

COUNCIL ACTION FORM

**SUBJECT: CONTRACT CHANGE ORDER NO. 9 - UNIT 7 TURBINE GENERATOR
MAJOR OVERHAUL**

BACKGROUND:

The Power Plant's two steam turbine-generator units must be periodically disassembled for inspection and repair. The basic scope of work is commonly referred to as "open, clean, and close." In this process, the turbine-generator is opened (disassembled), cleaned (key parts and components are measured, cleaned, and repaired or replaced), and closed (reassembled for operation). The 2018/19 Capital Improvements Plan included a project to perform this type of overhaul on the Unit 7 turbine and generator.

Several mechanical parts of the Unit 7 turbine were repaired or replaced during the fall 2019 overhaul. The parts include: turbine blades, turbine diaphragms, bearings, and mechanical seals.

As part of the start-up process for Unit 7, a fine screen mesh strainer and filter were installed in the Unit 7 main stop valve. The strainer was installed by HPI, the turbine generator overhaul contractor, to prevent any residual foreign materials (weld rods, weld slag, etc.) leftover from the overhaul and Unit 7 boiler tube repair work from migrating into the Unit 7 turbine. Without this strainer, these particles could cause damage to the turbine, resulting in additional costly repairs and outages. Use of the fine-mesh screen is recommended by the original equipment manufacturer (OEM) General Electric, for approximately 30 days after initial start-up of the Unit. However, the use of this strainer reduced the maximum capacity at which the Unit 7 could operate.

After approximately 30 days of operation with the fine screen, HPI re-mobilized to the site to remove the fine screen mesh strainer and re-install a coarse screen mesh strainer. This coarse screen strainer will still provide protection to the turbine generator but allow the unit to run at full capacity. It will remain in place and does not need to be removed at a later date

During the swapping of strainers, several nuts for the cover that house the main stop valve strainer were damaged and had to be replaced. (This type of damage is not unexpected during the removal of these nuts) The nuts had to be special ordered from the OEM and completely manufactured. This led to a delay of approximately 1.5 days waiting for delivery of the parts. This change order to HPI is to cover the time delay for the delivery of the housing nuts.

PRIOR ACTIONS

On June 11, 2019, the Ames City Council approved a contract with HPI, LLC in the amount of \$411,464 to overhaul the Unit 7 turbine-generator at the City's Electric Plant. This contract is for the "open, clean, and close" type of work as previously described.

Change Order No. 1, for \$15,482.45, was approved by staff for additional electrical tests recommended by GE (the OEM) to be performed on Unit 7 generator.

Change Order No. 2, for \$225,361.55, was approved by Council on September 17, 2019 for shop Rotor and Diaphragm repairs to be performed on Unit 7 turbine as recommended by GE (OEM).

Change Order No. 3, for \$28,386.00 was approved by staff for the additional labor, materials, and equipment necessary to ship the Unit 7 turbine rotor and diaphragms for repairs.

Change Order No. 4, for \$14,290.00 was approved by staff for shop repairs on steam seal bushing and spill strips.

Change Order No. 5, for \$3,412.50 for shipping on the Unit 7 turbine to Orbital Energy for erosion repairs and additional charges due to crane delay.

Change Order No. 6, for \$18,600.75 was approved by Council on November 26, 2019 for additional labor for IMD Startup Support.

Change Order No. 7, for \$26,709.00 was approved by staff for additional mob/demob labor for HPI Startup Support.

Change Order No. 8, for \$23,204.94 was approved by staff for additional labor for HPI Startup Support and iMD Remote Monitoring and an additional \$10,340.94 is to cover the T&M costs that occurred during CO #3 and #4 due to an unexpected crane downtime and additional onsite nozzle repair work.

THIS ACTION

This CAF is to cover project stand-by time during the delivery of main stop valve nuts during the installation of the coarse screen strainer.

This extra work is priced at \$2,675 according to the quotation from HPI dated February 3, 2020. HPI's quotation references a detailed description of work and pricing.

Because this change order, combined with the staff-approved change orders since the last Council-approved change order, exceeds \$50,000 in total, the

Purchasing Policies require that the City Council approve this change order. Therefore, this action is to request approval of Change Order No. 9 to HPI, LLC for \$2,675.00 for the screen replacement delay on the steam turbine as described.

The approved FY 2018/19 Capital Improvements Plan includes the following funding for the Unit 7 Turbine Generator Overhaul.

2017/18 Engineering/Parts	\$750,000
2018/19 Labor	\$1,500,000
2018/19 GE Tech Support	<u>\$300,000</u>
Total Available Revenue	\$2,550,000

Contracts awarded to date on this project are:

HPI LLC (<i>Perform Overhaul</i>)	\$766,911.19
Change Order #9	2,675.00
General Electric (<i>Field Engineering Services</i>)	\$360,386.22
General Electric (Generator Flux Probe Test)	\$14,920.00
MD&A (<i>Turbine Parts</i>)	\$139,683.12
Argo (<i>Turbine Parts</i>)	\$361,895.04
<u>Burns & McDonnell (<i>Engineering</i>)</u>	<u>\$43,000.00</u>
Total Estimated Expenditures	\$1,689,470.57

ALTERNATIVES:

1. Approve Change Order No. 9 to HPI, LLC in the amount of \$2,675 for screen replacement delay.
2. Do not approve the requested change order.

CITY MANAGER'S RECOMMENDED ACTION:

These costs are for project-standby for HPI due to the replacement and delivery of main stop valve housing nuts. Engineers from the Electric Department have evaluated the proposed work in the change order and agree that the scope and pricing are appropriate.

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