



PLAZA SUBSTATION SWITCHGEAR 4 REMOVAL AND 66KV BUS DIFFERENTIAL UPGRADE PROJECT

Riverside Public Utilities

Board of Public Utilities

April 10, 2023

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BACKGROUND

1. RPU Electric System was originally designed as 4kV distribution system
2. 2010 Electric System Master Plan recommends to convert remaining 4kV lines to 12kV
3. In 2022, 4kV rated power equipment was decommissioned at the Plaza Substation
4. Project benefits include, but not limited to improved reliability, increased capacity, and replaced aging infrastructure



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BACKGROUND

Protective Relaying Equipment:

1. Ensure proper performance of system reliability, safety and maintenance
2. Provide fast isolation of affected sections during abnormal conditions
3. 2010 Electric System Master Plan recommends the replacement of older relays with modern digital relays



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BACKGROUND

Plaza Substation:

1. In 2022, 4kV decommissioned equipment is currently housing 66kV bus protection electromechanical relays
2. To effectively remove this 4kV equipment, the relays must be replaced and installed in a different location



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DISCUSSION

Scope of Work – 4kV removals:

1. Demolishing and disposing 4kV rated Transformer T4 and Switchgear No. 4 at Plaza Substation
2. All associated equipment, circuits, structures, and conduits will be removed



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DISCUSSION

Scope of Work – 66kV Relay Upgrade:

1. Remove 66kV bus protection electromechanical relays housed in Switchgear 4
2. A new microprocessor relay panel will be installed in the control building to replace the removed equipment
3. RPU staff will perform procurement, engineering design, construction, testing, and commissioning



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DISCUSSION



4kV Rated Equipment to Remove at Plaza Substation



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DISCUSSION



Typical Electromechanical Relays



Modern Digital Relays



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PROJECT MAP



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PROJECT AND FISCAL BREAKDOWN

Work Type	Performed By:	Amount
Project Management and Engineering	RPU Engineering Staff	\$70,000
Construction	RPU Substation Electricians	\$110,000
Testing and Commissioning	RPU Test and SCADA	\$30,000
Equipment and Material		\$40,000
Project Contingency (10%)		\$25,000
Work Order Total:		\$275,000
Anticipated Start Date:		April 2023
Anticipated Duration:		18 weeks



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STRATEGIC PLAN ALIGNMENT



Strategic Priority 6 - Infrastructure, Mobility and Connectivity

Goal 6.2 – Maintain, protect, and improve assets and infrastructure within the City's built environment to ensure and enhance reliability, resiliency, sustainability, and facilitate connectivity.

Cross-Cutting Threads



Community Trust



Fiscal Responsibility



Sustainability &
Resiliency



Equity



Innovation



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RECOMMENDATION

That the Board of Public Utilities approve the capital expenditure for Work Order No. 2312723 in the amount of \$275,000 which includes all design, construction, procurement, testing, commissioning, and construction support for upgrading the 66kV bus differential protection system and removing Transformer T4 and Switchgear 4 at Plaza Substation.



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