

# PG&E's 2012 Request Window Proposals

## Central Valley

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Transmission System Planning  
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September 27, 2012





# Transmission Projects Overview

## Projects Seeking CAISO Approval

- Pease 115/60 kV Transformer Addition and Bus Upgrade
- Placer 115/60 kV Transformer Replacement and SPS
- Valley Springs No. 1 60 kV Line Reconductoring
- Salado 115/60 kV Transformer Addition
- Ripon 115 kV New Line
- Mosher Transmission Project
- Kasson SPS



# Pease 115/60 kV Transformer Addition and Bus Upgrade

## Background

- Pease Substations serves customers in Sutter, Yuba, and Butte Counties of Sierra Division.
- Two of the three local generators are connected to the Pease-Marysville-Harter 60 kV Line

## Assessment

- Loss of Pease-Marysville-Harter 60 kV Line & Greenleaf II (L-1/G-1) is projected to overload the Pease 115/60 kV Transformer and cause low voltages in the area
- Loss of the Pease-Marysville-Harter 60 kV Line & Pease 115/60 kV Transformer (N-1-1) is projected to cause extremely low voltages in the area
- During summer weekend days, when local generation is off-line, loss of the Pease 115/60 kV Transformer is projected to cause very low voltages in the area

## Scope

- Add a new 115/60 kV transformer rated at 200 MVA at Pease Substation
- Upgrade the Pease 115 KV Bus
- Install UVLS to drop load at Harter when low voltages are detected

