AGENDA ITEM SUMMARY

1. NAME OF ITEM: Natural Gas Central Heating Plant, UMF

2. INITIATED BY: Norman L. Fournier, Chair

3. BOARD INFORMATION: BOARD ACTION: X

4. BACKGROUND:

This is a request pursuant to Board of Trustees Policy 701 and other applicable policies to contract for the construction of a natural gas-fired central heating plant on Farmington campus to consume natural gas in lieu of heating oil.

At its January 6, 2014 Committee meeting, the Finance, Facilities and Technology Committee recommended approval of UMF entering into an agreement to provide natural gas to the campus. This recommendation was moved to the consent agenda at the January 29, 2014 Board of Trustee meeting and accepted. A copy of that prior agenda item is attached. The minutes from the Board meeting read:

“The Board of Trustees approved the recommendation to authorize the University of Maine System, acting through the University of Maine at Farmington to enter such agreements as may be necessary but not to exceed a term of 15-years to secure the delivery of natural gas to the campus and the facility improvements on campus necessary to consume that energy. The final terms, including rate, associated costs and other terms, shall be negotiated by the University of Maine at Farmington in the best economic interest of the University, subject to review and approval by the University of Maine System Vice Chancellor of Finance and Administration and General Counsel.”

Pursuant to this earlier approval, The University of Maine at Farmington now hereby requests Board approval to increase the scope and approved maximum expenditure for the approved Natural Gas Conversion project on the Farmington campus, financed through System resources or outside third-party financers.
Recent Progress

Following the Board approval, UMF issued Notice of Intent letters with Summit Natural Gas and Trane Energy Services from the outcome of UMS RFP 11-13. Summit Natural Gas has made a commitment to have natural gas to the Farmington area by October 2015, and Trane Energy Services has provided a gap-analysis of the campus as well as high-level cost proposals for alternate heating scenarios for the campus.

Originally, UMF was looking to expend between $2M-$4M to convert 46 individual boilers/burners on the campus to accept natural gas. Although this initial project was expected to save the University $4M in fuel cost savings over ten years, have a simple payback of less than five years, and to generate a positive operating cash flow potentially as soon as its first year of operation, the project did not address the six existing steam plants on campus that are beyond the end of their useful life and are not able to be retrofitted to accept natural gas fuel due to their age and construction. Aside from steam system inefficiency, these existing systems are in dire need of replacement in the next three years, at an estimated cost of $5M.

As UMF got deeper into the design stage, it became clear that the campus would not get the full and universal benefit of changing to natural gas from heating oil by not accommodating these steam plant buildings. In addition, UMF would still have approximately 34 individual heating plants to maintain, which is labor intensive to yearly operations and maintenance budgets. If UMF does not convert these steam plants, it will have a mixture of heating systems to maintain as well as old and new technology. Converting these six facilities to modern hydronic heating systems is projected to increase their overall efficiency by 28% and provide a simple payback of 7.9 years on these systems alone.

In light of the infrastructure needs, UMF went back to the RFP submissions and reconsidered a central heating plant option that would service the entire campus. Aside from the financial advantages further discussed below, there are several tangible qualitative advantages to this option, as follows:

- **Dual-fuel.** The central plant option provides for dual-fuel capacity. Not all buildings can accept dual-fuel burner retrofits on existing equipment. This gives the University flexibility to select fuel based on commodity prices and have a backup fuel in the event of an outage or service interruption.
- **Capital equipment.** Centralizing the heating plant will reduce the equipment unit count on campus, resulting in less administrative management of capital assets.
- **Existing fuel storage.** The existing, mostly underground fuel tanks can be removed with the central heating plant option. This reduces risk of leakage, yearly DEP-mandated administrative reporting, and maintenance.
**Future campus buildings.** A centralized heating plant and distribution system will provide capacity to accommodate future building projects on campus. As the heating system will be provided already, the capital construction costs can be reduced, as they will not need to include a separate heating system.

**Emissions.** The central plant’s carbon emissions are projected to be less than the sum-total of the entire individual heating plants burning natural gas.

