

BID No. RPU-7583-Multi-Substation Circuit Breaker Remote Racking Project

Riverside Public Utilities

Board of Public Utilities
November 26, 2018

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BACKGROUND – CIRCUIT BREAKERS

Medium Voltage Circuit Breakers:

1. Essential and integral part of the distribution protection system
2. Provide protection against abnormal conditions (Faults)
3. Housed in switchgear



15kV Circuit Breaker



Switchgear



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BACKGROUND – ARC FLASH

1. Circuit breaker manual racking during maintenance and CIP
2. High risk activity that can result in arc flash explosion



Manual Racking

3. Arc flash is a flashover of electric current that leaves its intended path and travels through the air

4. Arc flash can cause severe injuries and fatalities



Arc Flash Explosion

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BACKGROUND – ARC FLASH RISK

Occupational Safety and Health Administration (OSHA) recognizes that racking circuit breakers in and out of switchgear is a hazardous task.

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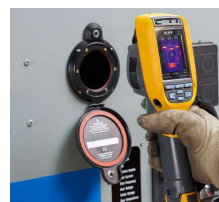
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DISCUSSION – ARC FLASH ASSESSMENT

1. RPU staff performed an arc flash hazard assessment per the requirement of the National Electrical Safety Code (NESC).
2. The assessment revealed that incident energy is high and risk of arc flash exposure is high during circuit breaker racking.

DISCUSSION – ARC FLASH MITIGATION

1. Circuit breaker remote racking is an effective arc flash mitigation method.
2. It places the operator outside of the arc flash zone.
3. Infrared (IR) window allows operator to inspect bus while the protective doors are closed.



DISCUSSION – WORK SCOPE

Bid No. RPU-7583 - Multi-Substation Circuit Breaker Remote Racking Project includes:

1. Installation of remote racking at 85 circuit breakers housed in 12 switchgears at 6 substations
2. Installation of 114 infrared windows at 12 switchgears

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BID NO. RPU-7583 RESULTS

VENDORS	AMOUNT	RANK
E.E. Electric	\$411,011.14	1
ABB, Inc.	\$498,000	2

➤ Engineer's Estimate is \$520,000

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PROJECT BREAKDOWN

DESCIRPTION	AMOUNT
Design and Project Management	\$60,000
Construction Contract	\$411,011.14
Construction Inspection and QEW	\$86,400
Contingency (10%)	\$61,589
Work Order Total	\$619,000

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RECOMMENDATIONS

That the Board of Public Utilities:

1. Award Bid No. RPU-7583 for the Multi-Substation Circuit Breaker Remote Racking Project to E.E Electric of Mira Loma, California, in the amount of \$411,011.14; and
2. Approve Work Order No. 1826998 in the total amount of \$619,000.