## Other Alternatives Considered

- Status Quo
- Plumas-Marysville Connection
- Reconductor Colgate 60 kV System

## In Service Date

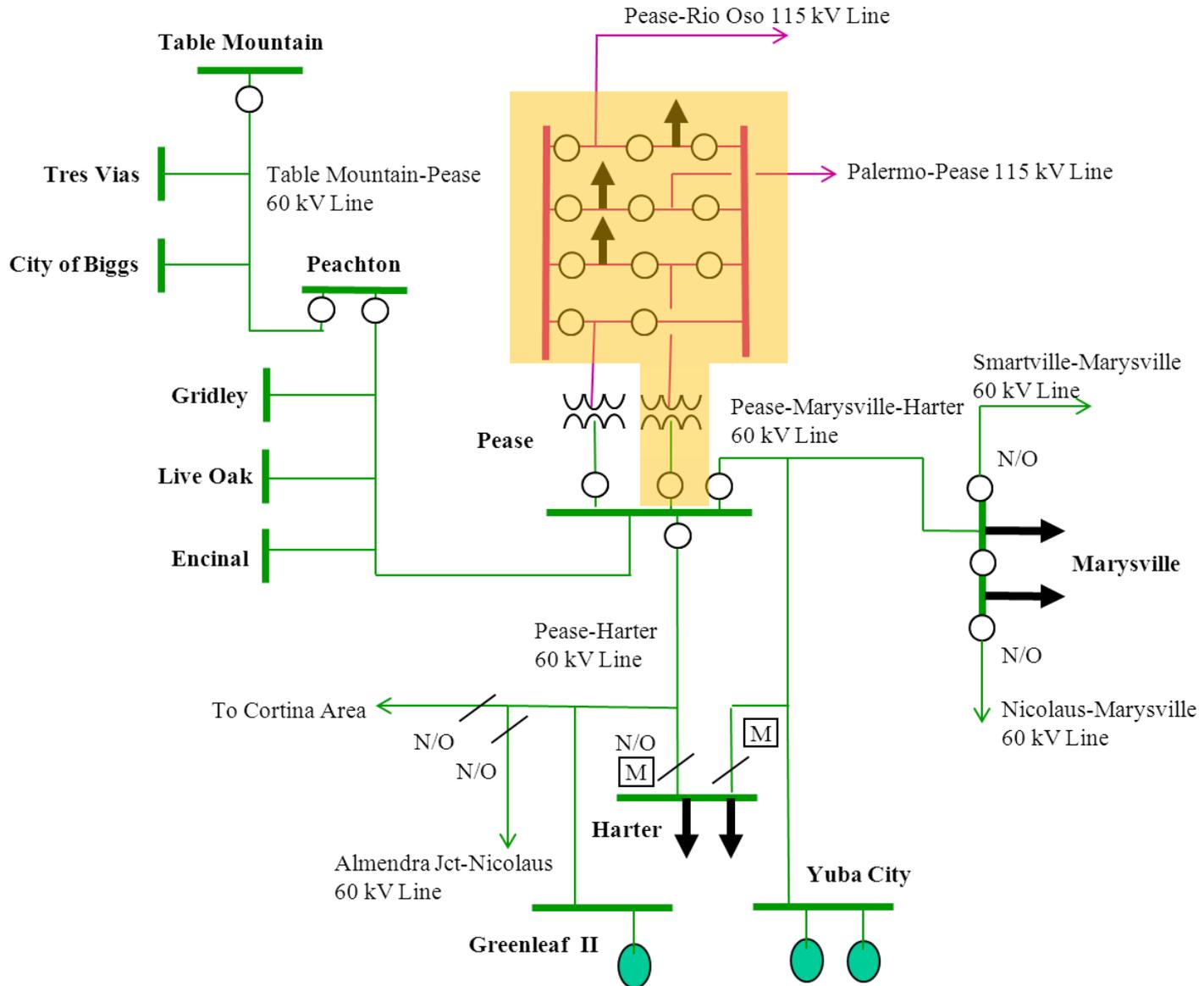
- May 2016

## Cost

- \$25M - \$35M



# Pease 115/60 kV Transformer Addition and Bus Upgrade





# Placer 115/60 kV Transformer Replacement and SPS

## Background

- Placer Substation serves customers in Placer County of Sierra Division.
- Primarily fed from two 115 kV lines from Gold Hill and one 115 kV line from Drum
- 60 kV system primarily fed from one Placer 115/60 kV transformer

## Assessment

- Placer 115/60 kV Transformer is projected to overload under normal conditions
- Loss of Halsey PH (G-1) is projected to overload the Placer 115/60 kV Transformer sooner
- Loss of the Gold Hill – Placer 115 kV Lines (DCTL) is projected to cause very low voltages in the Placer Area and overload the Drum- Higgins 115 kV Line

## Scope

- Replace the existing Placer 115/60 KV Transformer with a new 200 MVA transformer
- Investigate installing a SPS to drop load in the Placer area following a Gold Hill-Placer 115 kV Lines Double Circuit Tower Line (DCTL) outage.

