

Location: Collinsville, CA

Project Manager: Eyob Embaye

Project Name: Collinsville Interconnection Project:

Vaca – Collinsville 500kV & Collinsville – Tesla 500kV

Project Engineer: Safiullah Ahmadzai

BACKGROUND

Project Justification:

This project will provide transmission line support to the new Collinsville substation by installing two new 500kV circuits that will loop in the existing Vaca – Tesla 500kV. The remote substations at Vaca Dixon, Tesla, and Pittsburg will also be modified to support the interconnection.

Project Objective:

This scope includes the work required between the proposed Collinsville substation and PG&E's existing Vaca – Tesla 500kV line. The Vaca – Tesla circuit will be looped into the new substation near structure 23/99 with 2 single circuit transmission lines (Vaca – Collinsville 500kV & Collinsville – Tesla 500kV), each approximately 1.5 mile long. Each new transmission loop will contain approximately seven new 500kV structures and will support bundled 2300 AAC conductor and two overhead ground wires. With the addition of the new Collinsville substation, one new transposition location will be determined along the new Vaca – Collinsville 500kV and one new transposition location will be determined along the new Collinsville - Tesla 500kV to fix the disruption of existing phasing transpositions.

ENGINEERING SCOPE

I. Vaca – Collinsville 500kV & Collinsville – Tesla 500kV Transmission Line Work Scope

a. Locations Included

i. Structures to be re-used.

1. Existing structures on either side of the new transposition locations are assumed to not require modification.

ii. Structures to be added.

1. Approximately seven new 500kV structures will be added on each single circuit loop to support the transmission line for a total of fourteen new structures. Added two more structures totaling 16 structures until design is confirmed.
2. Approximately four new lattice steel poles (LSPs) structures will be utilized for two new transposition locations along the new Vaca – Collinsville 500kV and Collinsville – Tesla 500kV circuits.

b. Structure Type and Quantity

- i. All fourteen new structures on the transmission loop will be PG&E standard 500kV lattice steel towers. 3-Pole dead-end Tubular Steel Pole (TSP) structures may be utilized where necessary if loading conditions exceed the standard lattice tower designs, but this is not anticipated.
- ii. All new structures used for new transposition locations will be lattice steel poles (LSPs). There are approximately four new LSP anticipated on this project, two on

Preliminary Scope

each new section.

c. Work Included

- i. Install approximately fourteen new 500kV lattice steel towers with standard foundations (4 piers per tower, one for each leg).
- ii. Install approximately four new lattice steel poles with standard foundations to be used for new transposition locations.
- iii. String bundled 2300-61 kcmil AAC, and two new 7#8 Alumoweld overhead ground wire in the shield wire position. Install insulator assemblies, conductor hardware, and jumpers as required.

Summary:

1. Conductor Selection:

- Transmission Conductor - Double Bundled 2300 AAC
- Overhead Ground Wire - 7#8 Alumoweld

2. Structure Type Selection:

- PG&E Standard 500kV Lattice Steel Towers
- Lattice Steel Poles (used for transpositions)

3. Structure Location:

The loop will begin near existing structure 23/99 of the existing Vaca – Collinsville 500kV circuit. The remaining structures along the loop alignment will be spotted within the right of way easement provided by PG&E and located within the design limitations of the standard 500kV towers.

4. OPGW:

- N/A

5. Transposition Poles:

- One new transposition structure will be added on each section along the new Vaca – Collinsville and Collinsville – Tesla circuits. No new transposition structures will be required on the new transmission loop to from the tie point to Collinsville Substation.

6. Equipment to Be Removed:

- One existing LST

Project Risks:

Risks	Probability (H/M/L)	Impact (H/M/L)
CPUC Approval		
Agency Permitting		
Clearance Conflicts		
Executive Funding Approval		

Assumptions:

- PG&E will acquire adequate land rights as needed along the project corridor.
- Access is adequate for construction and maintenance. If not, PG&E will construct adequate access before the start of construction to accommodate.

Preliminary Scope

Substation Preliminary Scope From north to south

1. Vaca-Dixon:

I. Outdoor Work:

1. Remove the Power Line Carrier
2. Rename the line to reflect the new line name
3. Modify the existing Series CAP banks to have two equal steps of 5.625 Ohms
4. Establish the microwave system as a redundant communication path

II. Indoor Work:

1. Upgrade line relays
2. Replace the existing PMU system
3. Pulling one Fiber Optical circuit
4. Install telecom equipment for redundant communication path using microwave

2. Pittsburg:

I. Outdoor Work:

1. Relocate 2 existing lines (Pittsburg-Tesla and Pittsburg-San Ramon) from each bus "D" and "E" to the adjacent empty bays to make room for the new lines coming from the new Collinsville substation
2. Connect the two 230kV Lines from the POCO poles (located outside of the substation fence) to the existing bus sections "D" and "E". LS Power's POCO Pole to include the switch.
3. Due to increased fault duties, install a set of reactors on the 115kV bus 1 and bus 2
4. Pulling the new fiber optical cables from the POCO poles to the communication facility to serve as a second communication path (in addition to the existing Fiber path)

II. Indoor Work:

1. Install new SMP line and breaker relays on the MPAC buildings (to be installed prior to this work)
2. Install telecom infrastructure to accommodate the new F.O. lines
3. Install new Phaser Measurement Units

3. Tesla:

I. Outdoor Work:

1. Change the line name
2. Remove the Power Line Carrier

II. Indoor Work:

1. Upgrade line relays
2. Replace the existing PMU system
3. Pulling one Fiber Optical circuit
4. Install telecom equipment for the redundant communication path using fiber

Preliminary Scope

4. Collinsville:

I. Outdoor Work:

1. PG&E telecom enclosure similar to Fern Rd.