Contact: Joan Racki

REGISTER OF IOWA STATE UNIVERSITY
CAPITAL IMPROVEMENT BUSINESS TRANSACTIONS

Action Requested: Consider approval of:

1. The following actions for the **Utilities – Stoker Boiler Replacement** project:
   a. Acknowledge receipt of the University's final submission of information to address the Board's capital project evaluation criteria (see Attachment A);
   b. Accept the Board Office recommendation that the project meets the necessary criteria for Board consideration;
   c. Approve the financing plan and adoption of a Resolution declaring an official intent under Treasury Regulation 1.150-2 to issue debt to reimburse the Iowa State University Science and Technology Utility System for certain original expenditures paid in connection with various capital improvement projects; and
   d. Approve the schematic design, use of Burns & McDonnell as the design consultant for the remainder of the project, and project description and budget ($38,000,000), with the understanding that approval will constitute final Board approval and authorization to proceed with construction.

2. The project description and budget ($2,200,000) for the **Wilson Hall – Install Fire Sprinkler and Improvements** project.

(ROLL CALL VOTE)

Executive Summary:

The University requests approval of the schematic design, project description and budget ($38,000,000), continued use of Burns & McDonnell as the design consultant, and the financing plan for the **Utilities – Stoker Boiler Replacement** project, which would replace three existing coal-fired stoker boilers with three new gas-fired package boilers. The project would allow the University to replace aging equipment and comply with new environmental regulations.

The boilers would be housed in a 20,000 gross square foot addition to the east side of the existing main power plant located on the northeast side of the main campus, as shown in the schematic design booklet included with the Board's agenda materials. Since the firm of Burns & McDonnell is very knowledgeable of the project, having worked on the preliminary design, the University believes that considering another design professional at this time would increase costs and delay the project.

The proforma of the financing plan for the project is shown in Attachment B and includes the sale of approximately $42,000,000 in Utility System Revenue Bonds, netting approximately $38,000,000 in project proceeds. Debt service on the new bonds would begin when the debt service on existing bonds significantly declines, as the Series 1999A and 1999B bonds mature on November 1, 2013.

The University requests approval of the project description and budget for the **Wilson Hall – Install Fire Sprinkler and Improvements** project, which would install a fire suppression system and make other modifications in the building. The budget of $2,200,000 would be funded by Dormitory Improvement Funds. The location of Wilson Hall is shown on Attachment C.

Details of the Projects:

Utilities – Stoker Boiler Replacement

Project Summary

	Amount	Date	Board Action
Utilities – Environmental Strategies Study (Burns & McDonnell; Kansas City, MO)*	$ 342,000	Mar. 2011	Not Required**
Schematic Design		Dec. 2012	Requested
Project Description and Budget	38,000,000	Dec. 2012	Requested
Continued Use of Burns & McDonnell as Design Consultant		Dec. 2012	Requested
Final Review and Consideration of Capital Project Evaluation Criteria		Dec. 2012	Receive Report

*Study for three universities; firm selected based upon formalized consultant selection process
**Approved by Executive Director consistent with Board policies

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A phased project approach is needed to maintain operations at the power plant during the construction project. The existing stoker boilers would be temporarily converted from coal to natural gas. Then the existing stoker coal and ash handling systems and pollution control equipment can be demolished to make space for a building addition to house the new gas-fired boilers. Once the new boiler addition is completed and the new boilers fully operational, the stoker boilers can be retired.

The new boilers will be connected to existing systems in the power plant and will be used to produce steam, electricity and chilled water for the campus using existing power plant generators, chillers and auxiliary equipment.

The building addition and site layout are designed to accommodate the new boilers and the mechanical and electrical systems necessary to operate these boilers, with the building and site arranged to allow efficient operation and maintenance of the new equipment.