## Other Alternatives Considered

- Status Quo
- Atlantic – Placer Voltage Conversion

## In Service Date

- May 2016

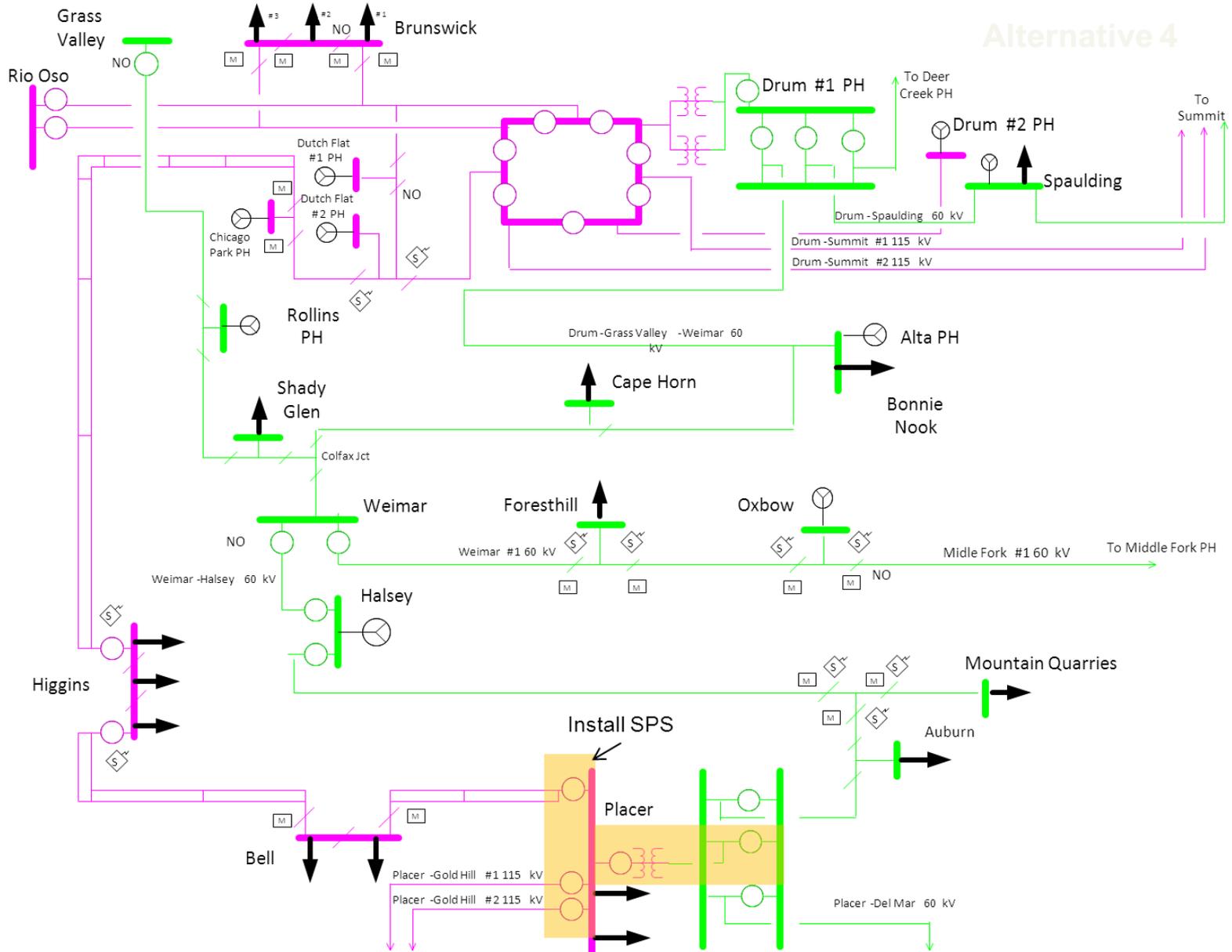
## Cost

- \$15M - \$20M



# Placer 115/60 kV Transformer and SPS

Alternative 4





# Valley Springs No. 1 60 kV Line Reconductoring

## Background

- The Valley Springs No. 1 60 kV Line is located in Calaveras County of Stockton Division.
- Valley Springs No. 1 60 kV Line is approximately 24 miles and limited by 4/0 AL conductor.
- Linden Substation is normally served from the Weber-Mormon Jct 60 kV Line and is automatically transferred to the Valley Springs No. 1 60 kV Line during emergency conditions.

## Assessment

- Loss of Weber – Mormon Jct 60 kV Line is projected to overload the Valley Springs No. 1 60 kV Line.

## Scope

- Reconductor 12.8 miles of the Valley Springs No. 1 60 kV Line with a conductor which has a summer normal rating of at least 600 amps.

