

REVISED



RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES

DATE: AUGUST 11, 2025

SUBJECT: RATIFY EXPENDITURE WITH GE VERNOVA OPERATIONS, LLC. OF HOUSTON, TEXAS FOR GAS TURBINE REPAIRS ON UNIT 2 AT RIVERSIDE ENERGY RESOURCE CENTER DUE TO THE URGENT NECESSITY FOR PROTECTION AND PRESERVATION OF PUBLIC LIFE, HEALTH, AND PROPERTY AND APPROVE WORK ORDER NO. 2510864 IN THE AMOUNT OF \$2,923,122

ISSUE:

Consider ratifying the expenditure with GE Vernova Operations, LLC. of Houston, Texas for gas turbine repairs on Unit 2 at Riverside Energy Resource Center due to the urgent necessity for protection and preservation of public life, health, and property and approval of Work Order No. 2510864 in the amount of \$2,923,122.

RECOMMENDATION:

That the Board of Public Utilities:

1. Ratify the expenditure with GE Vernova Operations, LLC. of Houston, Texas in the amount of \$2,923,122 for gas turbine repairs on Unit 2 at Riverside Energy Resource Center due to the urgent necessity for protection and preservation of public life, health, and property; and
2. Approve Work Order No. 2510864 in the amount of \$2,923,122.

BACKGROUND:

The Riverside Energy Resource Center (RERC) is equipped with four General Electric (GE) LM6000 gas turbine engines, which collectively provide up to 30 percent of Riverside's daily electric power demands during the summer months. This facility was constructed in two phases: Units 1 and 2 were commissioned in 2006, followed by Units 3 and 4 in 2011. Each of these fast-start gas turbine units can generate 50 megawatts (MW) of electricity in less than ten minutes and are strategically located in the city limits providing local generation capacity. The availability of these units is critical to ensuring that Riverside Public Utilities (RPU) can meet summer electricity demand and reliability needs.

Annual routine preventative maintenance tasks are performed by staff on all RERC units during the scheduled outage in November. Specialized borescope inspections are conducted on each gas turbine by highly trained authorized service technicians as a standard industry practice. These

inspections provide a detailed view of the turbine's critical internal components and allow the assessment of its overall operating conditions.

On November 4, 2024, during the annual borescope inspection of Unit 2 gas turbine, significant cracks were discovered on the stage one nozzle segment of the low-pressure turbine (LPT) which is located immediately after the second stage high-pressure turbine component, as indicated by the red arrow in Figure 1.

