

# RIVERSIDE PUBLIC UTILITIES

## Board Memorandum

**BOARD OF PUBLIC UTILITIES**

**DATE:** FEBRUARY 24, 2020

**ITEM NO:** 3

**SUBJECT:** BID NO. RPU-7719 FOR MULTI-SUBSTATION TRANSFORMER UPGRADE AND RECONDITIONING PROJECT WITH REINHAUSEN MANUFACTURING, IN THE AMOUNT OF \$1,375,809.57; AND WORK ORDER NO. 2002530 FOR A TOTAL CAPITAL EXPENDITURE OF \$1,883,000

**ISSUES:**

Award Bid No. RPU-7719 for Multi-Substation Transformer Upgrade and Reconditioning Project to Reinhausen Manufacturing, of Humboldt, Tennessee, in the amount of \$1,375,809.57; and approve Work Order No. 2002530 for a total capital expenditure of \$1,883,000.

**RECOMMENDATIONS:**

That the Board of Public Utilities:

1. Award Bid No. RPU-7719 for the Multi Substation Transformer Upgrade and Reconditioning Project to Reinhausen Manufacturing, of Humboldt, Tennessee, in the amount of \$1,375,809.57; and
2. Approve Work Order No. 2002530 for a total capital expenditure of \$ \$1,883,000.

**BACKGROUND:**

Substation power transformers (transformers) are essential components of the power grid. Transformers are critical to the reliability and optimum operation of the electric utility system. A single substation transformer can provide power to more than 4,000 customers. As such, substation power transformers are critical assets in Riverside Public Utilities' (RPU) electric system.

The average life of a transformer is approximately 40 years. The life of the transformers can be shortened substantially by various factors such as poor design, overloading for extended periods of time, moisture intrusion, and poor maintenance practices. Planned transformer upgrades and reconditioning measures are required to optimize the life of transformers, reduce failures, extend the reliable life of transformers, and improve public and employee safety.

Load Tap Changers (LTC) are an essential component of a substation transformer because they regulate voltage in the electrical system. Some transformers are experiencing recurring issues with LTCs. These devices are the only moving part in a transformer and are now requiring frequent repairs as they have exceeded their design life.

This project will provide essential upgrade and replacement of transformer parts that benefit a large number of customers to improve reliability and reduce prolonged outages. Also, the project introduces

new technology that will improve the based condition maintenance and reduce the maintenance cost and time.



**Typical Substation Power Transformer**

## **DISCUSSION:**

RPU is committed to providing safe and reliable energy service for all customers. As part of RPU's effort to upgrade existing infrastructures, RPU identified eight (8) transformers located at five (5) substations in need of upgrades and reconditioning. The scope and extent of transformer upgrade and reconditioning vary from one transformer to another based on the current condition and criticality of the transformer. The transformer's age, Dissolved Gas Analysis (DGA), inspection and electrical testing were used to evaluate the condition of the transformers and determine the candidate transformers.

The scope of work includes upgrading LTCs, replacing oil in LTCs, installing new LTC controllers, installing maintenance-free breather units, installing new gauges, performing electrical testing, oil screen testing, and DGA after the completion of the renovation work. In addition, new on-line condition monitoring devices will be installed on five (5) of these transformers. The online monitors will provide real-time information on the condition of the transformer which will improve operational efficiency, maintenance efforts, and reliability of the system. The online monitors will support implementing condition-based maintenance program which will allow RPU to actively evaluate and manage the health condition of critical assets in order to perform maintenance only when it is needed and at the most opportune times.

The list of the transformers to be upgraded is as follows:

Substation Name	Transformer No.
Freeman	T5 & T6
Riverside	T4
Orangecrest	T2, T4 & T5
Springs	T2
University	T4

Project was posted on September 23, 2019 and closed on November 18, 2019. Five (5) vendors submitted bids. Staff evaluated the bids and deemed Reinhausen Manufacturing of Humboldt, Tennessee, to be the lowest responsive and responsible bidder. The bids are summarized in the table below:

<b>Vendors</b>	<b>City Location</b>	<b>Bid Amount</b>	<b>Rank</b>
<b>Reinhausen Manufacturing</b>	<b>Humboldt, TN</b>	<b>\$1,375,809.57</b>	<b>1</b>
Siemens Industry, Inc	Buffalo Grove, IL	\$1,791,740.00	2
Delta Star	San Carlos, CA	\$1,872,525.00	3
SPX Transformer Solutions	Waukesha, WI	\$1,881,086.00	4
North American Substation Services, LLC	Altamonte Springs, FL	\$2,297,725.05	5
➤ <i>Engineer's Estimate</i>		\$1,600,000	

The project/fiscal breakdown is as follows:

<b>Project and Fiscal Breakdown</b>		
Work Type	Performed By:	Amount (\$)
Project Management and Engineering	RPU Engineering	\$70,000
Construction (Bid No. RPU-7719)	Reinhausen Manufacturing	\$1,375,809
Inspection and Testing	RPU Substation Elect. and Test	\$299,611
Contract Contingency (10%)		\$137,580
<b>Work Order Total:</b>		<b>\$1,883,000</b>
<b>Anticipated Start Date:</b>		<b>April 2020</b>
<b>Anticipated Duration:</b>		<b>12 Months</b>

The Purchasing Manager concurs that the recommended actions are in compliance with Purchasing Resolution No. 23256.

### **FISCAL IMPACT:**

The total fiscal impact is \$1,883,000. Funds of \$750,000 were transferred from the Public Utilities' GO 165 Upgrades/Ln Rebid/Reloc Account No 6130100-470623 to ensure sufficient funds are available in Public Utilities Substation Transformer Additions Capital Account No. 6130100-470632.

Prepared by: George R. Hanson, Utilities Assistant General Manager/Energy Delivery  
 Approved by: Todd M. Corbin, Utilities General Manager  
 Approved by: Al Zelinka, FAICP, City Manager  
 Approved as to form: Gary G. Geuss, City Attorney

Certifies availability of funds: Brian Seinturier, Utilities Fiscal Manager

### **Attachments:**

1. Project Site Map
2. Award Recommendation (Bid No. RPU-7719)
3. Presentation