## Other Alternatives Considered

- Status Quo

## In Service Date

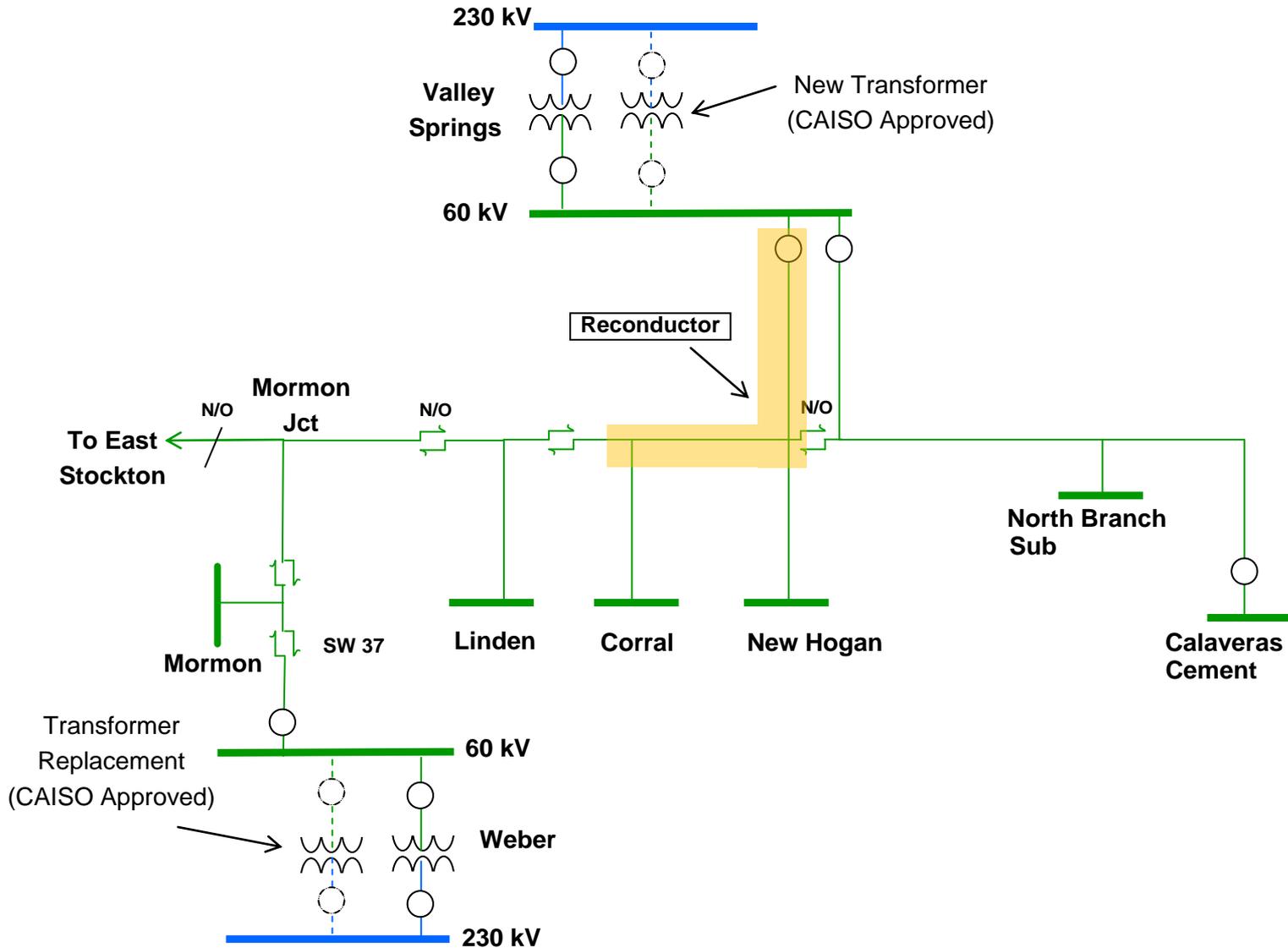
- May 2016

## Cost

- \$7M - \$12M



# Valley Springs No. 1 60 kV Line Reconductoring





# Salado 115/60 kV Transformer Addition

## **Background**

- Salado Substation is located in Stanislaus County in the Central Valley Region.
- Salado is comprised of a 115/60 kV transformer bank , with 3 single-phase units rated for 26.5 MVA each and no spare unit.
- The 58-year old Transformer serves radial load at Newman, Gustine and Crows Landing 60 kV distribution substations (approximately 8,600 customers, 31 MW total)

## **Assessment**

- Outage of Salado 115/60 kV Transformer results in sustained outages to approximately 8,600 electric customers (31MW).
- Existing maintenance issues due to radial load and weak back ties

## **Scope**

- This project proposes to install a second 115/60 kV transformer (100 MVA, three-phase with LTC), and to convert Salado 115 kV Bus from a loop arrangement to a Breaker and a Half (BAAH) arrangement .