**Biomass Expansion.** UMF’s energy team, made up of faculty, staff, students and community members is very interested in a biomass option for heating the campus. The central heating plant would allow for the addition of a biomass boiler plant in the future.

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**Financial Analysis and Findings**

Given the potential increased project conversion cost, the project team elected to go back to the results of the RFP and evaluate all of the options on a simple payback basis. UMF engaged third-party energy consultants to provide an impartial analysis of the various options. Their cost model includes current commodity rates, inflation rates, available incentives, FTE reductions, efficiency gains, and updated capital project cost estimates from Trane. (Attachment A)

**Payback.** The results of this numerical analysis show that the original project (Option 2) still has the quickest simple payback, but ignores the approximate $5M in steam conversions that will need to be otherwise funded. Choosing to remedy the steam conversion issue with this project, the numbers show that converting all of the steam systems (Option 1) or constructing a central heating plant (Option 3 or 4) provides nearly equal payback.

**Capital Investment.** The revised project is projected to have an approximate cost of $11M (depending on final design), save the University approximately $8.6 million in fuel costs over ten years, and, depending on final costs, have a simple payback of less than 9.89 years. **Modeling has shown that this project would be entirely self-funding over 15 years with an estimated positive $3.3 million cash flow in year 15. The final debt service will be determined by overall budgetary and other strategic considerations and matching the life of the asset.**

**Efficiency Improvements.** The efficiency improvements over the entire campus associated with the conversion to natural gas are anticipated to reduce our thermal energy consumption by the equivalent of 106,800 gallons of No. 2 Oil. The savings created will allow UMF to achieve badly needed capital improvements, to reduce our ongoing operations and maintenance costs, and to have a fuel-flexible central heating plant – all paid for through a project that is structured to be entirely self-funding.

**Building Area.** UMF acknowledges that construction of a Central Plant will add approximately 7,500gsf (50’ x 150’) to the campus footprint. At this time, UMF has identified approximately 4,000gsf to remove from the campus within the next two
years. However, there may be additional reductions that will occur when the campus master plan is complete.

**Financing.** Multiple financing options have been considered including third-party private and direct bonding options. Final financing will be determined in consultation with the University of Maine System Director of Finance subject to approval by the Treasurer. The likely choice is revenue bonding by the University and, in that case, the request for that specific authority would be brought before the Trustees as required for approval at a future meeting apart from this project approval. The intent is to issue debt not to exceed the useful life of the asset. Once the financing is fully repaid, cash flow will be increased even more for the balance of the 40-year anticipated lifespan of the central heating plant equipment.

**Recommendation**

UMF is recommending a change of focus from the original campus-wide natural gas distribution project, and instead constructing a natural gas-fired central heating plant with a hot water distribution system on campus. A central heating plant will allow UMF to be more flexible in the future when it comes to commodity cost, having the ability to easily switch between natural gas and oil (and biomass solid fuel in the future). As previously described, this agreement is not expected to be a traditional design, bid, build construction agreement but rather is expected potentially to involve an energy services agreement or other alternative contracting methods. In part, this is because the natural gas pipeline is yet to be built and the agreement will involve the University benefiting in facility infrastructure improvements on campus while paying for those improvements from its energy savings rather than as an up-front capital investment of University funds.

5. **TEXT OF PROPOSED RESOLUTION:**

That the Finance, Facilities and Technology Committee forward this item to the Consent Agenda at the July 21, 2014 Board of Trustees meeting for approval of the following resolution:

That the Board of Trustees authorizes the University of Maine System, on behalf of the University of Maine at Farmington, to increase the scope and approved maximum expenditure of $11M to build a central plant and distribution system that is dual-fuel, which is natural gas with a #2 oil backup, with the capacity to add a biomass boiler after five years. The final term, including rate, associated costs and other terms, shall be negotiated by the University of Maine at Farmington in the best economic interest of the University, subject to review and approval by the University of Maine System Treasurer and General Counsel.

06/27/2014