shortage is most prevalent
2. It would be located near the Northwest Chiller Plant and Future Chiller Plant for operations considerations.

Comparable Projects

Due to the unique nature of the project, there aren't similar projects on campus involving a tank of this size. During the planning stages, similar projects were reviewed at LAX, UC Davis, District Energy in St. Paul, Minnesota, amongst others. This project is planned for 52,000 ton-hrs. of capacity. Similar projects for above ground steel tanks at University of Illinois, 50,000 ton-hrs., University of Texas, 30,000 ton-hrs., TECO in Houston, 64,285 ton-hrs., and Princeton, 40,000 ton-hrs., were used to validate size, cost, location on site, and the "look" of the tank.

Background Materials

Funding Plan - $16,800,000:
Infrastructure Reserve, derived from year end balances and new recurring funds - F&A Cost Recovery (available 2013-14: $9M in 2013 and $7.8M in 2014)

CAPITAL PROJECT REQUEST FORM
INDIANA PUBLIC POSTSECONDARY EDUCATION
INSTITUTION CAMPUS SPACE DETAILS FOR THERMAL ENERGY STORAGE TANK INSTALLATION

Thermal Energy Storage Tank Installation B-1-13-1-07	Current Space in Use	Space Under Construction (1)	Space Planned and Funded (1)	Subtotal Current and Future Space	Space to be Terminated (1)	New Space in Capital Request (2)	Net Future Space
A. OVERALL SPACE IN ASF							
Classroom (110 & 115)	279,963	-	2,678	282,641	-	-	**282,641**
Class Lab (210,215,220,225,230,235)	555,732	-	(724)	555,008	-	-	**555,008**
Non-class Lab (250 & 255)	1,420,040	-	50,821	1,470,861	-	-	**1,470,861**
Office Facilities (300)	2,053,115	1,102	56,350	2,110,567	-	-	**2,110,567**
Study Facilities (400)	392,579	-	5,400	397,979	-	-	**397,979**
Special Use Facilities (500)	1,037,900	58,635	20,857	1,117,392	-	-	**1,117,392**
General Use Facilities (600)	836,634	1,433	31,055	869,122	-	-	**869,122**
Support Facilities (700)	3,032,422	21,800	(11,947)	3,042,275	-	-	**3,042,275**
Health Care Facilities (800)	76,330	-	-	76,330	-	-	**76,330**
Resident Facilities (900)	2,274,683	-	75,800	2,350,483	-	-	**2,350,483**
Unclassified (000)	83,456	(14,182)	-	69,274	-	-	**69,274**
B. OTHER FACILITIES							
(Please list major categories)	-	-	-	-	-	-	-
TOTAL SPACE	**12,042,854**	**68,788**	**230,290**	**12,341,932**	-	-	**12,341,932**

Notes:

(1) Identify in a footnote the specific facilities that are included in the data in these columns. Do not include pending approval, non-submitted projects or non-funded projects

(2) Should include capital projects requested by the institution based on 2013-15 Capital Request Summary

- Space/Room codes based on Postsecondary Ed Facilities Inventory and Classification Manual (2006)

Space under construction includes: Northwest Athletics Complex Phase I, RSC Renovation/Addition

Space planned and funded includes: Bailey Hall, BIND Addition, Center for Student Excellence and Leadership, Drug Discovery Facility, Health and Human Sciences Facility, Herrick Labs Center for Advanced Acoustics, Vawter Field Housing

Space to be terminated includes:

CAPITAL PROJECT COST DETAILS
THERMAL ENERGY STORAGE TANK INSTALLATION

Institution:	Purdue University	**Budget Agency Project No.:**	B-1-13-1-07
Campus:	West Lafayette	**Institutional Priority:**	N/A

ANTICIPATED CONSTRUCTION SCHEDULE

	Month	Year
Bid Date	February	2013
Start Construction	February	2013
Occupancy (End Date)	June	2014

ESTIMATED CONSTRUCTION COST FOR PROJECT

	Cost Basis (1)	Estimated Escalation Factors (2)	Project Cost
Planning Costs			
a. Engineering			$ 900,000
b. Architectural			$ -
c. Consulting			$ -
Construction			
a. Structure			$ 8,200,000
b. Mechanical (HVAC, plumbing, etc.)			$ 3,000,000
c. Electrical			$ 1,000,000
Movable Equipment			$ -
Fixed Equipment			$ -
Site Development/Land Acquisition			$ 1,200,000
Other (S&T, PM fees, insurance, contingencies)			$ 2,500,000
TOTAL ESTIMATED PROJECT COST	$ -	$ -	$ 16,800,000

(1) Cost Basis is based on current cost prevailing as of: (INSERT MONTH AND YEAR)

(2) Explain in the Description of Project Section of the "Cap Proj Details" schedule the reasoning for estimated escalation factors

CAPITAL PROJECT OPERATING COST DETAILS
THERMAL ENERGY STORAGE TANK INSTALLATION

Institution: Purdue University
Campus: West Lafayette

Budget Agency Project No.: B-1-13-1-07
Institutional Priority: N/A

GSF OF AREA AFFECTED BY PROJECT N/A

ANNUAL OPERATING COST/SAVINGS (1)

	Cost per GSF	Total Operating Cost	Personnel Services	Supplies and Expenses
1. Operations	N/A	**$ 10,578**	$ 4,058	$ 6,520
2. Maintenance	N/A	**$ -**	$ -	$ -
3. Fuel	N/A	**$ 39,394**	$ -	$ 39,394
4. Utilities	N/A	**$ 104,788**	$ -	$ 104,788
5. Other	N/A	**$ -**	$ -	$ -
TOTAL ESTIMATED OPERATIONAL COST/SAVINGS	**N/A**	**$ 154,760**	**$ 4,058**	**$ 150,702**

Description of any unusual factors affecting operating and maintenance costs/savings.

N/A

(1) Based on figures from "Individual Cap Proj Desc" schedule