

**Description and Functional
Specifications of Proposed Policy-
Driven Elements in Imperial Valley Area**

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Market and Infrastructure Development

Description and Functional Specifications of Proposed Policy-Driven Elements in Imperial Valley Area

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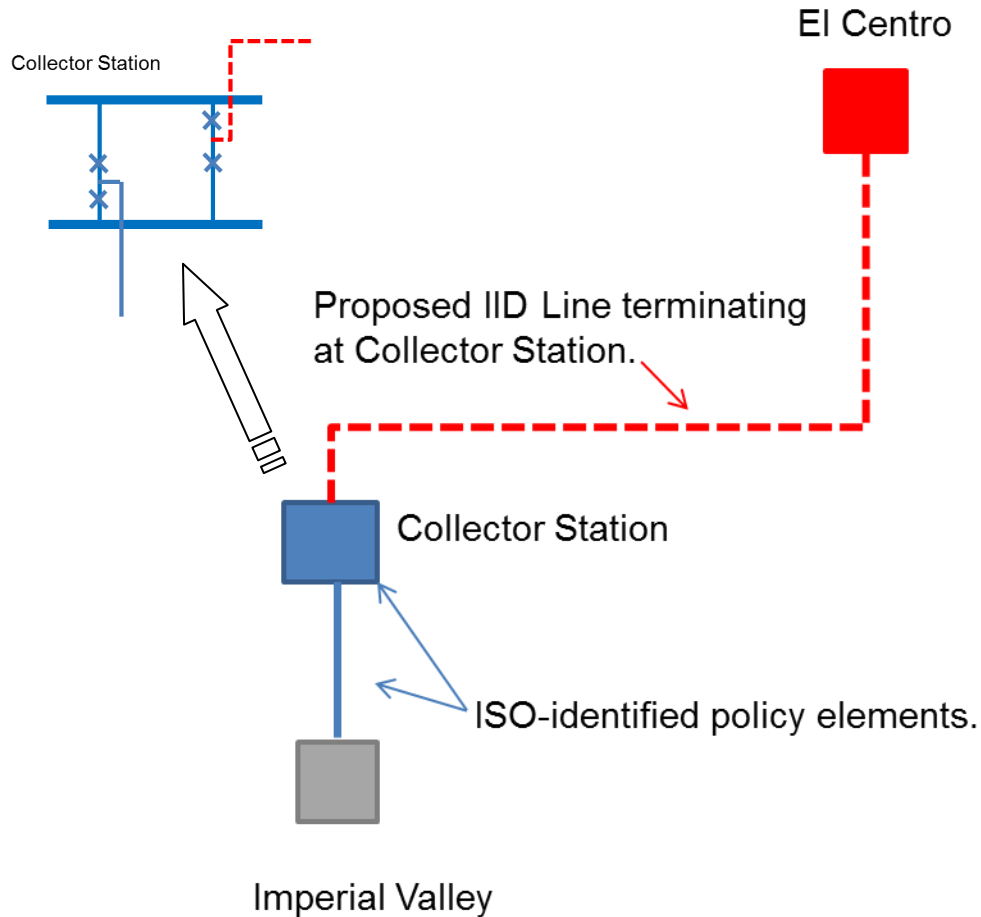
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Description and Functional Specifications of Proposed Policy-Driven Elements in Imperial Valley Area

1. Description

The ISO analyzed the location of generation projects in the ISO queue seeking interconnection to the Imperial Valley (IV) substation and considered transmission configurations that might reduce permitting and other concerns in the area. The ISO has also coordinated with IID and has been advised that IID plans to upgrade the IID IV-EI Centro line (the “S” line) to enhance its ownership rights at the IV substation. The ISO has reviewed such plans from IID. Based on this collaboration with IID and the need to provide an efficient means by which ISO queue generation located in Imperial Valley can move forward to commercial operation, the ISO has identified a policy-driven need for a 230 kV collector substation (located approximately one mile north of the IV substation) and a 230 kV transmission line connecting the collector substation to the IV substation, contingent upon IID upgrading the S line and looping it into the new collector substation, as depicted below:¹

¹ Because the 230 kV line and substation will not become network facilities until IID completes the S line loop-in, these elements cannot be turned over to ISO operational control until IID completes the network upgrades on its system.



The ISO estimates that the cost of the two elements - the collector substation and the connecting 230 kV line - will cost under \$25 million. This proposed transmission configuration will provide a means by which renewable generation MW in the ISO interconnection queue can quickly and efficiently be delivered to the existing ISO grid, while minimizing environmental impacts in the IID service territory.

2. Functional Specifications

2.1 Transmission Line – Functional Specification

Overhead Line Construction

Line Terminus 1: SDG&E Imperial Valley 230 kV Bus

Line Terminus 2: Proposed Collector Station 230 kV Bus

Nominal Phase to Phase Voltage: 230 kV

Minimum Continuous Ampacity - Summer: 3,000 Amps

Minimum Continuous Ampacity – Winter: 3,000 Amps

Minimum 4 Hour Emergency Ampacity – Summer: 4,050 Amps

Minimum 4 Hour Emergency Ampacity – Winter: 4,050 Amps

Minimum 30 Minute Emergency Ampacity – Summer: 4,380 Amps

Minimum 30 Minute Emergency Ampacity – Winter: 4,380 Amps

Approximate Line Impedance (Ohms): N/A

Approximate Series Compensation Level: N/A

Approximate Line Length: 1 mile

Latest In Service Date: May, 2015

Support Structures: Full double circuit tower with one side strung

Shield Wire Required: Optical ground wire (minimum 6 pairs of fibers)

Failure Containment Loading Mitigation (anti-cascade structures, etc.): Per applicable codes

Shield Wire Ground Fault Withstand Ampacity: Coordinate with interconnecting PTOs

Aeolian Vibration Control (Conductor and Shield Wire): Vibration dampers must be installed on all conductors and overhead shield wires, with the exception of slack spans.

Transmission Line Minimum BIL: 1,050 kV (900 kV for solidly grounded systems)

Minimum ROW Width: Per applicable codes

Governing Design and Construction Standards: (GO 95, NESC Code, applicable municipal codes)

2.2 Collector Station – Functional Specification

Switching Station Only

Nominal Phase to Phase Voltage: 230 kV

Initial Bus Configuration (DBDB, BAAH, SBSB, etc): Double breaker double bus (DBDB)

Ultimate Bus Configuration (DBDB, BAAH, SBSB, etc): Breaker and a half (BAAH)

Maximum Circuit Breaker Total Fault Clearing Time: 4 cycles

Initial Number of Lines: 2

Ultimate Number of Lines: 12 (Initially the collector station site is to be prepared for four bays and eight lines.)

Initial Number of CBs: 4

Ultimate Number of CBs: 18

Initial Minimum Bus Ampacity: 5,500 Amps Ultimate Bus Ampacity: 5,500 Amps

Minimum CB Ampacity: 4,000 Amps Minimum CB Interrupting Capability: 63 kA

Station Minimum BIL? 1,050 kV (900 kV for solidly grounded systems)

Initial Reactive Power Requirements: None

Ultimate Reactive Power Requirements: To be determined

Telemetry Requirements: Install the necessary equipment, including one RTU to monitor the typical bulk power elements such as MW, MVAR, and phase amps at each line and also kV at lines and buses and all circuit breaker status/control, protection relays status and alarms. The installed equipment will transmit information to the Participating TO's Grid Control Center.

Latest In Service Date: May, 2015

Low Profile Required: Subject to local permitting requirements

Gas Insulation Required: No