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A 15 MW Solar Power Plant in San Angelo, TX

Abstract:

This project designs a 15-MW photovoltaic (PV) power plant, located just outside San Angelo, TX in San Saba County, Texas (30.98°N, -99.00°W), to evaluate the performance trade-offs between two configurations: a fixed-tilt stationary system and a horizontal single-axis tracking (HSAT) system. Utilizing three years of meteorological data (2021–2023) from the NREL National Solar Radiation Database, the study will perform parametric analyses on the Ground Coverage Ratio (GCR) and DC:AC loading ratios. Calculations will determine annual energy yield, Performance Ratio (PR), and Levelized Cost of Energy (LCOE). Results will quantify the energy gain of tracking systems against increased land requirements and O&M costs, providing a technical justification for solar deployment in the Texas CREZ corridor.