

**AGENDA**  
**SPECIAL MEETING OF THE AMES CITY COUNCIL**  
**COUNCIL CHAMBERS - CITY HALL - 515 CLARK AVENUE**  
**SEPTEMBER 17, 2019**

**CALL TO ORDER:** 12:45 PM

1. Resolution approving Change Order No. 2 to contract with HPI, LLC, of Houston, Texas, for Unit #7 Turbine Generator Overhaul in the amount of \$225,361.55

**DISPOSITION OF COMMUNICATIONS TO COUNCIL:**

**COUNCIL COMMENTS:**

**ADJOURNMENT:**

**COUNCIL ACTION FORM**

**SUBJECT: CHANGE ORDER NO. 2 - 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.

**During the disassembly and cleaning phases of the turbine-generator overhaul, other problems are typically discovered that were not anticipated or could not be quantified before the internals of the turbine-generator were exposed. This discovery of problems is normal for the industry during major turbine-generator overhauls.** Typical problems include missing or damaged turbine blades, steam erosion of turbine blading, and loose generator end turns. These problems when discovered typically require repairs be made by skilled craftspersons either onsite or in special repair shops. These repairs require Change Orders for the extra work.

**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.

**THIS ACTION**

Upon disassembly of the steam turbine and inspection by the contractor (HPI) and GE field technical service, several key components of the Unit 7 turbine were found to be worn and damaged. Therefore, the following additional work is required:

- 1) The rotor needs to be shipped to a turbine repair shop in Missouri to be thoroughly inspected and tested and replace blade rows 1A, 2, and 3, and to repair foreign object damage on stages 4 and 5.

- 2) Diaphragms must also be shipped to the repair shop in Missouri to be inspected and to perform major repair work on stages 11 through 14.
- 3) Skilled craftspersons must be sent to Ames to perform repairs on the nozzle, the Curtis wheel, and diaphragms. The nozzle has 6 partitions needing repairs. The Curtis wheel has 9 vanes needing repair. Stages 2, 3, and 4 have foreign object damage requiring repair.

This extra work is priced at \$225,361.55 according to the quotation from HPI dated September 13, 2019. HPI's quotation references a detailed description of work and pricing from its subcontractor.

**Therefore, this action is to request approval of Change Order No. 2 to HPI, LLC for \$225,361.55 for the necessary repairs on the steam turbine as described.** HPI is not licensed to collect Iowa sales tax, so the City will be responsible for paying sales tax directly to the state. The sales tax amount is \$15,775.31.

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>
<b>TOTAL</b>	<b>\$2,550,000</b>

The Engineer's estimate for the total cost of the project is \$2,440,000. To date, \$426,946.45 has been authorized for this project (contract amount of \$411,464 plus Change Order No. 1 for \$15,482.45). With Change Order No. 2, the authorized total for the project is \$652,308. Adding sales taxes yields a budget total of \$697,949.56. This leaves \$802,050.44 available in the project's budget.

**ALTERNATIVES:**

1. Approve Change Order No. 2 to HPI, LLC in the amount of \$225,361.55 for repairs to Unit 7's steam turbine.
2. Do not approve the requested change order.

**CITY MANAGER'S RECOMMENDED ACTION:**

**These repairs to Unit #7's steam turbine are critical to restore the performance and integrity of the unit. The tests and repairs proposed could not be anticipated prior to opening the unit for preliminary inspection and, therefore, could not be made a part of the original contract scope of work. Engineers from the Electric Department have evaluated the proposed work in the change order and agree that the scope and pricing are appropriate.**

If approved, staff will work with the contractor to immediately package and ship the turbine rotor. If delayed, the turbine may not be repaired and reassembled before the Unit #7 boiler tube project is complete. This would delay the return of the unit to service.

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