ITEM#	**23**
DATE:	**03-28-23**
DEPT:	**ELEC.**

COUNCIL ACTION FORM

SUBJECT: UNIT 8 ELECTROSTATIC PRECIPITATOR MAINTENANCE

BACKGROUND:

The Power Plant's boilers co-fire natural gas and refuse-derived fuel (RDF) to produce heat and generate electricity. The combustion of RDF produces particulate matter (ash). Therefore, the Power Plant uses electrostatic precipitators (ESPs) to remove particulate matter from the boiler flue gas before the flue gas is exhausted to the outside. In Unit 8, the ESP is two separate vessels, an upper section and a lower section, that takes the flue gas from the boiler and removes 99.99% of the particulate matter before the gas exits the chimney.

The ESP contains hundreds of 30-foot wires charged with 10,000 volts that hang in the flue gas stream. As it passes the wires, the ash in the flue gas becomes electrically charged. The ash is then attracted to 30-foot plates hanging next to the wires. The plates are periodically vibrated, and the ash that has become stuck to the plates drops into collection hoppers where it is removed through piping. It is a requirement of the Power Plant's operating permit that this equipment is functioning properly while the boiler.

For approximately 30 years, Unit 8 operated by burning a combination of coal and RDF. Both fuels generated flyash to be captured by the ESP. Several years ago, Unit 8 was converted to operate on a combination of natural gas and RDF. This conversion has resulted in changes to the conditions experienced by the ESP. The particulate composition is now higher in moisture and flue gas flows are more erratic. Both changes have caused a greater amount of wear inside the upper and lower vessels.

It has been determined that a number of internal repairs need to be performed, including:

- Straightening bowed plates in all fields. An estimated 30% of the 448 plates are bowed
- Aligning the discharge electrode weight guides in all 8 fields
- Clean collector plates and electrodes in all 8 fields
- Clean all 64 support bushings
- Clean all 64 stand-off insulators

It has also been determined that customized brackets need to be installed on the lower frames that hold the electrodes. These brackets will help the equipment stand up to the erratic gas flows. Staff has worked with the original equipment manufacturer (OEM), Babcock & Wilcox, to design these customized brackets and the plant recently ordered the parts to have them before Unit 8 is put back online after the current Spring outage.

It is staff's belief that the Babcock & Wilcox Company, Akron, OH, is the best company to perform the repair work. Babcock & Wilcox is the OEM of the ESP, knows and understands the design of the ESP to perform repairs as needed, and has been working with the City to determine innovative solutions to keep the ESP operating reliably and efficiently while combusting natural gas and refuse derived fuel.

Staff obtained a quote from Babcock & Wilcox to perform the repairs and install the 32 customized brackets in 8 hoppers on both the upper and lower ESP vessels. The quote is in the amount of $175,056. This amount is an estimate based on the known condition of the ESP. Staff reviewed the time and material rates used to calculate the quote and compared them to other similar repair contracts for power plant work. In the opinion of the power plant staff, the rates provided are reasonable.

While plant staff and Babcock & Wilcox believe all needed work will be able to be accomplished within this amount, there may be more or less work involved with the straightening, aligning, and cleaning. **Payments will be based on the actual labor and materials expenses incurred using the rates provided in the quote.**

Staff is requesting that the City Council waive the City's purchasing policies requirement for competitive bids and award the work on the ESP Upper and Lower vessels to The Babcock & Wilcox Company, of Akron, OH in an amount not-to-exceed $175,056. The FY 2022/23 operating budget contains a remaining balance of $119,000 for Unit 8 Auxiliary equipment repairs. An additional $56,056 from the Unit 7 Auxiliary Equipment repair account will be used to cover the difference.

ALTERNATIVES:

1. Waive the City's purchasing policy requirement for formal bidding and award a contract to The Babcock & Wilcox Company, Akron, OH, for work to be completed on the Unit 8 Electrostatic Precipitator in an amount not to exceed $175,056.

2. Do not perform the maintenance necessary.

CITY MANAGER'S RECOMMENDED ACTION:

The electrostatic precipitator controls particulate emissions and must be in operation any time the unit is combusting natural gas and refuse derived fuel. It is in the City's best interest to continue to keep this equipment in good operating condition to ensure reliability and efficiency. It is also best to continue working directly with the OEM to ensure the equipment is receiving correct repairs.

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