Smart Wires Comments on the 2020-2021 Transmission Planning Process

October 8, 2020

Smart Wires appreciates this opportunity to provide comments on the CAISO 2020-21 Draft Transmission Plan. The comments below address material presented at the CAISO Stakeholder meeting on September 23-24, 2020. These comments focus on requests to assess flexible and cost-effective power flow control solutions to reduce Local Capacity Requirements (LCR) in several areas.

Included in following comments:

1. Background information on applicability of Smart Wires' technology for LCR reduction
2. Acknowledgement of PG&E's Greater Bay Area SmartValve project submission
3. Request for the re-evaluation of the benefits provided by Smart Wires' previously proposed Contra Costa LCR solution on Tesla-Delta Switchyard 230 kV
4. Request for the evaluation of a SmartValve solution to reduce San Diego – Imperial Valley Area LCR
5. Request for SmartValve to be adopted into CAISO's solution set when assessing other LCR areas

1. Leveraging SmartValve Solutions for Cost Effective LCR Reduction

Smart Wires' SmartValve solutions utilize Static Synchronous Series Compensator (SSSC) technology to introduce inductive or capacitive reactance in series with a transmission line or transformer. As a modular SSSC, the SmartValve provides a fast, flexible, and cost-effective solution option. The modular design of the technology enables solutions to be scaled up or down or even relocated as system needs change over time. Additionally, the power electronics based solution can take on various operating missions throughout the assets life if or as system conditions change. These attributes enable these solutions to provide considerable planning and operational flexibility amidst uncertain planning scenarios and deliver a highly cost competitive solution when comparted to traditional alternatives such as new builds, reconductors, other power flow control technology, or energy storage.

In the context of LCR, SmartValve solutions can be deployed in series with a particular constrained transmission line or transformer to push flows onto parallel paths. This effectively increases the ability for local areas to import system capacity and reduces the need for specific local capacity. SmartValve solutions can be manually operated or configured to act automatically within seconds based on observed conditions.

2. SmartValve for Greater Bay Area (GBA) LCR Reduction

As presented by PG&E during the most recent stakeholder meeting, PG&E has worked with Smart Wires to study and scope a SmartValve solution alternative to reduce the GBA LCR. Smart Wires looks forward to CAISO's evaluation of this project proposal and stands ready to support PG&E and CAISO in this effort as needed.

3. SmartValve for Contra Costa Sub-area LCR Reduction

In the 2019/2020 TPP cycle Smart Wires submitted a solution to reduce Contra Costa Sub-area LCR. While CAISO's evaluation showed the solution was cost beneficial with a benefit-to-cost ratio of 2.1 to 3.9, CAISO identified that the generation within Contra Costa was required to meet the overall Greater Bay Area requirement. Pending the results of the CAISO's assessment of PG&E's proposed SmartValve solution to reduce GBA LCR, Smart Wires requests a re-evaluation of the benefits provided by this previously proposed and vetted Smart Wires' Contra Costa project.

4. SmartValve for San Diego – Imperial Valley Area LCR Reduction

Smart Wires conducted analysis on the San Diego – Imperial Valley Area LCR and found the SmartValve could provide a cost effective solution option. As presented as part of the Draft 2030 LCR Study Results, the Yuka – Pilot Knob 161 kV line is driving an LCR of 3718 MW in this area. The results of Smart Wires' analysis show six SmartValve 10-1800i devices could be used to introduce up to 20 ohms to impede the flow of power on the Yuka – Pilot Knob 161 kV line following limiting contingency events. Smart Wires' study results indicate this size of a deployment could provide in excess of a 900 MW LCR reduction.

The 60 MVAr SmartValve solution includes six SmartValve 10-1800i devices and has a planning level cost estimate of $7M - $9M. With a capacity value of ~$19,000 per MW-year for local versus SP 26 capacity, a reduction in 900 MW yields a benefit of $17M per year. This indicates the solution's benefits would far exceed the total solution cost. This solution may be scaled up to further reduce local requirements and increase benefits to ratepayers.

5. SmartValve for Other Local Areas

Smart Wires believes these types of solutions can be used to cost-effectively reduce or eliminate local requirements for several areas in addition to the three presented above. In the 2019/2020 TPP cycle, CAISO considered the influence of several transmission alternatives to reduce LCR including reconductors and series reactors. Smart Wires requests CAISO to consider SmartValve as part of the tool kit when conducting this type of analysis more broadly in this cycle. Other areas where SmartValve solutions may be able to provide cost-effective reduction of LCR include, but are not limited to:

- South Bay-Moss Landing Sub-area
- South of Table Mountain Sub-area
- San Jose Sub-area
- Western LA Basin Sub-area, and
- The Overall LA Basin

Thank you for your consideration of these comments, and we look forward to working with the CAISO and relevant stakeholders to cost effectively reduce or eliminate the need for local requirements.

If you have any questions or concerns about these comments, please contact Andrew Martin (andrew.martin@smartwires.com) or Chris Ariante (chris.ariante@smartwires.com).