

RPU's Thoughts on Transmission Studies

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RPU continues to believe that N-2 contingency analyses and transient stability studies are not needed to adequately assess potential impacts to the transmission system that could result from the additions of Units 3 and 4 at RPU's RERC facility. Please consider the following information in support of RPU's position.

Following recent discussions with the CEC, RPU has reviewed the Reliability Standards approved by the NERC Board of Trustees and Regulatory Authorities and has determined the following:

1. Per the **Glossary of Terms used in Reliability Standards**, RPU does not operate any portion of the Bulk Electric System (BES). RPU's lone interconnection with the BES is via Southern California Edison's (SCE) Vista 230-69 kV Substation and 69 kV lines. Therefore any NERC Standards mandated for the BES will not apply to RPU. **Bulk Electric System (BES) Definition** - "As defined by the Regional Reliability Organization, the electrical generation resources, transmission lines, interconnections with neighboring systems, and associated equipment, generally operated at voltages of 100 kV or higher. Radial transmission facilities serving only load with one transmission source are generally not included in this definition." RPU operates at less than 100 kV and is radially fed from one SCE substation.
2. **NERC Standard FAC-001 - Facility Connection Requirements** is applicable to the Transmission Owner, whom in this case is SCE. According to this Standard, SCE is responsible for defining any necessary "coordinated joint studies of new facilities and their impacts on the interconnected transmission system." As such, RPU will defer to SCE's Planning studies criteria for Interconnected Transmission System higher than 69 kV.
3. **NERC Standard FAC-002 - Coordination of Plans for New Generation, Transmission, and End-User** requires that RPU "coordinated and cooperated on the assessment of the reliability impacts of new facilities on the interconnected transmission systems." RPU is cooperating and adhering to SCE's directions on Standard FAC-001.
4. **NERC Standard TPL-001 - System Performance Under Normal Conditions** is not applicable to RPU, since RPU is not directly connected to the Interconnected Transmission System. However, operating by Good Utility Practice, RPU does plan for a Network that "can be operated to supply projected customer demands and projected Firm Transmission Services at all Demand levels over the range of forecast system demands under N-0 conditions." With high demand growth experienced the last few years and a projection for continued growth in the near future, the addition of RERC 3 & 4 was proposed and is being expedited to ensure that RPU will be able to abide by this Standard.
5. **NERC Standard TPL-002 - System Performance Following Loss of a Single BES Element** is not applicable to RPU, since RPU is interconnected to SCE on the sub-transmission level as demonstrated in item 1. However as Good Utility Practice, RPU will perform and provide results for the N-1 Studies of RPU 69 kV System.
6. **NERC Standard TPL-003 - System Performance Following Loss of Two or More BES Element** and **NERC Standard TPL-004 - System Performance Following Extreme Events Resulting in the Loss of Two or more BES Element** are not applicable to RPU. As these Standards are excessive for the generally accepted practices of Radial Transmission Facilities, RPU respectfully

declines to perform studies for the N-2 and Transient Stability for RPU's 69 kV System.

RPU offers the following additional thoughts on transient stability studies. RPU's and POWER's past project experience indicate a stability study would be warranted based on:

1. *A large amount of power being transmitted over a long distance.* In the case of RERC 3 and 4, this will not be the case, since the RPU network is relatively small in geographic area. The average length of the 21 – 69 kV sub-transmission lines in RPU's network is about 5 miles long, making it a relatively "tight" system. Since the purpose of RERC 3&4 is to supply demand during peak load periods, the proposed generation will be consumed in the immediate area within RPU's network. Note that the capacity of the proposed and existing generation total to less than the projected peak load of the RPU network. Therefore, under expected conditions, the output of the plant will not leave the RPU network.
2. *Difficulty in solving the computer power flow model, with the additional proposed generation on-line.* It has been observed when performing computer load flow modeling of the system with the new generation, that convergence is not an issue. This is true during contingency conditions as well. In addition, the voltage of surrounding busses does not change appreciably between the "no-generation" case and the "full-generation" case. These conditions suggest that the system is really not stressed under steady state conditions with the generation, implying that transient stability is not an issue.

Note that SCE will perform a System Impact Study that includes transient stability to verify if the new generation will have an adverse impact on SCE's bulk electric system and their generators. It should also be noted that all RPU 69 kV lines have high-speed differential relaying that clears line faults as fast as possible with today's best-available technology. Each generator unit will also be equipped with out-of-step protection which relays the unit from the system if it loses synchronism, protecting the unit and the system from damage.

Based on the foregoing, we respectfully submit that performance of a transient stability study by RPU is not warranted at this time.