2023-2024 Transmission Planning Process Eldorado 230kV Short Circuit Duty Mitigation Project

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2023-2024 Transmission Planning Process Stakeholder Meeting
June 28, 2023

Housekeeping reminders

- Stakeholder calls and meetings related to Transmission Planning are not recorded.
  - Given the expectation that documentation from these calls will be referred to in subsequent regulatory proceedings, we address written questions through written comments, and enable more informal dialogue at the call itself.
- Meeting is structured to stimulate dialogue and engage different perspectives.
- Please keep comments professional and respectful.
- Please try and be brief and refrain from repeating what has already been said so that we can manage the time efficiently.

Instructions for raising your hand to ask a question

- If you are connected to audio through your computer or used the “call me” option, select the raise hand icon located on the top right above the chat window.
  Note: #2 only works if you dialed into the meeting.
  - – Please remember to state your name and affiliation before making your comment.
- If you need technical assistance during the meeting, please send a chat to the event producer.
- You may also send your question via chat to either Kaitlin McGee or to all panelists.

Project Submitter: SCE

Reliability Assessment Need:

- After coordinating with all the Eldorado co-owners' queued generation and transmission upgrades, it was identified that the short circuit duty for the joint-owned Eldorado 230kV bus would be 75.3 kA by the end of generation/transmission queue and would be 64.2 kA by the 2023 operational queue. This would exceed the 63 kA breaker rating and needs to be mitigated.

Project Scope Recommended for Approval:

- Split the joint-owned Eldorado 230kV bus into two sections using sectionalizing breakers and associated equipment. The bus will be extended with two new positions to the east of the current bus structure.
- Relocate lines to balance the short circuit contribution. One bus section will have Eldorado – NSO 230kV line, Eldorado – Mead 230kV No.2 line and the Eldorado 4AA bank. The other bus section will have the Eldorado 3AA bank, Eldorado – Mead 230kV No.1 line, Eldorado – Magnolia 230kV line, Eldorado – Cima – Pisgah 230kV No.1 and No.2 lines and Eldorado – Merchant 230kV No.1 and No.2 lines.

Mitigation Effectiveness:

- Splitting the Eldorado 230kV bus into two bus sections and relocating lines would effectively mitigate the identified short circuit duty issues as indicated in the table below.

Scenario	Eldorado 230 kV (kA) Section A	Eldorado 230 kV (kA) Section C	Eldorado 230 kV (kA) Section B
No Mitigation	75.3	-	46.7
Bus Split	53.9	37.0	46.7

