

# RIVERSIDE SUBSTATION 15KV RELAY REPLACEMENT PROJECT

**Riverside Public Utilities** 

Board of Public Utilities September 14, 2020



## **BACKGROUND**

## Protective Relaying Equipment:

- 1. Critical components in electrical grid system
- 2. Protect the power grid from abnormal electrical conditions
- 3. Provide fast isolation of affected circuit sections
- 4. Ensure proper performance of system reliability, safety and maintenance

## **BACKGROUND**

Staff has identified protective relaying equipment in RPU's system that have:

- 1. Exceeded or are approaching end of service life
- 2. Higher probability of electrical and mechanical failures, and require frequent maintenance
- 3. Protection settings and communication limitations compared to microprocessor-based relays



## **BACKGROUND**



Typical Electromechanical Relays (Aged Units)



**Typical Microprocessor Relays** 

(Replacement Units)



## DISCUSSION

RPU plans to replace 50 electromechanical 15kV distribution electromechanical relays with 15 microprocessor-based relays at Riverside Substation



Electromechanical Relay (Aged Unit)

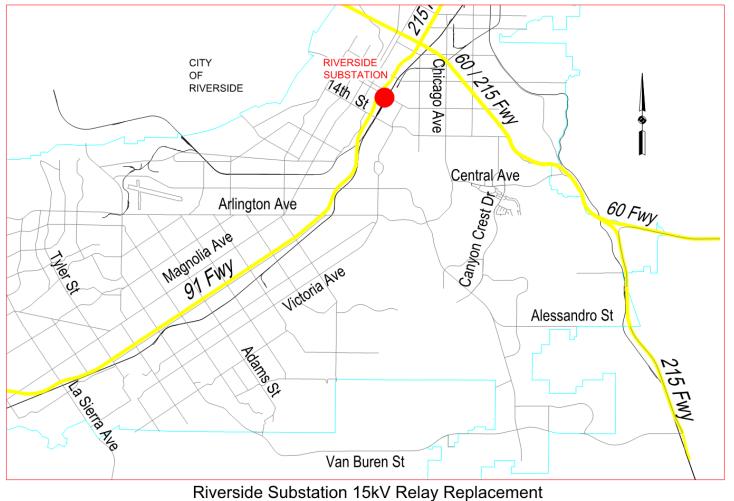




Microprocessor Relay (Replacement Unit)



## **DISCUSSION – PROJECT SITE**







W.O. 2021755 SITE MAP



## **DISCUSSION – BENEFITS**

#### New Microprocessor Relays will:

- Increase system reliability by assuring fast, sensitive and secure operations reducing miss-operation and interrupting fault current effectively
- 2. Provide intelligent features, flexible protection schemes, and critical information (i.e. fault location, event reports)
- 3. Reducing maintenance costs and potential equipment failures
- 4. More reliable operation (self diagnosis)



## DISCUSSION - WORK SCOPE

- Scope of work includes replacement of relays, upgrades to auxiliary equipment, and addition of new substation automation system
- 2. RPU staff will perform procurement, engineering design, construction, testing, and commissioning.
- 3. City's Metal Shop will fabricate new relay doors



## PROJECT AND FISCAL BREAKDOWN

WORK TYPE	PERFORMED BY	AMOUNT (\$)
Project Management and Engineering	Riverside Public Utilities	\$165,00
Construction, Field Testing and Commissioning	Riverside Public Utilities	\$450,000
Equipment and Material		\$200,000
Contingency (10%)		\$85,000
Work Order Total:		\$900,000
Anticipated Construction Start Date:		September 2020
Anticipated Duration:		10 months



#### RECOMMENDATION

That the Riverside Public Utilities Board approve Work Order No. 2021755 in the amount of \$900,000 for the Riverside Substation 15kV Relay Replacement Project.