## **Other Alternatives Considered**

- Status Quo
- Network the 60 kV System

## **In-Service Date**

- December 2014

## **Cost**

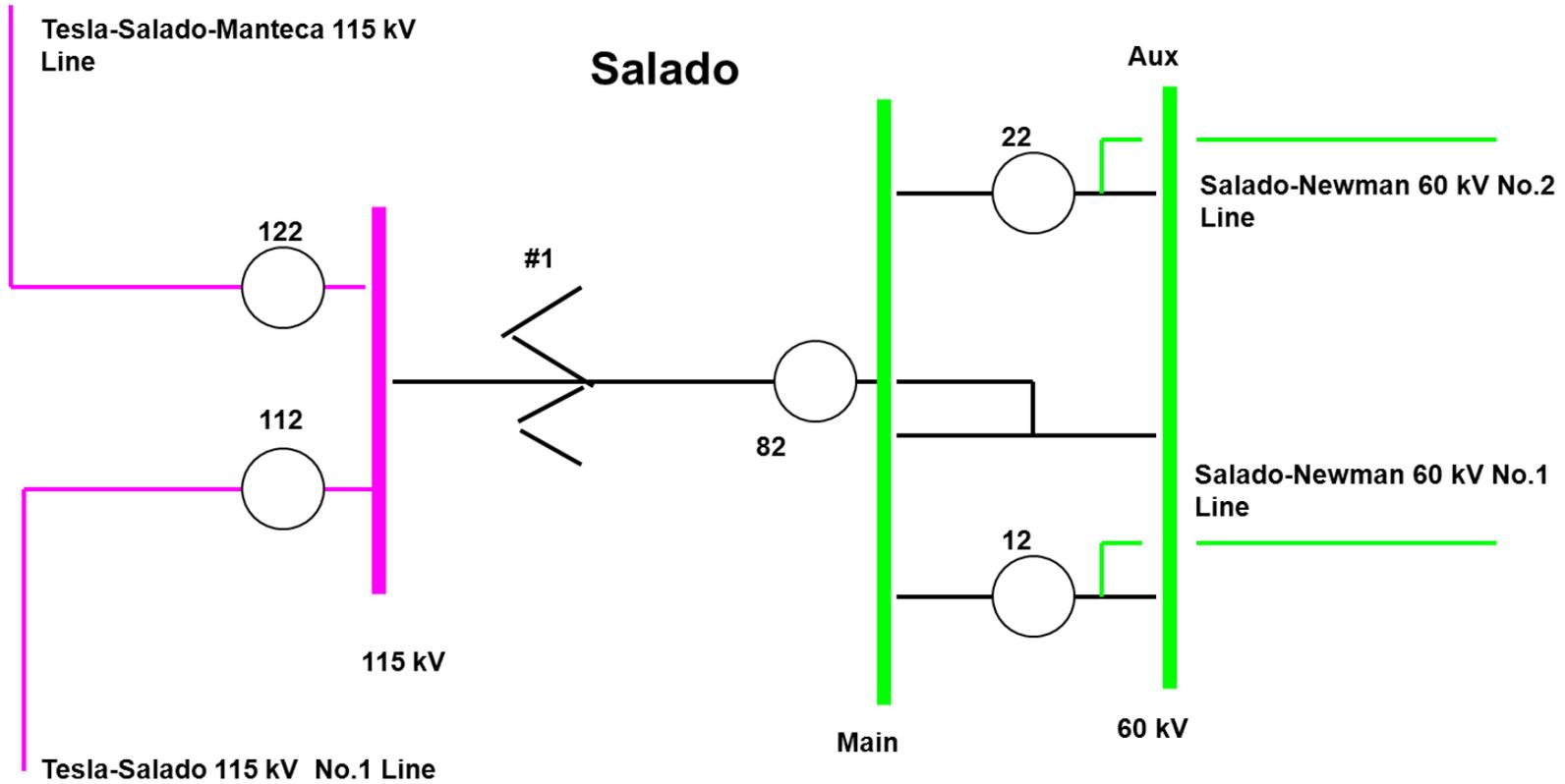
- \$15M - \$20M

## **Benefits**

- This project will improve reliability of electric service for PG&E electric customers in Stanislaus County.
- The BCR is 1.1

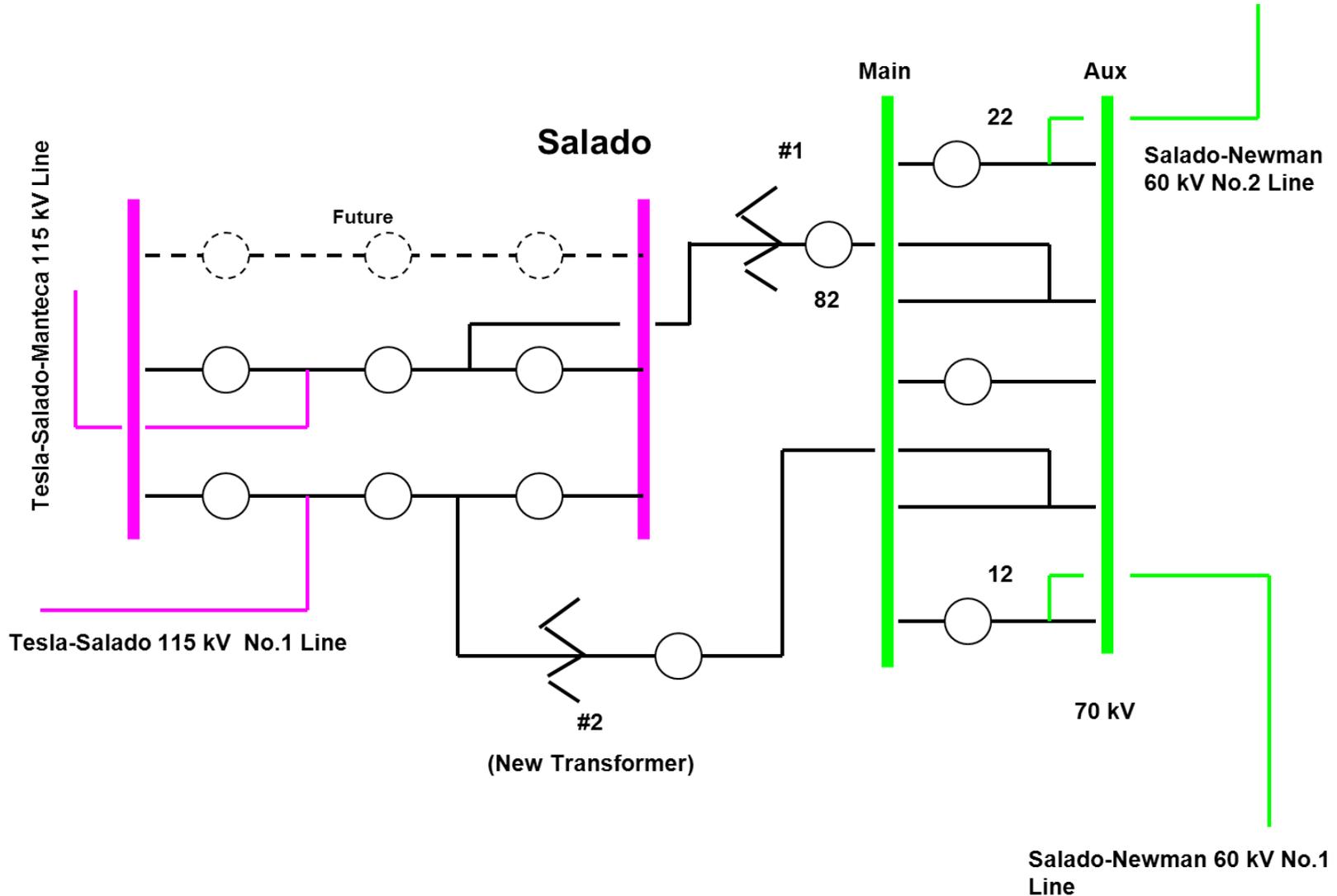


# Salado Substation Existing System





# Salado 115/60 kV Transformer Addition





# Ripon 115 kV New Line

## Background

- Ripon Substation, located within San Joaquin County serves over 5,500 electric customers (22 MW), via a radial 4.6-mile long connection off the Riverbank Junction Switching Station – Manteca 115 kV Line.
- The line has an average of 2.2 outages per year.

