Combined Heat and Power Plant

BACKGROUND

Projected Boiler Capacity Shortage Threatens University Research and Teaching

• The University’s Minneapolis campus encompasses approximately 18 million square feet throughout 163 buildings with growing heating, cooling, and electricity needs.

• The University’s Utility Master Plan anticipates a shortage in boiler capacity for the Minneapolis campus beginning in 2015 due to increasing demand and aging equipment.

• One of the University’s boilers currently in use will need to be decommissioned in 2015, magnifying supply and demand issues.

• Last year, the University saved $2.6 million and 29,000 tons of CO2 as a result of energy conservation initiatives; however, these efforts cannot remedy the growing demand.

Old Main Steam Plant Is the Preferred Solution

• Old Main was built in 1912 to heat the Minneapolis campus. The building is currently decommissioned.

• The building’s location will allow the University to meet peak demand at a significantly lower construction cost than a remote campus site.

• The building is large enough to serve as a multi-utility plant without constructing additional facilities.

PROJECT DESCRIPTION

Renovate Old Main to Be a Multi-Utility Plant

• Add two seven-megawatt natural gas fired turbines as a combined heat and power system with heat recovery steam generators.

• Replace inefficient, WWII-era coal burners.

• Construct systems to support a future chilled water cluster plant and another natural gas boiler.

• Address Old Main’s safety and code issues.
**2012 Capital Request**

**Benefits**

**Reliability**

- Protects research currently vulnerable to shortages by providing a second source of steam production.
- Reduces Risk. The current practice of depending on one plant for 100% of the campus’s heat has been cited as a top property insurance risk for the campus.
- Provides needed steam peak capacity for at least the next 15 years.

**Sustainability**

- Reduces the campus carbon footprint by 10 percent.
- Uses the waste heat from generating electricity to increase efficiency.

**Cost Control**

- Reduces University utility costs by a projected $1.9 million annually, assuming projected natural gas and electric cost for 2014.*
- Saves the University an additional $4.1 million in debt service with two-thirds state bonding support.
- Provides a financial hedge against future electric rates.
- Creates a cost-effective site for a future chilled water plant.

**Investment: $81 Million**

- $54 million in state funding*
- $27 million in University funding*

*Dollar amounts have been rounded

*Natural gas at $6.54 per MMBtu and electric at $0.0804 per kWh

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This plant will help protect hundreds of millions of dollars in University research activities.