

CASE STUDY

AC Interference Mitigation for Solar Farm Transmission Line

CLIENT

International renewable energy developer

LOCATION

Corpus Christi, Texas

SERVICES

- › Data collection + risk assessment
- › Environmental compliance evaluation
- › Asset integrity analysis + modeling
- › Installation + commissioning

CHALLENGE

Accurately assess pipeline risk from utility-scale solar power generation.

To power a flagship plastics-manufacturing plant in Corpus Christi, Texas, an international renewable energy operator developed a solar farm capable of producing 187 MW delivered by a 138-kV transmission line. With 10.5-mi stretches and 130 impacted easement crossings, the high-voltage transmission line needed approval from multiple stakeholders, including seven global pipeline operators, to comply with industry standards for AC interference risk and pipeline corrosion prevention.

Further complicating the project were the ASTM International standards themselves, being unique to the operations of traditional electric infrastructure rather than solar panel operations. After initial interference modeling provided inaccurate risk assessment, the solar farm's operator sought a custom approach for reliable evaluation of AC interference risk and mitigation planning.

An international solar energy producer built a solar farm on the Gulf Coast of Texas to deliver power for a flagship plastics-manufacturing facility. With 800,000 solar panels and 187 MW of power, the farm can provide 100% of the plant's energy requirements, making it the state's largest renewable-energy private use network (PUN). To achieve regulatory compliance on the site's high-voltage transmission line, the operator contacted Audubon Companies to assess the risk of alternating current (AC) interference on adjacent pipelines from utility-scale solar power.



SOLUTION

Customize a first-ever solar-modified AC interference model.

Audubon stepped into the project with expertise in asset integrity and a dedication to agile, flexible solutions. The Audubon team began by collecting comprehensive field data at specific locations along the transmission line's path. A detailed model was created to estimate steady-state AC voltages, simulate line-to-ground faults, and evaluate stress voltages under fault conditions, along with touch and step hazards and arcing between the transmission line and pipelines. Critically, instead of applying industry defaults for electric power transmission, Audubon tailored the model specifically for solar power transmission. The first of its kind, the solar-modified model accurately represents the solar farm's AC interference risk for adjacent pipelines.

RESULTS

"Audubon is always focused on right-fit solutions when it comes to integrity engineering. In Corpus Christi, we combined detailed, data-driven risk assessment with project- and environment-specific mitigation planning."

The team is proud to support the safe delivery of solar power for the future of energy."

Bryan Louque

Vice President,
Pipeline Integrity
Audubon Companies

Reduce risk, save cost and time to startup of solar-powered plant production.



Eased ROW approvals from pipeline operators



Regulatory adherence efficiency



Mitigation cost savings up to \$1MM/section

Leveraging the unique solar-modified model of AC interference risk, Audubon designed and implemented a mitigation and monitoring system to protect solar-adjacent infrastructure over time. Our data-driven insights and custom risk methodology allowed the solar developer to secure all required easement approvals from pipeline operators and other stakeholders with confidence—without overestimating risk or overengineering a costly mitigation program. Right-of-way (ROW) approvals on the site's transmission line streamlined regulatory adherence, avoided excessive costs from unnecessary mitigation and compliance fees, and ultimately saved time to startup of the largest PUN in Texas.

This global renewable energy developer will rely on the custom integrity solution by Audubon to safely deliver solar energy for the plastics-manufacturing plant at an average rate of 40% of total annual consumption.