## Assessment

- An outage of the Riverbank Junction Switching Station-Manteca 115 kV Line will result in the loss of electric service to Ripon customers.
- Existing maintenance issues due to radial load.

## Scope

- Build a new 5-mile 115 kV tap line from the Riverbank Jct. Sw. Sta. – Manteca 115 kV Line to Ripon Substation.
- Add two breakers at Ripon to loop the substation.

## Other Alternatives Considered

- Status Quo
- Build a second line and a ring bus at Ripon Substation.

## In Service Date

- May 2015

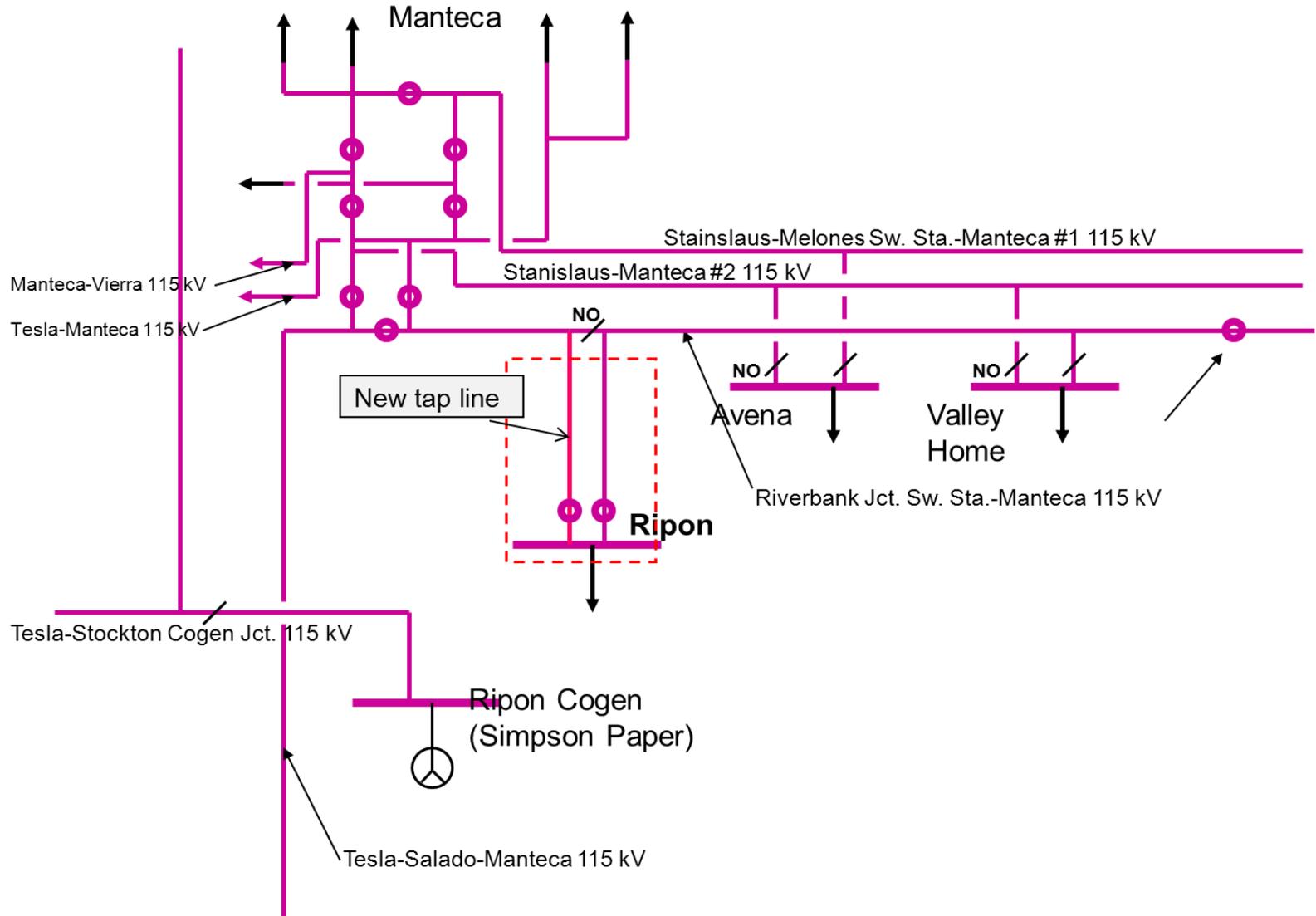
## Cost

- \$10M - \$15M

## Benefits

- This project will improve reliability of electric service for PG&E customers in the Ripon area
- The BCR is 3.7

# Ripon 115 kV New Line





# Mosher Transmission Project

## Background

- The Lockeford No. 1 60 kV Line is located in San Joaquin County.
- Lockeford No. 1 60 kV Line is approximately 11.5 miles and is limited by 2/0 CU conductor.
- Mosher Substation is normally served from the Hammer-Country Club 60 kV Line but is automatically transferred to the Lockeford No. 1 60 kV Line during emergency conditions.

