



City of Arts & Innovation

# City Council Memorandum

**TO: HONORABLE MAYOR AND CITY COUNCIL                      DATE: DECEMBER 17, 2019**

**FROM: PUBLIC UTILITIES DEPARTMENT                              WARD: ALL WARDS**

**SUBJECT: ISSUANCE OF A PURCHASE ORDER WITH GE PACKAGED POWER, INC. OF HOUSTON, TEXAS FOR EMERGENCY REPAIRS ON GAS TURBINES FOR RIVERSIDE ENERGY RESOURCE CENTER UNITS 1 AND 3 IN THE AMOUNT OF \$4,530,289 – EMERGENCY RESOLUTION DECLARING THE REPAIR AN URGENT NECESSITY FOR PROTECTION AND PRESERVATION OF LIFE, HEALTH AND PROPERTY- AUTHORIZE A SUPPLEMENTAL APPROPRIATION FROM ELECTRIC FUND UNRESTRICTED, UNDESIGNATED CASH RESERVE TO COVER THE FULL REPAIR COST AND A 10% CONTINGENCY IN THE AMOUNT OF \$4,983,319.**

## **ISSUES:**

Adopt an emergency resolution waiving the formal bidding requirements and declaring the repairs on the gas turbines for Riverside Energy Resource Center Units 1 and 3 in the amount of \$4,530,289 are of an urgent necessity for the protection and preservation of public life, health, and property; approve the issuance of a purchase order with GE Packaged Power Inc. of Houston, Texas for urgent repairs on gas turbines for Riverside Energy Resource Center Units 1 and 3 in accordance with Purchasing Resolution No. 23256, Section 302 (c); approve 10% change order authorization; and authorize a supplemental appropriation from the Electric Fund Unrestricted, Undesignated Cash Reserve to cover the full repair cost and a 10% contingency in the amount of \$4,983,319.

## **RECOMMENDATIONS:**

That the City Council:

1. Adopt, by five affirmative votes, an emergency resolution waiving formal bidding requirements and declaring the repairs on the gas turbines for Riverside Energy Resource Center Units 1 and 3 in the amount of \$4,530,289 are of an urgent necessity for the protection and preservation of public life, health, and property;
2. Approve the issuance of a purchase order(s) with GE Packaged Power Inc. of Houston, Texas in the amount of \$4,530,289 for emergency repairs on gas turbines for Riverside Energy Resource Center Units 1 and 3 and authorize staff to make any necessary revisions to the purchase order terms and conditions to complete the repairs; and
3. Approve change order authority for 10% in the amount of \$453,030; and
4. Authorize a supplemental appropriation in the amount of \$4,983,319 from the Electric Fund

Unrestricted, Undesignated Cash Reserve for emergency repairs on gas turbines for Riverside Energy Resource Center Units 1 and 3.

## **BOARD APPROVAL**

Section 1202(b) (2) 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 ratification approval of this expenditure will be scheduled for approval by the Board of Public Utilities at its next regularly scheduled meeting.

