**HARVEY LYNN SUBSTATION
SWITCHGEAR NO. 5
PROTECTION SYSTEM UPGRADE PROJECT**

Riverside Public Utilities

Board of Public Utilities
January 23, 2023

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BACKGROUND

Protective Relaying Equipment:

1. Critical components in electrical system

2. Protect the power grid from abnormal electrical conditions

3. Provide fast isolation of affected sections

4. Ensure proper performance of system reliability, safety and maintenance

2

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BACKGROUND

Protective Relay Replacement Program targets the replacement of older relays with modern digital relays.

The replacement is prioritized based on:

1. Age of the relays
2. Problematic relays
3. Availability of replacement parts
4. Criticality of the circuits

3

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BACKGROUND

Typical 1st Generation Digital Relays

Modern Digital Relays

Modern Digital Relays Advantages

1- Higher precision
2- Application flexibility
3- Less maintenance
4- Self diagnostic
5- More reliable
6- Improved monitoring and control functions

4

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DISCUSSION

Scope of Work includes:

1. Replacing seven 1st generation relays that reached end of design life with new digital relays at Harvey Lynn Substation Switchgear No. 5

2. Installing new substation automation system for communication with the new relays

3. Replacing the auto-transfer schemes for Potential and control power transformers
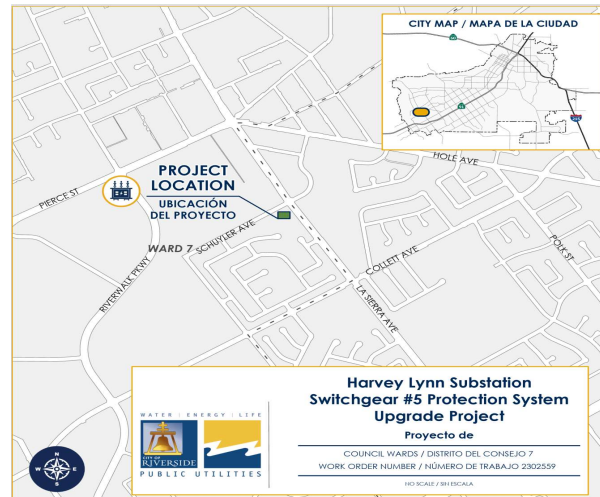
5

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DISCUSSION

- Harvey Lynn Switchgear 5 relays installed in 1995 (27 years).

- Relays past their design life of 20 years

- Failure of the same vintage of relay at multiple substations due to age

- By Mid 2024, all these relays will be replaced from the RPU system

6

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DISCUSSION – PROJECT MAP

DISCUSSION – SCOPE OF WORK

- Scope of work includes replacement of relays, and meters, upgrades to auxiliary equipment and control schemes, and addition of new substation automation system

- RPU staff will perform procurement, engineering design, construction, testing, and commissioning

PROJECT AND FISCAL BREAKDOWN

Work Type	Performed By:	Amount ($)
Project Management and Engineering	RPU Engineering Staff	$60,000
Construction	RPU Substation Electricians	$105,000
Testing and Commissioning	RPU Test and SCADA	$68,000
Equipment and Material		$115,000
Project Contingency (10%)		$35,000
Work Order Total:		$383,000
Anticipated Start Date:		February 2023
Anticipated Duration:		16 weeks

9

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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

10

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RECOMMENDATION

That the Board of Public Utilities approve the capital expenditure for Work Order No. 2302559 in the amount of $383,000 which includes all design, construction, procurement, testing and commissioning, and construction support for upgrading the protection and automation systems at Harvey Lynn Substation Switchgear No. 5.

11

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