ITEM # 19
DATE: 10-23-18

COUNCIL ACTION FORM

SUBJECT: UNIT 7 BOILER REPAIR PROJECT

BACKGROUND:

This council action is for the approval of plans and specifications for the Unit 7 Boiler Repair Project. This project, which has been planned for several years, is to repair the boiler through the following actions:

- Replacing the boiler tubes in the lower waterwall section of the boiler
- Replacing all the pendant tubes in the superheat section
- Reinsulating the steam and mud drums
- Replacing the insulation and lagging (the aluminum skin) that covers the boiler

Unit 7 is one of two primary boilers at the City's Power Plant, and is now 50 years old. Due to a combination of age, firing coal, firing natural gas since 2016, and co-firing refuse derived fuel (RDF), the boiler is in critical need of tube repairs.

As a result of boiler tube failures, Unit 7 has been off-line since early this year. With Unit 8 also experiencing frequent boiler tube issues, it is critical that this Unit 7 project proceed as quickly as possible so that the Power Plant can continue to burn refuse derived fuel.

After switching from coal to natural gas two years ago, staff found that the boiler tubes, especially the superheater tubes, were deteriorating at an accelerated pace. The water vapor created during the combustion of natural gas combines with the chlorides and acid gases from combusting RDF, causing the tube surfaces to corrode very quickly, especially in the high temperature zones of the superheater. For many years the power boiler and waste to energy (WTE) industries have relied on coating or cladding boiler tubes with nickel based alloys to form a barrier to the corrosive attack of the boiler gases upon the tubes. For this project, the outer surfaces of the new replacement tubes for the waterwall and superheater sections of Unit 7 boiler will be clad with a nickel based alloy to prevent or largely mitigate the corrosive attack upon the tubes.

Based upon earlier engineering estimates, the approved Capital Improvements Plan (CIP) includes the following funding for the Unit No. 7 Boiler Repair:

2015/16	Engineering	$5,150
2016/17	Engineering	$125,796
2017/18	Engineering	$50,000

2019/20	Materials/labor - superheat and waterwall	$5,650,000
TOTAL		**$5,830,946**

It has now been determined that the funding included in the CIP is inadequate to accomplish these repairs. The updated engineer's cost estimate is $8,400,000. The reason for this major cost increase stems from recent experience with similar tube issues in Unit 8. It has now become clear that burning natural gas with RDF leads to tube wastage in the higher portions of the boiler, specifically in the superheater section. It is now clear that protective coating must be applied to that section as well, meaning that many more tubes must be coated than were originally anticipated.

With the Engineer's estimate significantly higher than the funding included in the CIP, staff needs to evaluate delaying or eliminating other future capital projects to make up the difference. Those recommendations for additional funding will be presented by staff by January 8 when staff brings a recommendation for award of bid. Staff also believes that bidding on this project may produce bids that are less than the Engineer' estimate, which would further reduce the amount of additional capital funding needed.

ALTERNATIVES:

1. Approve the plans and specifications for the Unit No. 7 Boiler Repair and set December 19, 2018, as the bid due date and January 8, 2019, as the date of hearing and award of contract.

2. Delay the Unit No. 7 Boiler Repair.

CITY MANAGER'S RECOMMENDED ACTION:

This project will go to great lengths to address Unit 7's boiler tube failures. It is crucial that the project proceed as soon as possible in order to minimize downtime for this boiler and to increase the Power Plant's ability to burn refuse derived fuel.

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