

# **Board Study Session**

**July 11, 2017**

The College's Central Plant is equipped with two large steam boilers that are used to provide heat for the 8 main campus buildings. These boilers were originally installed in 1967 and are now 50 years old. Their typical life expectancy is about 25 years. As with most equipment of this age, efficiency is not what it could be, and is nowhere close to the efficiency of modern equipment. These boilers operate at a modulated load up to full load and are typically about 70-80% efficient depending on the load.

Boiler #1 developed a leak in the exterior steam jacket late last winter. We had a contractor weld the leaking areas, but additional leaks developed. Again, we had the new leaks welded shut, but the boiler is again leaking.

We have two of the large steam boilers and during the heating season these boilers are alternated to spread out the load and wear and tear on them. Only one boiler is necessary to be operational for heating. We cannot go into the heating season with only one heating source. If the single boiler was to fail, the entire campus would be without heat.

During a recent engineering study, a number of contractors bid on a hybrid modification of our boiler plant. The costs for modifying our plant were much higher than expected, resulting in an inadequate payback to fully modify the entire heating plant.

We have developed an alternate modification to our plant which would phase in the replacement of our two boilers. The local contractor with the low bid on the modification of the heating plant was Peterson Mechanical. This plan would keep Boiler #2 as a backup heat source and would replace the failing Boiler #1.

## **Recommendation:**

1. Purchase three small high efficiency condensing hot water boilers directly from the manufacture's distributor (AES). These would be Lochinvar boilers and are rated with an efficiency of 95%. The total cost of the three boilers and associated equipment is \$172,720.
  - The expectation is that the new high efficient boilers will save 30% on the cost of gas necessary for the campus heating.
  - These three boilers would be our "primary" heating source.
  - Boiler #2 (original) would serve as a backup boiler for the time being.
  - Eventually, we would add two additional Lochinvar boilers to replace Boiler #2.
2. Authorize Peterson Mechanical to do the majority of the piping/boiler installation as well as the demo of the existing Boiler #1. The total cost of the installation is \$156,650.
3. Barton staff would run all power necessary as well as the electronic control system necessary to integrate the new boilers with our EMS system.
4. This project has been budgeted as a capital expense.