



Legislative Fiscal Bureau

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Joint Committee on Finance

Paper #184

Charter Street Heating and Cooling Plant (Building Program)

[LFB 2009-11 Budget Summary: Page 707, #2 and Page 721, #15]

CURRENT LAW

Under s. 20.924 (1)(a) of the statutes, the Building Commission can authorize the design and construction of any building, structure or facility costing in excess of \$500,000 regardless of funding source, only if that project is enumerated as part of the state building program.

BUILDING COMMISSION

Provide \$250,636,600 BR of program revenue supported bonding and enumerate the Charter Street heating and cooling plant renovation and addition project.

DISCUSSION POINTS

1. The UW-Madison has three plants that supply steam and chilled water to the campus (Charter Street, Walnut Street, and West Campus Cogeneration Facility). The Charter Street Heating Plant (CSHP) is the major source of steam for the campus. Based on a heating plant study released in 2008, the CSHP produced approximately 87% of annual steam output in 2007.

2. The CSHP has five boilers, one of which is fired on natural gas or fuel oil. The remaining four boilers are coal fired, although there is some use of paper derived fuel and tire derived fuel. In 2007-08, the heating plant study indicates that coal was the predominant fuel used at the CSHP. The total rated capacity of all five boilers is 800,000 pounds per hour of steam.

3. The state is operating the CSHP under an amended consent decree under the U.S. District Court for the Western District of Wisconsin. This amended consent decree was entered to settle an action brought by the Sierra Club relating to compliance with the Clean Air Act. As it relates to the CSHP, the consent decree requires certain modifications to the plant's operations in the interim and facility improvements to conform with Clean Air Act requirements relating to boilers that have been subject to major modifications in the past.

4. As a matter of policy, the Governor has indicated that coal is not an option as a fuel

source in the future for the CSHP. To achieve this goal, the proposed project would construct a new circulating fluidized bed solid fuel fired boiler with a capacity of 350,000 pounds per hour of steam. This type of boiler can burn a wide variety of fuels, including switchgrass, corn stover, wood chips and pellets, and other forms of biomass, or, if necessary, natural gas or fuel oil.

5. Either a natural gas fired boiler or a biomass fired boiler should accomplish the environmental goals underlying the amended consent decree. In assessing whether a natural gas fired boiler or a biomass fired boiler would be more desirable, there are several issues to be considered. The initial capital cost of a biomass boiler is higher than a natural gas unit by approximately \$100 million. As a result, for the biomass boiler to have a life cycle cost that is less than the life cycle cost of a natural gas boiler, the relative cost of biomass fuel must be less than that of natural gas. It is estimated that the life cycle cost would be at a break-even point if the cost of biomass fuel would be \$2 per million British thermal units (BTU) less than that of natural gas. At a favorable spread of \$4 per million BTUs, the biomass fired boiler would have a seven-year payback.

6. Because there is uncertainty both as to the maturity of the regional market for biomass and the future costs of natural gas, it is difficult to estimate the comparative long-term costs, although the additional upfront capital cost is known. A biomass boiler would provide flexibility in the choice of fuels, and would increase demand in the Dane County area for biomass fuels. By increasing market demand for biomass fuels, the value of Wisconsin's agricultural products and investments in clean energy technologies may also be increased leading to long-term economic development for the state.

7. The \$250.6 million of bonding proposed by the Building Commission for this project would be self-amortizing bonding. The source for much of this funding would be the GPR fuel and utilities appropriation of the UW System, related tuition funding, and other sources of program revenue. It is estimated that approximately 45% of the debt service costs on these bonds would be paid from GPR funding provided in the UW System's fuel and utilities appropriation, after consideration of the tuition component of this funding and other PR moneys.

8. Based on the age of the existing boilers that would be retrofitted, or replaced, to burn natural gas, it is likely that another major project will be needed at the CSHP in 10 to 15 years. By proceeding with a single biomass boiler now, the state would gain experience with this technology and the availability of biomass in this market before making additional major investments in the CSHP.

9. Although the Amended Consent Decree does not lay out a specific timetable for construction, there are deadlines for monitoring and permit applications, and the Decree will remain in effect until the violation is resolved. Delaying the CSHP project until the 2011-13 building program would not allow timely compliance with the goals of the Decree.

ALTERNATIVES

1. Approve the Building Commission's recommendation to enumerate the Charter Street heating and cooling plant renovation and addition project with \$250,636,600 BR of program

revenue supported bonding.

ALT 1	Change to Bill
	Funding
BR	\$250,636,600

2. Maintain current law, which would result in this project not being enumerated as part of the 2009-11 building program.

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