



# URGENT GAS TURBINE REPAIRS ON UNIT 2 AT RERC

## Riverside Public Utilities

### Board of Public Utilities

August 11, 2025

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## BACKGROUND

### Riverside Energy Resource Center (RERC)

1. 196 MW - Four General Electric (GE) LM6000 gas turbine engines
2. Units 1 & 2 Commissioned in 2006
3. Units 3 & 4 Commissioned in 2011
4. Provide up to 30% of Riverside's daily electric power demands during summer months
5. Availability is critical to ensuring RPU can meet minimum electricity demand and reliability needs



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## BACKGROUND

### 1. Borescope Inspection

- a. Performed annually as standard industry practice
- b. Highly trained authorized service technicians
- c. Detailed view of the gas turbines critical internal components
- d. Allow the assessment of overall operating conditions

### 2. RERC Unit 2 Inspection – November 4, 2024

- a. Discovered cracks on stage one nozzle segment of low-pressure turbine (LPT)
- b. GE Engineers performed a more detailed evaluation
  - Confirmed unserviceable condition
  - Above allowable limits
  - Can be operated on a limited basis

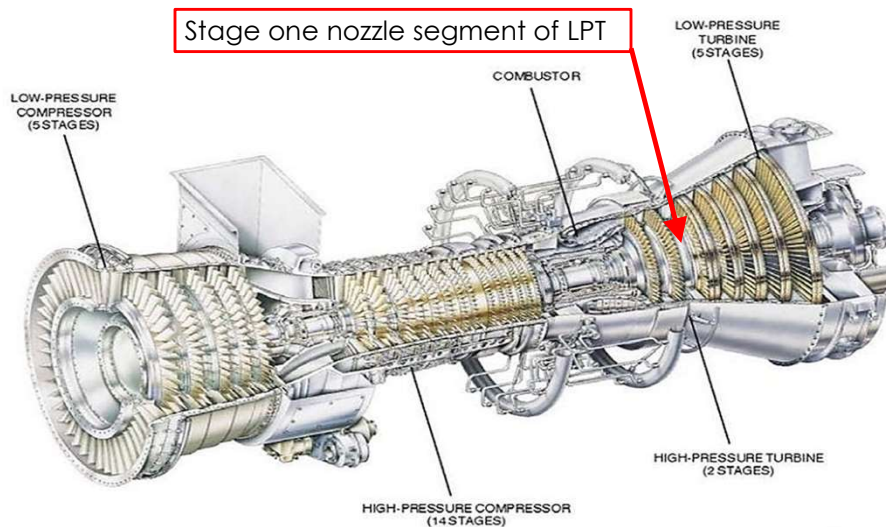


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## BACKGROUND – GE LM6000 LPT



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## BACKGROUND – STAGE ONE NOZZLE



1. Examples of the detected cracks
  - a. A crack of this nature is expected through normal operations for a turbine of this age (19.5 years)
  - b. First time this type of maintenance is required on RERC Unit 2



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## BACKGROUND – URGENCY

1. Extended loss of a unit has substantial negative impacts to the safety and health of the public
2. Reduced capacity of available power that may be required during summer peak or emergency power supply interruptions
3. Only four authorized service providers (ASP) worldwide
4. Repairs can take up to 6-9 months due to limited resources
5. November 13, 2024, request to approve emergency repairs submitted to Utilities General Manager and City Manager
6. November 14, 2024, approval to proceed with repairs and issue a Purchase Order was received



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## BACKGROUND – REPAIR OPTIONS

1. Proposals were obtained from the four authorized service providers
2. Two repair options:
  - a. Remove & Repair LPT
    - i. Remove LPT and send to authorized repair facility
    - ii. Preliminary cost - \$600,000 to \$800,000 from three ASP's
    - iii. Additional repairs are likely to be discovered given the age of the turbine – additional \$500,000 to \$2,000,000
    - iv. Limited availability of parts could result in significant delays in completion of the repairs
    - v. Increase in RA cost due to unavailability – Potential \$11,000,000 cost if unavailable all summer
  - i. Rotable Exchange LPT
    - i. Exchange entire LPT sectional component with a refurbished and rebuilt replacement
    - ii. GE Vernova is the one ASP that can reliably provide this option
    - iii. Firm quote of \$2,923,122 – Delivery date of June 30, 2025
    - iv. Repair can be completed within 7 days onsite at RERC



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## DISCUSSION – SELECTED REPAIR

1. Determined the rotatable exchange was the best option for the health and safety of the public
  - a. Unit 2 will remain available for limited use for mandatory emissions testing and emergency power needs
  - b. Refurbished LPT will include all “like-new” parts
  - c. Unit 2 will return to unrestricted service for most of summer
2. Purchase Order No. 253102 was issued to GE Vernova to guarantee the rebuilt LPT section will be delivered on June 30, 2025



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## DISCUSSION – REPAIR COMPLETED

1. GE confirmed the rotatable LPT was ready for install and offered to transport the turbine to their maintenance facility in Bakersfield, California at no additional cost
  - a. Ensured GE technicians' access to specialized tools and equipment
2. June 14, 2025, Unit 2 gas turbine was removed and transported to GE's maintenance facility
  - a. The replacement of the LPT took 7 days
3. June 23-24, 2025, the repaired gas turbine was returned to RERC and restored to normal operations



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## DISCUSSION – REMOVAL/TRANSPORT



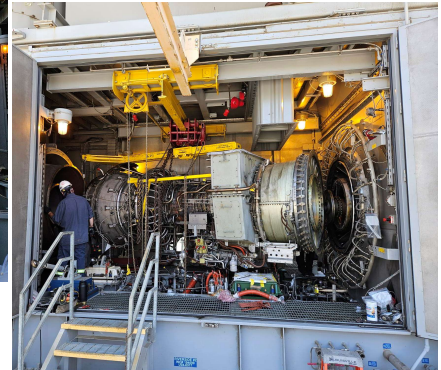
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## DISCUSSION – INSTALLATION



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## DISCUSSION – TIMELINE

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 necessary 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.
June 27, 2025	Staff finalized and submitted report/presentation on Unit 2 repairs.
August 11, 2025	RPU Board received final report on the necessary urgent repairs for Unit 2.

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## 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. 251864 in the amount of \$2,923,122.



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