240 MW Photovoltaic Project

Interconnection | Wind

Project Description

Located in Utah, the Photovoltaic (PV) project comprised Phase I, II, and II, each rated at 80 MW. The proposed site of interconnection for the project was a new 345 KV substation designed to tap into the 345 KV Red Butte-Sigurd transmission line owned by PacificCorp. Overall, the proposed 240 MW project consisted of one hundred forty-four (144) skid-mounted power stations, each including one (1) 1667 kW TMEIC PVLL1833GRQ solar inverter and one (1) 1850 kVA, 3-phase, 2-winding inverters' step up (ISU) transformer.

Need

EPE performed a steady state harmonic analysis to determine if the proposed 240 MW PV project complied with the voltage and current distortion limits of IEEE Std 519-1992 at the Point of Interconnection (POI) without background harmonic distortion from the PacifiCorp transmission system source.

EPE Services

In accordance with the needs of this project, EPE created a detailed PSCAD™ three phase balanced harmonic model of the proposed 240 MW PV project up to the 40th harmonic order using the latest harmonic impedance spectrum made available electronically to EPE by SunEdison.

Results

The results of EPE's harmonic analysis revealed that the PV project did not comply in several respects with the individual and total current harmonic distortions of IEEE Std 519-1992 In response to these noncompliance issues, EPE recommended the completion of a Post Energization Harmonic Analysis after energization in order to determine the harmonic filters that may be needed to mitigate the harmonic distortion demonstrated by EPE's analysis.

As an interim operating mode, EPE recommended engaging the proposed 28 MVAr Capacitor Bank once the project is energized to reduce the harmonic distortion at the POI

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