The two existing coal-fired fluidized bed boilers will remain in operation. A dry sorbent injection system, included in the project budget, will be added to these two boilers to comply with new environmental regulations

Project Budget

Construction	$32,547,500
Design and Supervision	3,759,080
Project Contingencies	1,693,420
TOTAL	$38,000,000
Source of Funds: Utility System Revenue Bonds	$38,000,000

It is anticipated that demolition will begin in Summer of 2013 with project completion projected for Fall of 2015.

Wilson Hall – Install Fire Sprinkler and Improvements

Project Summary

	Amount	Date	Board Action
Permission to Proceed		Sept. 2012	Approved
Selection of HR Green, Inc. (Cedar Rapids) as Design Professional		Sept. 2012	Approved
Design Professional Agreement (HR Green, Cedar Rapids)	$ 196,600	Oct. 2012	Not Required*
Project Description and Budget	2,200,000	Dec. 2012	Requested

*Approved by Executive Director, consistent with Board policies

Wilson Hall is a ten-story dormitory building with a lower level. In addition to the installation of the fire sprinkler system, the project would include the conversion of a resident room on each floor into a kitchenette. The kitchenette would have a sink, stove, oven, microwave and preparation counter. An ADA (Americans with Disabilities Act) accessible unisex, single occupant restroom would also be added, replacing an existing store room on the first floor.

Project Budget

Construction	$1,791,000
Design and Supervision	344,430
Project Contingencies	64,570
TOTAL	$2,200,000
Source of Funds: Dormitory Improvement Funds	$2,200,000

Utilities – Stoker Boiler Replacement
Evaluation Criteria

Since the project meets the Board's definition of a major capital project, the University has provided the following information in response to the Board's evaluation criteria.

Institutional Mission / Strategic Plan: This project will allow the university to continue to meet energy demands in an efficient manner, while minimizing emissions and meeting environmental regulations. This project replaces three older coal-fired boilers that will not comply with new environmental regulations and that are reaching the end of their life. New high-efficiency gas-fired boilers will be installed to maintain plant capacity. Coal consumption at the university will be reduced as a result of this project.

Other Alternatives Explored: The three Regents' institutions initiated a joint Environmental Strategies Study in early 2011. The purpose of the study was to identify several strategies for each campus to comply with proposed EPA regulations affecting the boilers at the respective power plants. The basis of this study and the study assumptions were the same for each campus.

As part of the initial study, a team from the three Regents institutions and the Board of Regents office completed a consultant selection process. Burns & McDonnell was selected unanimously from a group of seven consultants who provide power plant design services.

This study identified five different options for Iowa State University to comply with the new regulations. The study was completed in June of 2011 and the results presented to the university administration and student leadership in the fall of 2011.

In the spring of 2012, Iowa State University initiated a preliminary design project to further review two of the options identified in the initial study. The university used Burns & McDonnell again to complete the preliminary design. As the preliminary design progressed, one option was selected as the best choice for the university to continue to meet campus utility demands, while complying with the proposed environmental regulations. The preliminary design effort evolved into the development of the schematic design and budget.

The selected option simultaneously will replace aging equipment and will allow the university to comply with new environmental regulations. Preliminary design of the selected option established a project budget and construction phasing plan that would allow construction to proceed without disrupting the operating power plant.

Impact on Other Facilities and Square Footage: The addition to the power plant will be approximately 20,000 gsf and will occupy a site formerly used for coal and ash handling equipment and pollution control equipment. No existing building space will be eliminated.

Financial Resources for Construction Project: The project will be funded with Utility Revenue Bonds which will be repaid though utility rates. The university anticipates this project can be accommodated with only marginal increases in utility rates due to the upcoming retirement of previous bond issuances.

Financial Resources for Operations and Maintenance: Operating and maintenance funding will be recovered by utility rates. The university expects maintenance costs to be reduced and operating costs to vary with fuel pricing.

Compelling External Agency or Policy Issues: One of the drivers for this project is changing environmental regulations. Those regulations make it not economical to continue to operate the stoker boilers on coal.