## Assessment

- An outage of the Hammer – Country Club 60 kV Line is projected to overload the Lockeford No. 1 60 kV Line

## Scope

- Reconductor the Lockeford No. 1 60 kV Line and install two 60 kV circuit breakers and SCADA at Mosher Substation.
- Operate Mosher circuit breaker to Lockeford normally open and continue to automatically restore Mosher substation following the Hammer-Country Club 60 kV Line outage.

## Other Alternatives Considered

- Status Quo
- New Underground Stagg-Mosher 60 kV Line

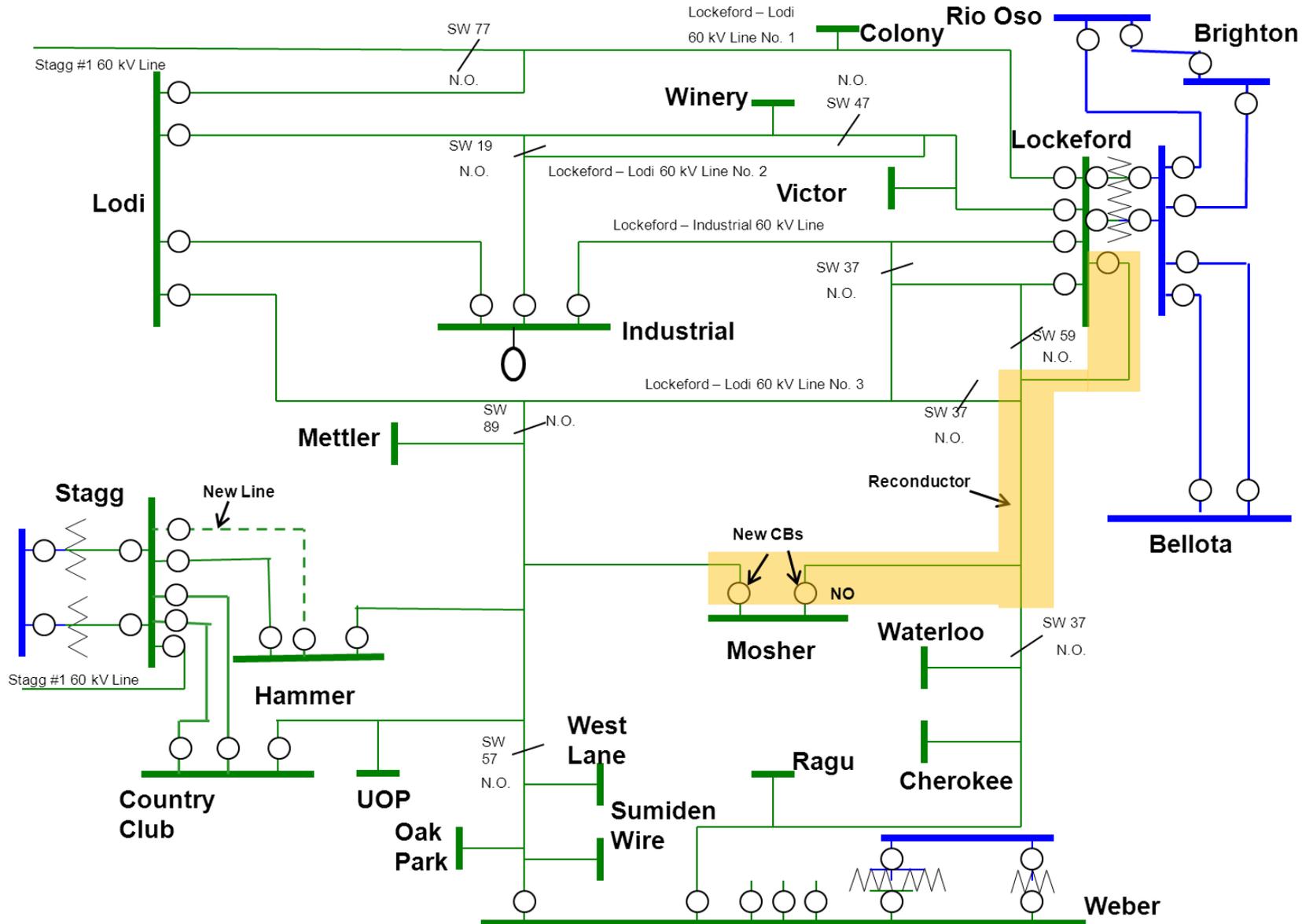
## In Service Date

- May 2015

## Cost

- \$11M - \$15M

# Mosher Transmission Project





# Kasson SPS

## Background

- Kasson Substation is located in San Joaquin County of PG&Es' Stockton Division.
- Kasson and Manteca Substations are the main sources to a 60 kV local system serving over 9000 customers via the Kasson – Louise & Manteca - Louise 60 kV Lines

