AGENDA ITEM SUMMARY

1. **NAME OF ITEM:** Central Heat Plant Replacement, USM

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 replace the dual-fuel-fired central heating plant on Portland campus.

   The University of Southern Maine requests approval for the expenditure of up to $3 million to replace the existing Portland Central Heat Plant boilers, related boiler room equipment switch gear, the main distribution panel and the transformer serving the Central Heat Plant and the adjacent Woodbury Campus Center.

   The main buildings on the USM Portland campus are heated by a low pressure steam generation and distribution system that supplies steam and returns condensate to the central heat plant. Boilers 1 and 2 burn #6 fuel oil and were installed in 1964. Boiler 3 has dual fuel capacity as a result of replacing the burners in 2010 and was installed in 1970. Either natural gas or #2 fuel oil is burned, depending on which fuel is more cost effective at any given time.

   The American Society of Heating, Refrigerating and Air Conditioning Engineers, (ASHRAE) estimates the service life of these types of boilers to be 30 years. USM’s have been in service for 44-50 years. A condition assessment done in 2012 concluded that the boilers’ critical components have undergone thermal stress cycles beyond the expected service life, thereby making it impracticable for any type of further life extension. There should be no expectation of continued reliable service for these boilers and a complete catastrophic equipment failure is possible. A life extension, though financially impractical, would require replacement of all major components consisting of burner, tubes and tube sheets, refractory, insulation, boiler jacket and controls.

   USM retained an engineering firm to prepare a central heat plant assessment, study options, and make recommendations. This study was informed by information in the 2010 Utility Master Plan and the goals of the President’s Council on Climate Neutrality.

   Several options were presented and considered for replacement of the existing boilers at the plant. Considering many factors, including efficiency, carbon footprint, capital and operating costs, and available space, the decision was made to replace the existing boilers
with dual fuel boilers of like size utilizing natural gas and #2 fuel oil. This project will also include building improvements to adhere to current codes and accommodate the three replacement boilers.

The following scope will be included in the overall Central Heat Plant Replacement and infrastructure improvements project.

- Replace three existing low pressure steam boilers and all associated piping and equipment. Include solar preheated hot water make up water, stack economizers, full system automation and coordination with the building automation system, ventilation and combustion air make up, and an environmentally controlled control room.
- Installation of a permanent standby emergency generator to provide reliable full power requirements to operate the central heat plant during an extended electrical outage. This will maintain the ability to provide steam distribution throughout the campus during an extended electrical outage.
- Building exterior upgrades include new windows and doors, masonry repointing, roof replacement, chimney removal, and refurbishing the existing oil tank for #2 oil.
- Building interior upgrades to include a new control room, bathroom facility, maintenance area, and mechanical area.
- Electrical upgrades include new switch gear, main distribution panel, and transformer for the Central Heat Plant and Woodbury Campus Center.

This project will improve efficiency resulting in an approximate fuel savings of 11%; in FY '14 that would have reduced costs by $63,000. Additional savings will be realized by equipment reliability, significantly reduced repair costs, and reduced overtime labor for emergency repairs. While savings are significant, this project is not being undertaken for energy savings. Rather, the purpose is the fundamental need to reliably heat and operate the involved facilities as cost-effectively as possible.

USM has accumulated approximately $3 million in University E&G funds for this project. Because of the lead time necessary to order the specialized equipment, construction is estimated to start at the end of the 2014-2015 heating season to be in operation by October 1, 2015. There will be no increase in square footage from this project. The estimated renovation age and net asset value of the plant currently stand at 49 years and 36 percent respectively. The project will re-set the renovation age to the equivalent of a new building and the net asset value is expected to increase to 100 percent, new status.

5. TEXT OF PROPOSED RESOLUTION:

That the Finance, Facilities and Technology Committee forward this item to the Consent Agenda at the September 21-22, 2014 Board of Trustees meeting for approval of the following resolution:

That the Board of Trustees authorizes the University of Southern Maine to expend up to $3,000,000 in University E&G funds to replace the Portland Central Heat Plant and related equipment.