COMMISSION FOR HIGHER EDUCATION
Friday, June 8, 2012

DISCUSSION ITEM B-2: **Wade Power Plant Production and Distribution Improvements – Purdue University West Lafayette**

Staff Recommendation

That the Commission for Higher Education recommend approval to the State Budget Agency and the State Budget Committee the following project: *Wade Power Plant Production and Distribution Improvements – Purdue University West Lafayette.* Staff recommendations are noted in the staff analysis.

Background

By statute, the Commission for Higher Education must review all projects to construct buildings or facilities costing more than $500,000, regardless of the source of funding. Each repair and rehabilitation project must be reviewed by the Commission for Higher Education and approved by the Governor, on recommendation of the Budget Agency, if the cost of the project exceeds seven hundred fifty thousand dollars ($750,000) and if any part of the cost of the project is paid by state appropriated funds or by mandatory student fees assessed all students. Such review is required if no part of the project is paid by state appropriated funds or by mandatory student fees and the project cost exceeds one million five hundred thousand dollars ($1,500,000). A project that has been approved or authorized by the General Assembly is subject to review by the Commission for Higher Education. The Commission for Higher Education shall review a project approved or authorized by the General Assembly for which a state appropriation will be used. All other non-state funded projects must be reviewed within ninety (90) days after the project is submitted to the Commission.

The Trustees of Purdue University seeks authorization to proceed with improvements to the power plant production and distribution at the West Lafayette campus. The planned improvements will include. The expected cost of the project is $33,100,000 and will be funded through student fee bonds issued by PUWL and authorized by the 2007 General Assembly.

Supporting Document

Wade Power Plant Production and Distribution Improvements – Purdue University West Lafayette, June 8, 2012.

WADE POWER PLANT PRODCUTION AND DISTRIBUTION IMPROVEMENTS
PURDUE UNIVERSITY WEST LAFAYETTE

Project Description

DESCRIPTION OF THE PROJECT

As a result of the recommendations from the Comprehensive Energy Master Plan (CEMP), the following work is planned. Boiler No. 2 is currently a stoker coal boiler with the ability to co-fire natural gas for up to 20% of the fuel load. This boiler will be converted to run 100% natural gas and the project will include the removal of some of the coal and ash systems. Included in the scope is the demolition of Boiler No. 1 which was a portion of the original Boiler No.6 project and will now be removed to install the 6.5 MW Combined Heat and Power (CHP). In addition, the steam distribution system will be increased along Jischke Drive from Third Street to Tower Drive near the Permanent Apartment (PA) pit. The CEMP confirmed that the demand for steam on the north end of campus exceeds the capacity of the existing infrastructure to serve those spaces. This project will increase the line size or add an additional line.

RELATIONSHIP TO OTHER CAPITAL IMPROVEMENT PROJECTS

These projects are essential to support new construction on campus: Herrick Lab, Bindley Addition, Rec Sports, Health & Human Science, Drug Discovery, CSEL, and Vawter Field Housing plus the projects identified in the Capital Ten Year Plan.

RELATIONSHIP TO MISSION AND LONG-RANGE PLANNING

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, following the recognition of the environmental and financial costs of the previously-approved coal-fueled Boiler No. 6.

The resulting CEMP 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.

ALTERNATIVES CONSIDERED

A traditional gas boiler or a combined heat and power (CHP) system are the most viable options to add steam capacity. A gas fired boiler is the lowest first cost. CHP has several benefits in the areas of efficiency, reliability and the environmental impact. Lower operating costs, reduced emissions of all pollutants, increased power quality, and better reliability over the 25 year economic analysis period

RELATIONSHIP TO LONG-RANGE FACILITY PLANS

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.

STAFF ANALYSIS

During the 2007 General Assembly session (January through May), institutions sought authorization for major improvements and upgrades to power plant operations. This included Purdue University West Lafayette (PUWL) at an amount of $53 million for a new coal fired boiler, known as Boiler Number 6. The General Assembly granted authorization for PUWL to issue student fee bonds for the boiler replacement project and fee replacement associated with the debt was included in the debt service appropriation. In addition, during the 2005 General Assembly session, PUWL was provided $1.5 million for architecture and engineering services related to overall power plant renovations. Total state investment in the PUWL power plant renovations has been $54.5 million

In November 2007, the Commission provided a favorable review of the $53 million boiler project and was subsequently approved by the State Budget Committee in December of 2007. With PUWL receiving approval to move forward with the project, debt was issued for the boiler replacement initiative and funds were made available.

