



4kV to 12kV CONVERSION PROGRAM STATUS REPORT

Public Utilities Department

Board of Public Utilities
September 25, 2017

RiversidePublicUtilities.com



1

BACKGROUND

1. Original system was 33kV-subtransmission with 4kV-distribution
2. Today's modern systems are 69kV and 12kV
3. 33kV system almost completely upgraded to 69kV
4. Gradually being migrating to a standard 12kV system
5. 33kV and 4kV are some of the oldest facilities

RiversidePublicUtilities.com



2

BACKGROUND

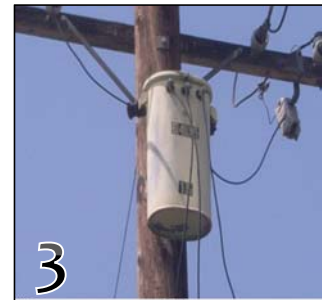
1. Electric Master Plan recommends conversion of aging 4kV facilities to a modern 12kV system
2. Facilities are obsolete, inefficient, and difficult to procure
3. Average age is over 50 years old
4. Equipment is at or beyond its useful life
5. Replacement of aging 4kV facilities include:
 - a) Deteriorated wooden poles
 - b) Transformers and switches
 - c) Cables and related components

RiversidePublicUtilities.com



3

BACKGROUND - AGING INFRASTRUCTURE



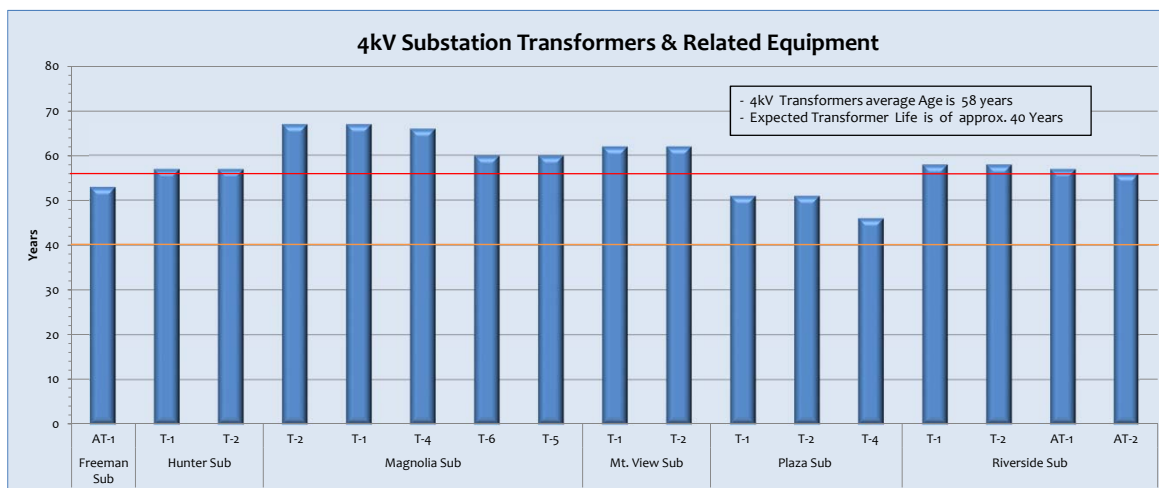
1. Substation transformer
2. 4kV Switchgear
3. Overhead transformer and related facilities

RiversidePublicUtilities.com



4

BACKGROUND – 50+ YEAR FACILITIES



RiversidePublicUtilities.com



5

DISCUSSION - PURPOSE

1. Upgrade aging infrastructure to a modernized 12kV distribution system
2. Implement advanced technology to monitor impact on grid
3. Reduce overall system line losses
4. Improve electric service and power quality

RiversidePublicUtilities.com



6

DISCUSSION - BENEFITS

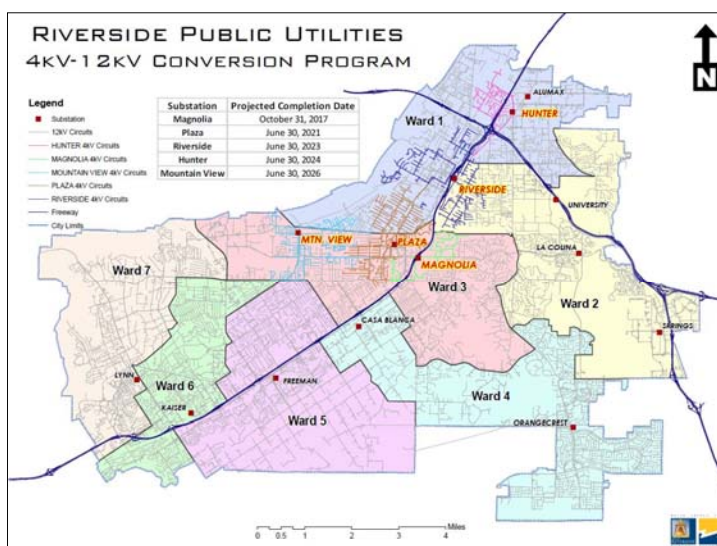
1. Keep up with increased demand for electricity
2. Up to 3 times greater power capacity
3. Improve overall system efficiency
4. Improve voltage stability:
 - a) Enable photovoltaic installations
 - b) Large industrial customers with sensitive equipment
5. Faster outage restoration – transfer load to nearby 12kV circuits

RiversidePublicUtilities.com



7

PROJECT SITE MAP



RiversidePublicUtilities.com



8

4K TO 12KV CONVERSION SUMMARY

1. (5) Substations associated with conversion effort
2. (16) Substation transformers to be decommissioned
3. (34) 4kV circuits to be upgraded to 12kV
4. (1) Circuit already upgraded
5. (8) Circuits under construction
6. (25) Circuits pending design and construction

RiversidePublicUtilities.com



9

4kV to 12kV PROGRAM STATUS

Substation	Number of substation transformers	Number of 4kV circuits	Number of circuits upgraded	Number of circuits under construction	Circuits under construction projected completion date	Projected completion date
Magnolia Substation	5	5	1	4	Oct. 31, 2017	Oct. 31, 2017
Plaza Substation	3	14		4	June 30, 2018	June 30, 2021
Riverside Substation	4	6				June 30, 2023
Hunter Substation	2	3				June 30, 2024
Mt. View Substation	2	6				June 30, 2026
Totals	16	34	1	8		

RiversidePublicUtilities.com



10

DISCUSSION - NEXT STEPS

1. Plaza Substation – (10) circuits pending design
June 2018 – (5) circuits projected to be issued to construction with projected completion **June 2019**

Jan 2019 – (5) circuits projected to be issued to construction with projected completion **June 2021**

2. Balance of circuits to be converted by 2026

RECOMMENDATION

That the Board of Public Utilities receive and file the status report for the 4kV to 12kV Conversion Program.