ISU Utility Enterprise

		FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	Assumed Inflation
Revenue											
	RMM Income*	$ 24,774,709	$ 25,394,077	$ 26,028,929	$ 26,679,652	$ 27,346,643	$ 28,030,309	$ 28,731,067	$ 29,449,344	$ 30,185,577	2.5%
	RMM Rebate**	$ (2,000,000)	$ (2,157,374)	$ (2,222,095)	$ -	$ -	$ -	$ -	$ -	$ -	
	Auxiliary Income***	$ 9,580,486	$ 9,819,998	$ 10,065,498	$ 10,317,136	$ 10,575,064	$ 10,839,441	$ 11,110,427	$ 11,388,187	$ 11,672,892	2.5%
	Total Revenue	$ 32,355,195	$ 33,056,701	$ 33,872,332	$ 36,996,787	$ 37,921,707	$ 38,869,750	$ 39,841,494	$ 40,837,531	$ 41,858,469	
Expense											
	Labor	$ 3,023,839	$ 3,177,380	$ 3,288,588	$ 3,403,689	$ 3,522,818	$ 3,446,117	$ 3,566,731	$ 3,691,566	$ 3,820,771	3.5%
	Supplies & Services	$ 6,187,361	6,206,250	$ 6,330,375	$ 6,456,983	$ 6,586,122	$ 6,517,845	$ 6,648,201	$ 6,781,166	$ 6,916,789	2%
	Coal	$ 15,491,912	$ 14,429,129	$ 10,403,320	$ 10,715,420	$ 11,036,882	$ 11,367,989	$ 11,709,028	$ 12,060,299	$ 12,422,108	3%
	Natural Gas	$ 261,675	$ 920,422	$ 5,328,624	$ 5,861,486	$ 6,447,635	$ 7,092,399	$ 7,801,638	$ 8,581,802	$ 9,439,982	10%
	Purchased Electricity	$ 3,208,500	$ 3,271,900	$ 3,559,600	$ 3,666,388	$ 3,776,380	$ 3,889,671	$ 4,006,361	$ 4,126,552	$ 4,250,349	2%
	Debt Service - Existing	$ 4,146,784	$ 4,168,891	$ 4,200,718	$ 1,539,235	$ 1,540,474	$ 1,544,506	$ 1,536,225	$ 1,544,572	$ 1,539,631	
	Debt Service - New #1				$ 1,348,781	$ 1,348,781	$ 1,348,781	$ 1,348,781	$ 1,348,781	$ 1,348,781	
	Debt Service - New #2						$ 1,497,146	$ 1,497,146	$ 1,497,146	$ 1,497,146	
	Capital Renewal	$ 35,124	$ 882,729	$ 761,106	$ 4,004,806	$ 3,662,616	$ 2,165,297	$ 1,727,381	$ 1,205,647	$ 622,912	
		$ 32,355,195	$ 33,056,701	$ 33,872,332	$ 36,996,787	$ 37,921,707	$ 38,869,750	$ 39,841,494	$ 40,837,531	$ 41,858,469	

Boiler Replacement Project	Const Costs	$ 5,700,000	$ 13,300,000	$ 15,200,000	$ 3,800,000	$ 38,000,000	Total
	w/Financing	$ 6,327,000	$ 14,763,000	$ 16,872,000	$ 4,218,000	$ 42,180,000	Total
	Bond #1		$ 20,000,000				
	Bond #2				$ 22,200,000		
	Payment****		($1,348,780.56)		($1,497,146.42)		

*RMM Income - Resource Management Model - General University Entities
**RMM Rebate - Depreciation Credit Given to University for Utility Assets Paid for Prior to Formation of Utility Enterprise (1986); ends in FY 2014 when 1986 bonds mature
***Auxiliary Income - Income from Auxiliary Units, such as Residence System
****Based on 4.5% interest rate for 25 years

Wilson Hall Map