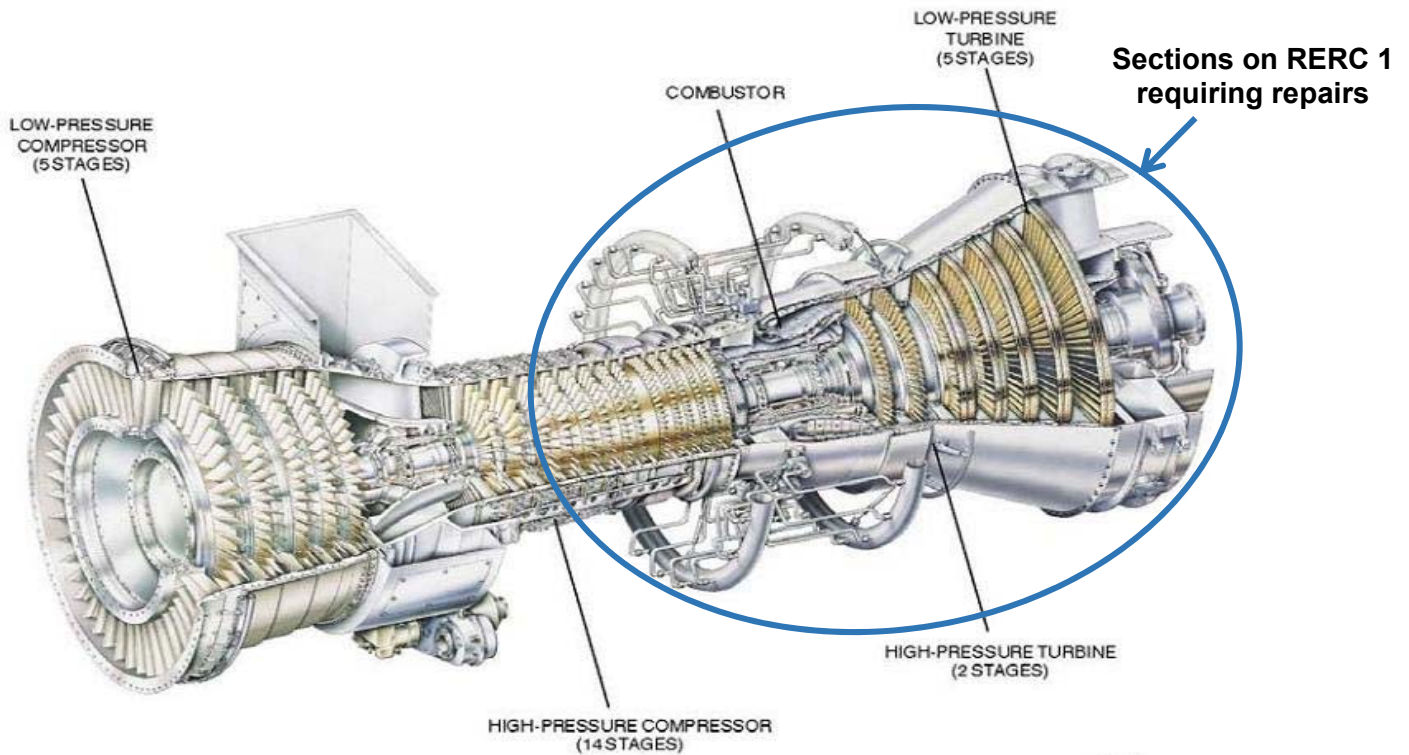
## **BACKGROUND:**

Riverside Public Utilities (RPU) commissioned Riverside Energy Resource Center Generation Unit 1 (RERC 1) in June 2006 and Riverside Energy Resource Center Generation Unit 3 (RERC 3) in April 2011. Each of these fast-start gas turbine units is able to generate 50 megawatts (MW) of electricity in less than ten minutes and are strategically located in the city limits providing local generation capacity. RERC 1 and RERC 3 have historically been reliable units that serve a critical role in meeting customer’s energy demands, but these units are aging. Discussion below illustrates the critical nature the RERC units play in ensuring that Riverside can meet minimum customer demands for electricity in the event that the connection to the regional grid through the Vista Substation is lost.

Staff routinely conducts annual preventative maintenance on all RERC units in November. Authorized service technicians perform specialized borescope inspections on the gas turbine’s internal components and document observations. This year’s inspection resulted in the identification of internal component cracks above the allowable limits for continued operation on RERC 1 and RERC 3. RERC 2 and RERC 4 were determined to be fine. Because of the significance of these cracks, staff had GE Package Power Inc. (GE), the Original Equipment Manufacturer, perform a second inspection, which confirmed that the cracks are above the serviceable limits. As a result, RERC 1 and RERC 3 are currently non-operational until repairs are completed.

Loss of any of the generating units at RERC represents an emergency for the City of Riverside. RERC 1 and RERC 3, which comprise one-half of the RERC facility, provide emergency power to the City and as well as playing a crucial role in meeting the City’s daily capacity and electricity demands. Extended time to make repairs will have a substantial impact on the City’s ability to provide emergency power.