## Assessment

- Loss of the Kasson 115 kV Bus is projected to overload the Kasson-Louise 60 kV Line, Manteca – Louise 60 kV Line, and Manteca 115/60 kV Transformer

## Scope

- Install SPS that trips all Kasson 60 kV CBs following a Kasson 115 kV Bus outage

## Other Alternatives Considered

- Status Quo
- Install new Kasson 115/60 kV Transformer and add sectionalizing breaker on 115 kV bus

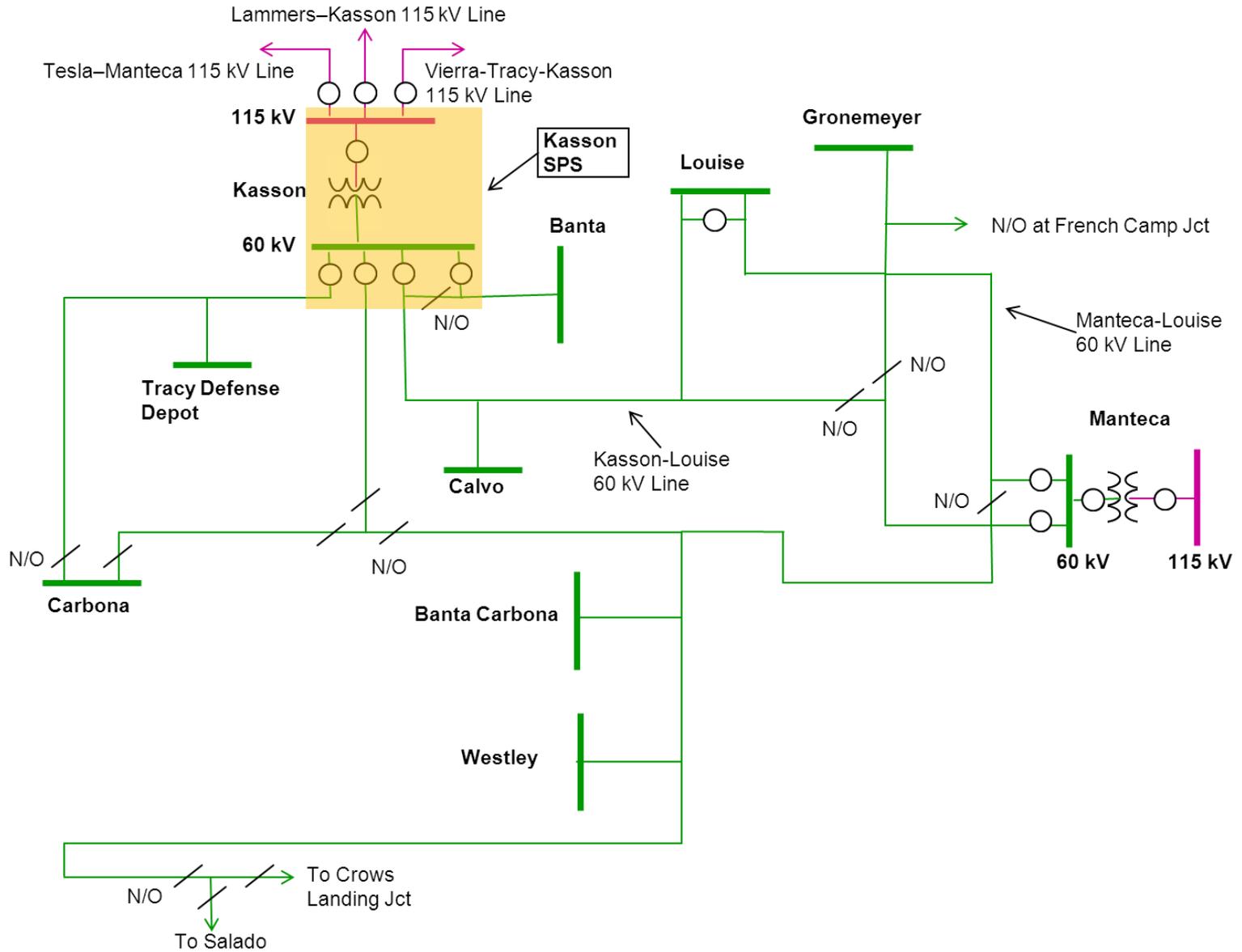
## In Service Date

- May 2015

## Cost

- \$1M - \$3M

# Kasson SPS





# Conceptual Long Term Plans

## Projects that Require Additional Analysis:

- Gold Hill 230/115 kV Transformer Addition
- Tesla – Weber 230 kV Line Equipment Upgrade
- Vaca – Suisun – Jameson 115 kV Line Reconductor
- Weber – Mormon Jct 60 kV Line Reconductor and Switch Upgrade
- Lockeford-Lodi Area Long Term Study

# Thank You