One-Line Diagram Pre Project

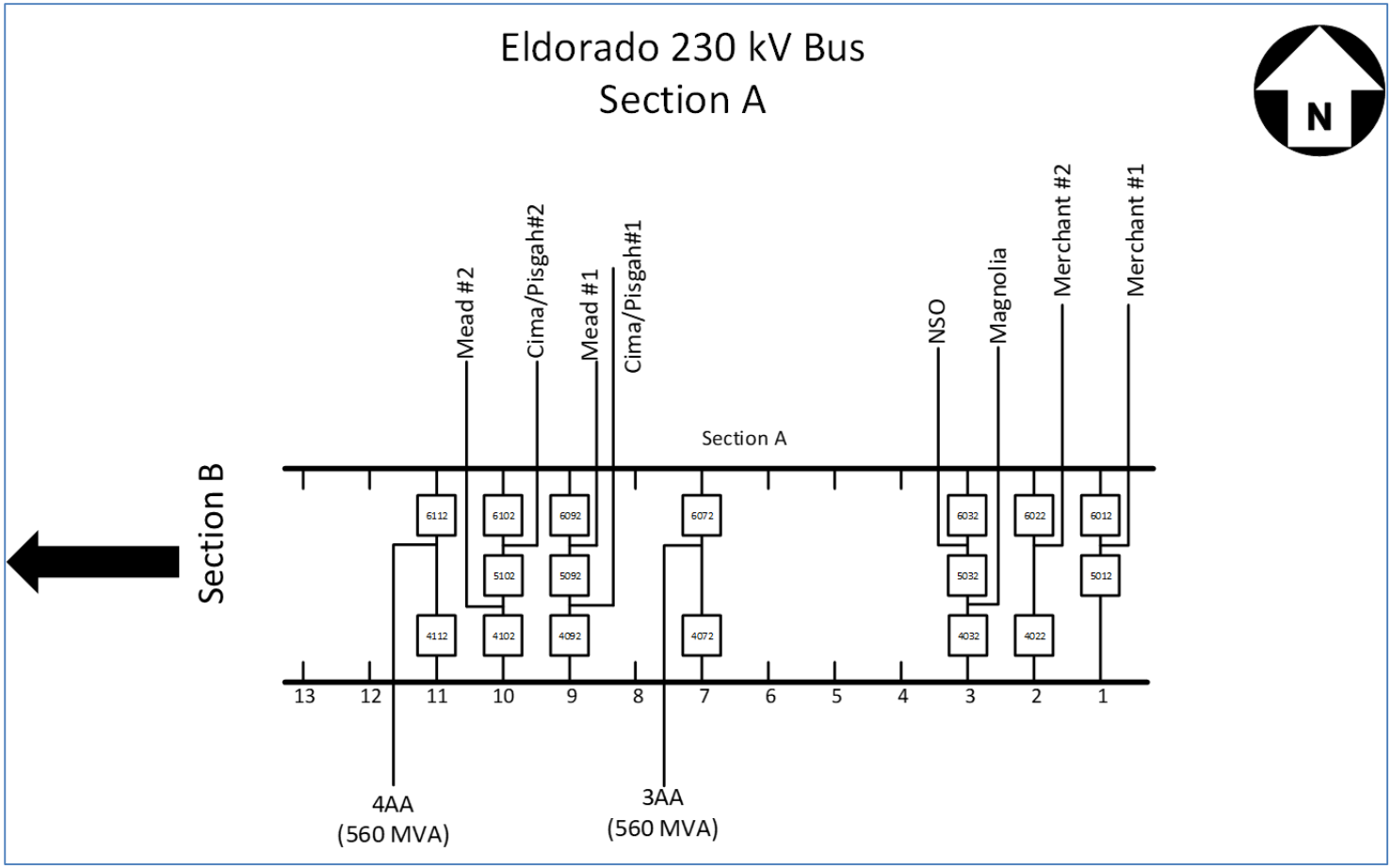
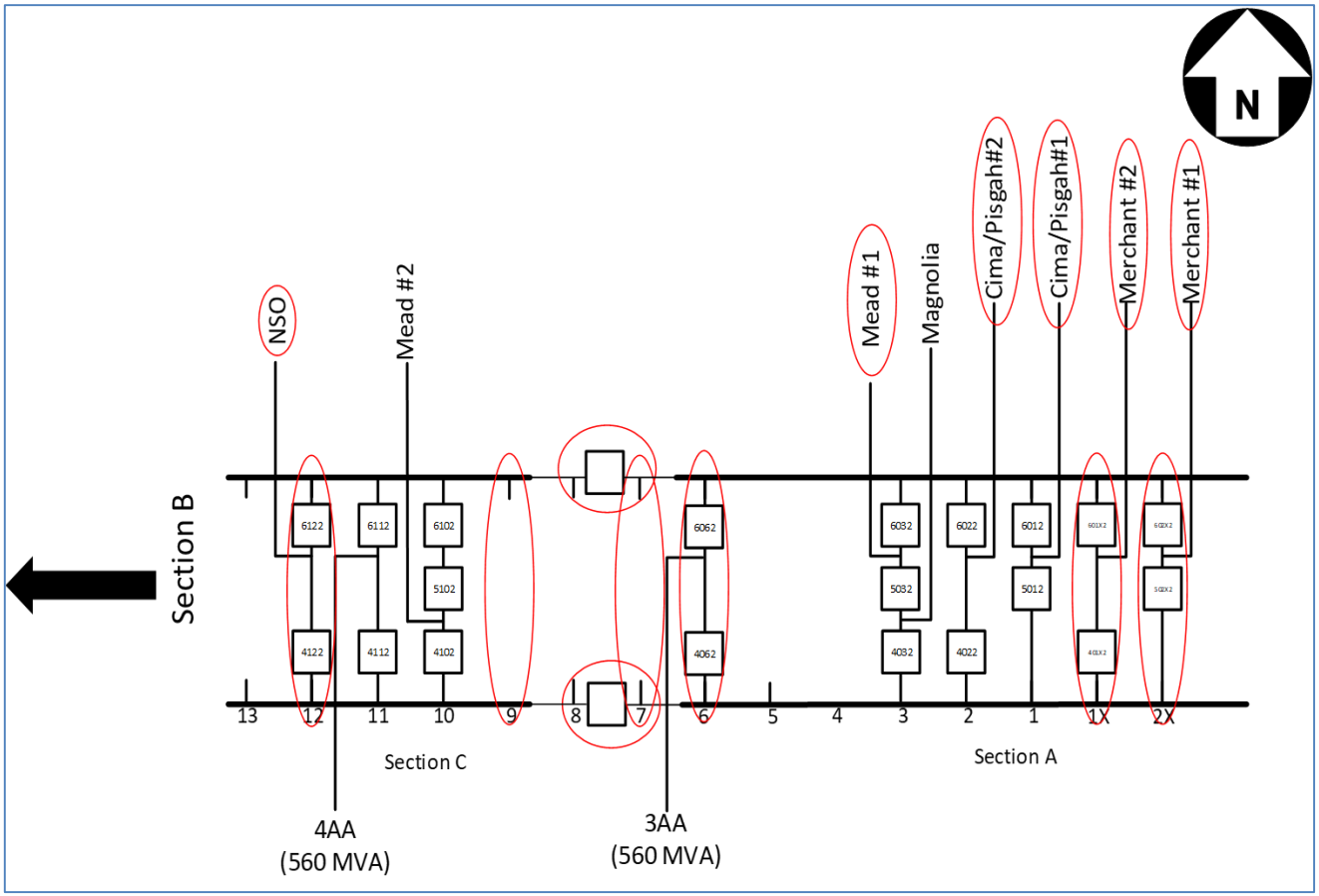


