

COUNCIL ACTION FORM

**SUBJECT: CONTRACT FOR FIELD ENGINEERING SERVICES FOR UNIT #8
OVERHAUL AT POWER PLANT – CHANGE ORDER 1**

BACKGROUND:

On June 23, 2020, the City Council approved plans and specifications for the Unit 8 Turbine-Generator Overhaul Project. The Unit 8 Turbine-Generator is disassembled at regular intervals to inspect the turbine and the generator for repairs and to install replacement parts that may be needed to prevent unplanned turbine-generator outages, prevent costly turbine-generator damage, and increase turbine-generator efficiency and reliability.

Major turbine-generator overhauls are performed generally every 5-10 years, depending on amount of run time and conditions. The last major overhaul on Unit 8 was performed in 2013. The overhaul consists of removing the top turbine casing, removing the turbine rotor, removing the end caps on the generator, and removing the generator rotor. Numerous inspections, measurements, and tests are taken on all parts to assess wear and damage and they are within tolerance. Damaged or worn parts are repaired or replaced, and the unit is reassembled.

General Electric (GE) is the original equipment manufacturer (OEM) of the turbine generator. Because of the precision of the many parts inside the turbine-generator and the knowledge and experience required to inspect and repair them correctly, a field service person from GE is needed to be on site overseeing all inspections and repairs during the entire project. As the OEM, GE has all necessary drawings and is very familiar with our unit since we have used GE's services for the turbine controls conversion in 2016. Additionally, GE technical services was used during the last overhaul performed on Unit 7 in 2019.

On April 13, 2021, City Council approved a contract for GE's technical services in the amount of \$242,800. The original proposal provided a firm price for GE to perform field engineering services on site for 10-hour shifts, 6 days a week, for 8 weeks.

The overhaul project has not been able to be completed within the originally planned 8-week window due to two major factors. First, the Electric utility is subject to membership requirements of the Mid-Continent Independent System Operator (MISO), the utility's power marketing organization. In order to meet MISO operating requirements, Unit 8 needed to be operational by August 29, 2021, and operate for a minimum of 30 days to have the unit's capacity accredited with MISO. Therefore, the project scheduling expected the contractor to mobilize in June and complete the project before this August 29 deadline.

Second, ahead of the project, the Unit 8 crane was supposed to be rebuilt by a separate contractor. The crane is necessary to completely disassemble the turbine and generator components for inspection and repair. However, the crane was not returned to service prior to the turbine-generator overhaul project commencing, despite the original completion date of the crane rebuild being October 31, 2020.

Therefore, the turbine contractor (Blade Runner) mobilized to the site on June 11, 2021, and GE was on site June 14, 2021, to begin the outage on Unit 8. The turbine contractor performed what could be done without the overhead unit crane, expecting the crane to be available within days. **Due to delays by the crane contractor because of material availability, the crane was not installed until June 12, 2021.** The next day, June 13, 2021, the crane failed its load certification test and was rendered inoperable.

Ames staff believed the contractor could repair the crane and pass the test within a few days. However, it became apparent that the crane would not be available in time to complete the entire overhaul before MISO's August 29 deadline. Therefore, Electric staff determined it would be best to perform all repairs that would ensure Unit 8's availability by the 29th, operate the unit for the 30-day requirement, and then return to perform the remaining overhaul scope in a second maintenance outage beginning October 4, 2021.

Following the failed load certification test, the Unit 8 crane was repaired and certified on July 23, 2021. The turbine contractor and GE returned to site on October 4, 2021, and continued the work to complete the entire scope of the overhaul. Unfortunately, the crane incident slowed down the project, which necessitates an additional three weeks of technical services from GE.

To date, the total contract amount has been spent. **Based on the initial contract, three weeks would cost an additional \$91,000. Therefore, the action being requested is to approve Change Order No. 1 to General Electric in the amount of \$91,000 to extend the contract to provide technical oversight for an additional 3 weeks.** GE's technical services payment is based on verification of timesheets and using approved rates.

Funding for the Unit 8 Turbine-Generator Overhaul Project was originally budgeted in the 2019/20 CIP in the amount of \$3,000,000 total. **If approved, this Change Order increases the total GE contract amount to \$333,800. This is below the \$350,000 budgeted for GE services in the CIP. However, the entire project has exceeded the \$3,000,000 in available funding due to Change Orders with the turbine contractor, Blade Runner. A separate Council Action Form is being presented to the City Council on the November 23, 2021, agenda outlining the Blade Runner Change Orders and the funding sources to cover them.**

Contracts awarded to date on this project are:

Argo	Parts	\$ 1,077,109.00
Argo	City to pay sales tax	\$ 74,711.63
MD&A	Parts (sales tax included)	\$ 191,461.85
Power Plant Services	Parts (sales tax included)	\$ 147,224.65
Burns & McDonnell	Engineering	\$ 39,176.89
General Electric	Technical Support	\$ 242,800.00
General Electric	CO #1 (This Council Action)	\$ 91,000.00
Blade Runner	Prime Contractor	\$ 699,800.00
Blade Runner	City to pay sales tax	\$ 48,986.00
Blade Runner	CO # 1	\$ 607,678.37
Blade Runner	City to pay sales tax	\$ 42,537.49
Blade Runner	CO # 2	\$ 26,993.86
Blade Runner	City to pay sales tax	\$ 1,889.57
Blade Runner	CO # 3	\$ 181,357.44
Blade Runner	City to pay sales tax	\$ 12,695.02
Blade Runner	CO # 4 (Separate Council Action)	\$ 123,843.27
Blade Runner	City to pay sales tax	\$ 8,669.03
	TOTAL	\$3,617,934.07

The Engineer's estimate for the cost of the total project was \$2,488,000, although it is very difficult to determine the actual repair cost before the unit is completely disassembled and measured/tested. Funding for the Unit 8 Turbine-Generator Overhaul Project was originally budgeted in the 2019/20 CIP in the amount of \$3,000,000. Funds to finance expenses exceeding that amount will be taken from the Unit 7 Boiler Repair Project CIP, the Unit 7 Turbine-Generator Overhaul CIP, and the Unit 8 Turbine & Generator Maintenance account.

In total, funds are available for this project as follows:

2019/20 Unit #8 Turbine Generator Overhaul CIP

Materials/Parts	\$1,000,000.00
Construction	1,650,000.00
GE Tech Support	350,000.00
Unit 7 Boiler Tube CIP	311,623.00
Unit 7 Overhaul CIP	288,924.12
Unit 8 Turbine & Generator Maint.	55,000.00
TOTAL	\$3,655,547.12

City staff is reviewing the crane contract and the events leading up to the failure of the crane during the load certification testing. The delays that resulted from this incident have resulted in this cost increase as well as other cost increases to re-mobilize other contractors on this project. Staff is consulting with legal counsel to determine the liability the crane contractor has for these costs and will consider pursuing a claim against the crane contractor and/or others responsible for the damage and resulting delays.

ALTERNATIVES:

1. Approve Change Order 1 for additional technical field advisor services for Unit 8 overhaul with General Electric Steam Services, Inc., Midlothian, Virginia, in an amount not-to-exceed \$91,000.
2. Do not approve Change Order 1 for additional technical field engineering services for Unit 8 overhaul.

CITY MANAGER'S RECOMMENDED ACTION:

This project will complete the overhaul of Unit 8 Turbine-Generator. It is crucial to perform this work in a timely fashion in order to maintain compliance with the turbine-generator and maintain reliability. General Electric is the manufacturer of the turbinegenerator and its technical field direction during the actual work is critical to the success of the project.

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