ITEM # 33
DATE: 06-12-18

COUNCIL ACTION FORM

SUBJECT: ENGINEERING STUDY FOR OPERATING UNIT 8 BOILER AT LOWER STEAM TEMPERATURE AND PRESSURE

BACKGROUND:

Unit 8 has suffered from an excessive number of tube failures in the secondary superheater, due to high temperature fire side corrosion. The purpose of this engineering study is to determine if the boiler can be operated at a lower pressure and temperature to prevent additional superheat tube failures. Currently, super heat tube failures are a result of the chemical characteristics of burning natural gas and RDF as fuel. Combustion of these products result in increases chloride gases that are transported through the flue gas of the boiler. These chlorides attach boiler tubes an increase the rate of corrosion within the tubes. Additionally, temperatures above 900 deg F can exponentially increase the degradation of tubes from chloride corrosion. Unit 8 boiler super heat tubes are currently in a region above 900 deg F, which in turn, is creating accelerated corrosion in boiler tubes. This corrosion is resulting in increased boiler tube failures resulting in increased plant down times, outages and a great burden in boiler maintenance repairs.

The study will examine the specified loads and identify circulation characteristics in each flow circuit when reducing boiler temperature and/or pressure. These results will then be compared to current B&W Circulation Guidelines to determine if they are acceptable for the load conditions being examined. If the unit cannot meet the required circulation criteria, recommendations to address these issues will be provided. These recommendations could be an operational change or physical modifications to alter the boiler circuitry and/or material specifications to improve boiler reliability.

Unit 8 boiler was designed by B&W and they are considered the Original Equipment Manufacturer (OEM) for the Unit 8 boiler. B&W has knowledge of the Unit 8 boiler history, operation, and design data. B&W is considered an industry expert in boiler operations and design and have the industry experts to model the Unit 8 boiler to understand the dynamics in changing boiler temperatures. These changes will need to be studied to understand the possible safety and financial impacts that changing boiler dynamics can have on the Unit 8 turbine and system components. This study will also investigate if lowering steam temperatures will have an impact on turbine performance and turbine maintenance.

City staff is seeking authorization to enter into a contract with The Babcock & Wilcox Company of Kansas City, Missouri for this engineering work based on OEM knowledge of the City's boiler and industry expertise in boiler design. To accomplish this objective, Staff also is recommending that the City Council waive

the City's purchasing policies requiring competitive proposals to provide for selection of this firm. Funding for this work will be taken from the Unit #8 Steam Turbine and Generator Maintenance account which has a current balance of $80,000.

ALTERNATIVES:

1. Waive the City's purchasing policy requirement for competitive proposals and award a contract to The Babcock & Wilcox Company of Kansas City, Missouri in the amount of $76,263 for the engineering study for operating Unit 8 Boiler at lower steam temperature and pressure.

2. Reject the waiver request and direct staff to issue a request for proposal.

MANAGER'S RECOMMENDED ACTION:

Operating the Power Plant boilers, as is, will result in continued deterioration of boiler tubes resulting in unplanned down time, outages, and increases in costs associated with maintenance repairs. This ultimately affects the Power Plant's ability to reliably process RDF. It is hoped that this engineering work will identify operational changes or physical modifications to alter the boiler circuitry and/or material specifications to improve boiler reliability.

Therefore, it is the recommendation of the City Manager that the City Council adopt Alternative No. 1 as stated above.