Diagram source: SCE 2021-2022 TPP RW submission

One-Line Diagram Post Eldorado 230kV Short Circuit Duty Project



Project Cost:

- The high-level estimate cost for the project is $67 million. $48.8 million will be allocated to CAISO TAC and $18.2 million will be allocated to LADWP and NVE based on facilities allocations for the Eldorado System.

Expected In-Service Date: 12/31/2029

Alternatives Considered:

- **New Substation:** This alternative would site a new substation and move some lines to that location. It was not recommended due to high cost, licensing issues and long lead time to construct.
- **80 kA System:** This alternative would upgrade substation to 80 kA standard to include breakers and associated equipment. It was not recommended due to high cost, long lead time to construct.
- **Bus Reactors:** This alternative would split the north and south buses and install 10 ohms reactors. However, the size of the reactors prevents the installation of required protection and isolation equipment within the existing switch rack.
- **Line Reactors:** This alternative would add line reactors to the most impactful line that contributes the short circuit duty. However, the sufficient reactors impedance for short circuit duty purposed would cause very low voltages in the system. Thus this alternative was not recommended.
- **De-loop Lines:** This alternative would move lines around so that breakers can be opened to de-loop lines going in and out of the substation. This alternative would have little headroom for any expansion in the area and was not recommended.

Next Steps

- Please submit comments on the Discussion Paper and meeting discussion using the commenting tool linked on the initiative webpage
  - Comments are due by end of day July 12, 2023

- Visit initiative webpage for more information: https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/2023-2024-Transmission-planning-process

- If you have any questions, please contact isostakeholderaffairs@caiso.com