The City currently has only one interconnection to the State grid to import electricity into the City; this interconnection is the Vista Substation, which is owned and operated by Southern California Edison (SCE). Loss of the connection to the regional grid at the Vista Substation is a significant and real risk to the City. If that connection is disrupted, the entire RERC facility, including RERC 1 and RERC 3, is relied on as the primary, if not only, source of electricity for customers.



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

In 2007 the Vista Substation was damaged and RPU connection to the regional transmission grid was lost. The event resulted in a Citywide blackout. RERC units, which had been out for scheduled maintenance, were immediately activated and were essential in providing emergency power to the City until SCE could repair the interconnection.

Currently, the City faces the potential for a similar loss of power should SCE determine the need to enact a Public Safety Power Shutoff (PSPS) and de-energize any or all of the sub-transmission lines they control that interconnect the City to the regional grid. Five of the seven sub-transmission lines that provide Riverside its connection to the regional grid through the Vista Substation are located in Tier II Fire Hazard Areas. SCE could de-energize the lines at any time since they control the lines until they cross into the City of Riverside. The RERC units provide emergency power in such events and their operation is critical to ensuring that customers have reliable electricity during such emergency situations. Without RERC 1 and 3, the potential for extended power outages during a PSPS event de-energization increases.

## **DISCUSSION:**

### **Resolution**

Due to the urgency of repairing the RERC Units 1 and 3, the project was unable to be competitively procured through an advertisement for bids. Section 1109 of the City Charter provides that such contracts may be let without advertising for bids if such work or supplies or materials shall be deemed by the City Council to be of urgent necessity for the preservation of life, health or property, and shall be authorized by resolution passed by at least five affirmative votes of the City Council and containing a declaration of the facts constituting such urgency.

Vendor Selection

Only four vendors worldwide are authorized to make the emergency repairs on the equipment in RERC 1 and 3 because the cracks are located on internal blades and high heat impacted components. Staff contacted each vendor regarding availability of parts and to request proposals for the completion of the necessary work. These vendors included:

1. General Electric (GE)
2. Trans Canada Turbine (TCT)
3. IHI Power System Co, Ltd (IHI)
4. MTU Aero Engines AG (MTU)

IHI and MTU were determined to be unresponsive because they were not able to begin repairs until 2022 or the second quarter in 2020, respectively. TCT was partially non-responsive because they did not provide estimated costs for any of the reasonably expected repairs and only provided “preliminary” costs for the repair of the low-pressure turbine and indicated that other costs would be determined after the equipment was at their repair facility. Only GE provided a complete cost, had the component parts available and was available to perform the work on site.

After extensive evaluation, staff recommends an onsite, rotatable exchange on the combustor, high-pressure turbine and low-pressure turbine on RERC 1. A rotatable exchange means that GE will exchange the damaged equipment for refurbished and fully warranted equipment at a lower cost than replacement of the equipment with completely new parts. All work for the replacement will take place at the RERC facility. The option costs \$3,966,955; provides the quickest return to service; and eliminates the very high risk of costly and unforeseen repairs if the damaged equipment had to be shipped to a repair facility.

**Table 1: RERC 1 Summary of Costs**

Item	Component	GE	TCT
A	Combustor overhaul	\$157,500	<i>Not included</i>
B	HPT overhaul	\$1,401,900	<i>Not included</i>
C	LPT overhaul/repair	\$1,820,200 (overhaul)	\$402,864 (repair of first stage nozzle only)
D	Component swap-out Labor	\$77,100	n/a
E	Expected additional LPT repairs (using GE Option 1 estimates)	n/a	\$1,471,130
F	Repair Time	6 days	45 – 100 days
G	Q1-2020 RA Replacement Costs (based on repair time)	\$0	\$175,000 (current best estimate)
H	Fuel Nozzles	\$197,513 <i>(\$194,594 plus \$2,919 for shipping)</i>	<i>Not included</i>
I	Shipping Insurance	<i>No additional cost</i>	<i>To be determined</i>
	Sub-Total	\$3,654,213	\$2,048,994
	Taxes	\$312,742	
	<b>Total</b>	<b>\$3,966,955</b>	<b>\$2,048,994</b>

The extent of the necessary emergency repairs on RERC 3 are not as severe. Cracks were contained to just the combustor and high-pressure turbine sections. A rotatable exchange of the combustor and high-pressure turbine is approximately \$1.8 million dollars. After review, staff

recommends to only perform a rotatable exchange on the high-pressure turbine nozzle sections. This will bring the unit back to normal operation at a cost of \$563,334.