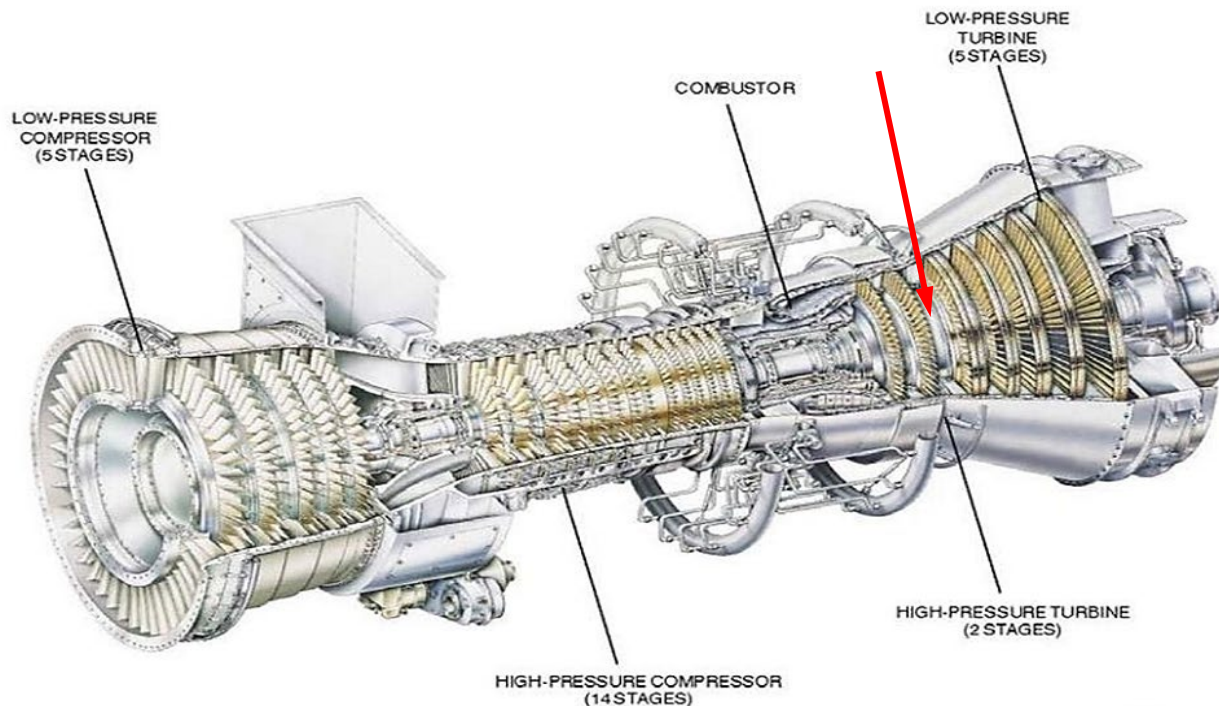


Figure 1. LM-6000 GE natural gas turbine engine.

Examples of the detected cracks in this stage one nozzle are shown in Figures 2 and 3.



Figure 2. Stage one nozzle - lateral crack



Figure 3. Stage one nozzle - flume crack

Following this inspection, GE engineers performed a more detailed evaluation of the results and confirmed the unserviceable condition and agreed that the cracks were above the allowable limits. The GE team explained that Unit 2 can still be operated on a limited basis if needed, although

such operation is not recommended.

The extended loss of even one unit at RERC represents an emergency for the City of Riverside. It could result in substantial negative impacts to the safety and health of the public as it reduces the capacity of available power that may be required during critical peak summer load events and/or any emergency power supply interruptions. Completing repairs on the turbine can potentially take up to twelve months as there are only four authorized service providers worldwide. Due to the limited options and resources, it was critical to issue a Purchase Order as soon as possible to secure the parts and ensure Unit 2 would be readily available for operations in the event of unexpected power outages and before summer 2025 when the demand for additional power would be at its peak.

On November 13, 2024, the request to approve the emergency repairs was submitted to the Utilities General Manager and the City Manager. Approval to proceed with the repairs and issue a Purchase Order was received on November 14, 2024.

DISCUSSION:

Given the urgency to get this unit repaired and fully available, staff quickly contacted the four authorized service providers (ASP) regarding the availability of parts and to request proposals for the completion of the necessary work. There were two repair options that were presented.

Repair Options:

- **Remove & Repair LPT**
This option involved removing the LPT sectional component of the turbine and sending it to one of four authorized repair facilities, three of which have provided preliminary quotes ranging from \$600,000 to \$800,000. This cost only covered the removal, disassembly, and replacement of the stage one nozzle. Given the turbine's age (19.5 years), additional damage and component wear was likely to be discovered during disassembly, potentially adding \$500,000 to \$2,000,000 in replacement costs. Additionally, the limited availability of parts for the LM6000 due to ongoing supply-chain disruptions could have potentially resulted in a significant delay in the completion of the repairs (e.g., a delay that extends into and potentially beyond summer 2025).
- **Rotable Exchange LPT**
This option involved exchanging out the entire LPT of the gas turbine with a refurbished and rebuilt replacement LPT. GE is the one authorized service provider that could reliably provide this option and provided staff with a firm quote of \$2,923,122, which included sales tax and all shipping, delivery, and installation costs. While this option has a higher initial cost, it offered several benefits. It provided firm pricing with no expected deviations and was able to be completed onsite at RERC within 7 days. GE confirmed delivery by June 30, 2025, allowing RERC Unit 2 to return to unrestricted service for the critical Q3 summer period. Additionally, Unit 2 was able to remain available for dispatch, completing mandatory emissions tests and responding to emergency power needs pending the LPT exchange. Replacing the entire LPT section extends the unit's service life, as the refurbished LPT will include all "like-new" parts.

