

# **Travis AFB: Infill Radars as a Wind Turbine Solution**

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## **Problem Statement**

The wind resource area (WRA) at Travis contains nearly 800 wind turbines within a 5 nautical mile radius located approximately 9-nautical miles southeast of the base. It penetrates Travis Class D airspace (tower airspace). Wind turbines create challenges for air traffic control systems such as false returns, excessive clutter, and false radar tracks. To date, there is no effective remedy for their interference.

Wind turbines appear as targets identical to aircraft on air traffic control displays, they compromise air traffic control safety with false targets, and they increase workload for air traffic controllers. The wind industry wants to increase the number of wind turbines in California. Newer turbines will be larger than current ones, cover greater swaths of land, and, consequently, exasperate air traffic control. Therefore, Travis AFB is seeking solutions to be able to cooperate with the wind industry while providing safe air operations.

## **Mission Statement**

Deploy and integrate in-fill radars to eliminate or reduce wind turbine clutter on air traffic control displays

## **Pilot Mitigation Program (PMP) Objective**

Integrate and evaluate in-fill radars as a feasible method to eliminate or reduce wind turbine clutter on air traffic control displays

## **PMP Summary**

Multiple agencies (for example, DoD, Air Force, DoE, BOEM, and FAA) have conducted the PMP. The project successfully integrated two infill radars and the DASR into the STARS G1 air traffic control system at Travis Radar Approach Control (RAPCON). Fifteen (15) Civil Air Patrol flight missions have been flown over the Wind Resource Area (WRA) with flight paths designed to stress the radars and trackers. Additional data collections were taken with targets of opportunity. All these flights have been thoroughly analyzed and studied to determine the utility of infill radars. Three critical issues have been examined: 1) radar performance for simple and complex flight paths, 2) integration of the three radars under different fusion conditions, and 3) STARS performance under stressful conditions.

The PMP team considers in-fill radar technology a promising solution to wind turbine clutter.

## **Moving Forward**

The FAA has assembled a team to develop a repeatable process to validate infill radars. This team will develop the necessary processes and documentation for validation and conduct further testing of infills in air traffic control systems to test its approach. The team is excited to continue working with Travis AFB and to utilize the STARS G1. Many of the newly developed processes from the PMP apply to validation so Travis AFB is the ideal developmental site.