**Table 2: RERC 3 Summary of Costs**

Item	Component	GE	TCT
A	HPT Stage 2 Nozzle	Overhauled	Overhauled
B	Repair Time	6 days	6 days (available January or later)
C	HPT Stage 2 Nozzle Exchange	\$352,920	<i>Price breakdown not included</i>
D	Field Services	\$77,100	
E	Fuel Nozzles	\$94,322 (\$92,700 plus \$1,622 for shipping)	<i>Not Included</i>
	Subtotal	\$524,342	
	Taxes	\$38,992	
	<b>Total</b>	<b>\$563,334</b>	<b>\$540,000</b>

Additional costs may be identified once repairs on RERC 1 and RERC 3 are underway. Staff recommends that the supplemental appropriation include an additional 10% contingency to cover the costs associated with potential change orders. Change order costs shall not exceed 10% for each unit. The amounts by unit shall not exceed \$393,696 for RERC 1 and \$56,334 for RERC 3 (the total contingency is \$453,030).

This is the first indication of cracks since the turbines were first commissioned. RERC 1 has started over 2,300 times to provide electricity to the city. RERC 3 started 1,200 times since it was commissioned in 2011. Based on the recent results, staff will formulate a turbine maintenance plan for all the units at RERC.

In order to maintain reliable plant operations, staff seeks approval for this emergency work under City Charter section 1109, which states that for emergency repairs, such contracts may be let without bids “if such work or supplies or materials shall be deemed by the City Council to be of urgent necessity for the preservation of life, health or property, and shall be authorized by resolution passed by at least five affirmative votes of the City Council and containing a declaration of the facts constituting such urgency.” City Purchasing Resolution 23256, Sections 302 (c), which states for emergency purchases relating to Riverside Public Utilities, Article, XII, Section 1202 (b) of the City’s Charter applies and shall be followed. Section 1202(b) (2) 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 recommended actions comply with Purchasing Resolution No. 23256, Section 302.

**FISCAL IMPACT:**

The total fiscal impact for the emergency repairs is \$4,983,319. The supplemental appropriation in the amount of \$4,983,319 from the Electric Fund Unrestricted, Undesignated Cash Reserve

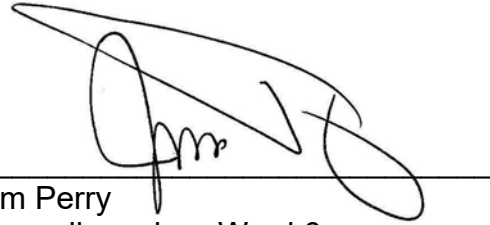
will fully cover the urgent repairs with funding to be appropriated in the amount of \$4,363,651 to RERC Machine and Equipment Account No. 6120130-462200 for RERC Unit 1 and in the amount of \$619,668 to RERC Maintenance-Generating Plants Account No. 6120130-424131 for RERC 3. Costs for FY2019/2020 are projected to exceed the adopted FY2019/2020 budget by \$4,983,319.

Prepared by: Todd M. Corbin, Utilities General Manager  
Certified as to availability of funds: Edward Enriquez, Chief Financial Officer/City Treasurer  
Approved by: Al Zelinka, FAICP, City Manager  
Approved as to form: Gary G. Geuss, City Attorney

Concurs with:



Chuck Conder  
Councilmember, Ward 4



Jim Perry  
Councilmember, Ward 6

Attachments:

1. Emergency Resolution
2. GE Proposal – High Pressure Turbine Stage 2 Nozzle Exchange
3. GE Proposal – Low Pressure Turbine, Combuster, and Hot Section Exchange
4. GE Quote for Fuel Nozzles
5. Proposal Attachment - Products and/or Services Terms and Conditions
6. Presentation