

COUNCIL ACTION FORM

SUBJECT: INSPECTION OF GT1 COMBUSTION TURBINE GENERATOR TO DETERMINE OPTIONS AND COSTS OF RETURNING UNIT BACK TO SERVICE

BACKGROUND:

On July 8, 2013, Electric Services' GT1 engine generator catastrophically failed while operating. At the time of the failure, the front compressing section of the engine was rotating at 5,900 revolutions per minute (rpm) when it threw blades and tore much of that section and the inlet vanes and cowling apart. The failure caused other collateral damage to the engine and other components of the combustion turbine. The root cause of the failure is unknown at this point.

This incident is covered by the City's property insurance coverage. Immediately following the failure, the City's Risk Manager notified the appropriate insurance contacts. Very shortly following the failure, an insurance adjuster and an engine consultant hired by the insurance adjustment company visited the site to observe the aftermath of the failure. The City also provided both the adjuster and the engine expert with all requested available documentation.

City staff issued a request for proposal (RFP) to the original equipment manufacturer (OEM), Wood Group Pratt & Whitney (WGPW), for the purpose of inspecting the post-failure combustion turbine to determine the extent of damage and to identify the repair options and associated repair costs to return the unit back into service. The OEM was chosen for this task because it was deemed that they would provide the most valid assessment of the damage and the repair options.

The proposal for this work from WGPW is itemized as follows:

- 1) On-site inspection and documentation of the engine failure and resultant damage; removal of the engine from its base plate and compartment; placement of engine onto a shipping stand and preparation for shipment; complete the visual inspection after the engine removal to determine what other items need repair or replacement; provide motor carrier transport from Ames to WGPW's facility; provide detailed field services report.

Estimated cost of \$22,763.70

- 2) Receive engine at WGPW's facility; disassemble, inspect and document shop inspection of engine; evaluate failure and provide engineering report.

Estimated cost of \$81,065

- 3) Field inspect expander (free turbine). To be performed by Energy Services, Inc.

Estimated cost of \$6,250 plus expenses

- 4) Field inspect generator. To be performed by Leppert-Nutmeg, Inc.

Estimated cost of \$14,000 plus expenses.

The total cost for all work as described above is estimated to be \$131,500.

This total includes estimates of the expenses for Items 3 and 4 above, and for the 10% markup that WGPW will apply to the invoices from its subcontractors, Energy Services and Leppert-Nutmeg.

Even though the failure of the engine, based upon visual observations, did not seemingly damage the expander (free turbine) and the generator, it is important to perform an inspection and assessment of them, since staff does not know their condition, related to the engine failure or otherwise. Since we are on a path to return the combustion turbine to service (with a repaired or replacement engine), it is important to make sure we are mating a like-new engine to an expander and generator in good condition.

Once the inspections and assessments of the engine, expander, and generator are complete, WGPW will provide the City with a report of the findings which will include the options and costs for returning the combustion turbine to service.

It is important to emphasize that the expenditures highlighted above do not cover the costs for repair or replacement of any of the combustion turbine's components (the engine, expander, generator, or any of the balance-of-plant equipment).

The cost of these inspections and assessments will be included in the insurance claim and will be applied against our insurance deductible (\$350,000). The FY 2014/15 Capital Improvements Plan includes \$1,500,000 for work on GT1.

ALTERNATIVES:

1. Approve a contract with Wood Group Pratt & Whitney of Bloomfield, Connecticut, for up to \$131,500 to provide inspection and assessment services as described in their proposal.
2. Direct staff to solicit proposals for inspection and assessment from other service and repair providers of this engine.

MANAGER'S RECOMMENDED ACTION:

This work is necessary to evaluate whether the City's GT1 engine can and should be repaired versus other options, and to also assess the condition of the unit's expander (free turbine) and electric generator. Wood Group Pratt & Whitney is the OEM for GT1's engine, and is therefore regarded to be in the best position to evaluate GT1's condition following the engine failure and to identify and cost out the options to return the unit to operating service.

This generating unit provides needed capacity and provides quick energy production in an emergency. Failure to return the unit to service will require the City to purchase replacement capacity and /or explore the purchase and installation of a new generating unit.

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