During the development stages of the project, PUWL spent $5.4 million of the $54.5 million on boiler replacement planning and design. Between 2008 and 2010, PUWL noticed significant changes in assumptions that were made for Boiler Number 6. Some of the changes included: environmental requirements, fluctuations in natural gas prices versus coal prices, cost comparisons of a coal fired boiler versus alternative options, etc.

Due to these significant changes in the scope of the boiler replacement project, PUWL began development of a Comprehensive Energy Master Plan (CEMP), which included alternate options for the Boiler Number 6 project. As a result of the CEMP, which was finalized in February 2011, PUWL chose a Combined Heat and Power (CHP) system which is better suited for the campus from an environmental and financial perspective.

The estimated cost of the project is $33.1 million and would include four major components:

- Demolition of Boiler Number 1 ($2.5 million)
- Installation of the Combined Heat and Power System ($23.6 million)
- Converting Boiler Number 2 to 100% natural gas ($2.5 million)
- Upgrade of steam distribution along Jischke Drive ($4.5 million)

Of the $54.5 million of authority granted to PUWL for the boiler replacement project, $5.4 million was expended on designing and planning the project (including the CHP option) and $16 million was reallocated by the General Assembly to fund the PUWL Health and Human Science Building. The remaining $33.1 million will fund the Wade Power Plan Distribution and Improvement Project, in which funds to support the debt service are already included in PUWL's debt service appropriation. There is no impact to the state general fund.

Other major power plant projects authorized by the General Assembly and approved by the Commission include:

- IUB Cooling and Heating Renovation - $34 million (2006)
- BSU Boiler Replacement - $41.8 million (2007)

Staff recommends the Commission provide a favorable review of this proposed project.

Project Summary

MAJOR REPAIR AND REHABILITATION

INSTITUTION: *PURDUE UNIVERSITY* **CAMPUS:** *WEST LAFAYETTE*
PROJECT TITLE: *Wade Power Plant Production and Distribution Improvements* **BUDGET AGENCY NO.:** *B-1-12-2-18*
INSTITUTION'S PRIORITY:

PROJECT SUMMARY DESCRIPTION (ATTACHMENT A)

The project involves the installation of a new combined heat and power (CHP) unit, conversion of Boiler No. 2 from stoker coal to natural gas, distribution of steam created by the CHP, and the distribution of steam on the north end of campus.

SUMMARY OF NEED AND NET CHANGE IN CONTRIBUTION TO EDUCATIONAL SERVICES PROVIDED BY INSTITUTION (ATTACHMENT B)

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, following the recognition of the environmental and financial costs of the previously-approved coal-fueled Boiler No. 6.

The resulting CEMP 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.

SPACE DATA (ATTACHMENT C)

AREA AFFECTED BY THE PROJECT:	114,080	GSF	6,456	ASF		
PROJECT SIZE:	114,080	GSF	6,456	ASF	.06	ASF/GSF
NET CHANGE IN CAMPUS ACADEMIC/ADMINISTRATIVE SPACE:					0	ASF

TOTAL PROJECT BUDGET (ATTACHMENT D)

TOTAL ESTIMATED COST:	$ 33,100,000	$/GSF	$ N/A
ANTICIPATED DATE OF PROJECT COMPLETION:			February 2015

ANTICIPATED SOURCES OF FUNDING (ATTACHMENT E)

Fee Replacement Bond Proceeds	$ 33,100,000
TOTAL BUDGET	$ 33,100,000

ESTIMATED CHANGE IN ANNUAL OPERATING BUDGET AS A RESULT OF THIS PROJECT (ATTACHMENT F)

$ 498,000 ____ INCREASE ____ DECREASE

NOTE: SEE ATTACHMENTS FOR SUPPORTING INFORMATION REQUEST TO BE SUBMITTED WITH PROJECT SUMMARY FORM.