After a thorough evaluation, staff determined that proceeding with the rotatable exchange of the LPT was the best option for the health and safety of the public as it would ensure that Unit 2 would be fully available for operation by early July 2025. Additionally, each unit currently provides Riverside with approximately \$7,500,000 to \$11,000,000 of local, flexible summer resource adequacy credit (Local-FRAC RA) in the CAISO market, along with extra energy revenues during the summer (approximately \$250,000 to \$400,000 per unit per month).

To guarantee parts availability and a delivery date of June 30, 2025, and to authorize GE to perform the necessary repairs on site, Purchase Order No. 253102 was issued on November 14, 2024.

On March 10, 2025, the Board of Public Utilities received a presentation outlining the urgent repairs required for Unit 2. The repairs, to be performed onsite at RERC, were estimated to take approximately seven days and until the repairs commenced, Unit 2 remained available for limited use.

GE subsequently contacted RPU staff, and it was decided to transport the turbine to their maintenance facility located in Bakersfield, California at no additional cost. This allowed GE technicians access to specialized tools and equipment necessary for the replacement.

On June 14, 2025, the Unit 2 turbine was removed and transported to GE's maintenance facility. The replacement of the LPT section took 7 days, and on June 23, 2025, the repaired turbine was returned to RERC and restored to normal operations on June 24-25, 2025.

Images of the removal and installation:



**Table 1. Timeline of Events**

Date	Action
November 4, 2024	Borescope Inspection Unit 2 – Unserviceable cracks.
November 4, 2024	Staff declared that urgent repairs to Unit 2 are required.
November 4-8, 2024	Obtained proposals from all ASP's.
November 13, 2024	Request for approval - Utilities General Manager and City Manager.
November 14, 2024	Determined the rotatable exchange to be the best option, obtained approval to proceed with repairs, and issued PO No. 253102 to GE to secure parts.
March 10, 2025	RPU Board received an overview of the urgent repairs for Unit 2.
June 14, 2025	GE removed Unit 2 and transported it to GE Maintenance Facility.
June 23, 2025	Repairs were completed and the Unit was shipped back to RERC.
June 24-25, 2025	GE installed Unit 2 and it was placed back into operational status.

Purchasing Resolution 24101, Section 302. Authorization states, “Emergency Procurement may be initiated by the head of a Using Agency or his or her duly authorized representative (the “individual”) only as follows: (c) For urgent purchases relating to Riverside Public Utilities, Article XII, Section 1202(b) of the City’s Charter applies and shall be followed.” Section 1202(b) of Article XII of the Riverside City Charter provides the following: “a purchase, or acquisition, construction, extension, enlargement, diminution or curtailment may be made without prior approval (2) if there is an urgent necessity to preserve life, health or property (i) as determined by the Director of Public Utilities or, (ii) if the amount exceeds \$100,000 by the Director of Public Utilities and the City Manager. As soon as practicable thereafter, the Director of Public Utilities shall take the matter under Section 1202(b)(2) to the Board of Public Utilities for ratification.”

The Purchasing Manager concurs that the recommendations are in compliance with Purchasing Resolution 24101.

FISCAL IMPACT:

The total fiscal impact is \$2,923,122.26. Sufficient funds are available in Public Utilities Electric CIP OH/UG Substations Generating Station Account No. 6130100-470627.

Prepared by: Scott Lesch, Utilities Assistant General Manager/Power Resources
Approved by: David A. Garcia, Utilities General Manager
Certified as to
availability of funds: Kristie Thomas, Finance Director/Assistant Chief Financial Officer
Approved by: Rafael Guzman, Assistant City Manager
Approved as to form: Rebecca McKee-Reimbold, Interim City Attorney

Attachments: Presentation