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# Comparison of Field Measurements and Large Eddy Simulations of the Scaled Wind Farm Technology (SWiFT) Site

Myra L. Blaylock, Brent C. Houchens, and Ari L. Frankel
*Sandia National Laboratories, Livermore, CA, 94550, USA*

David C. Maniaci, Thomas Herges, Gianluca Geraci, Michael S. Eldred, Robert C. Knaus, and Philip Sakievich
*Sandia National Laboratories, Albuquerque, NM, 87185, USA*

**Power production of two of the three turbines at the Scaled Wind Farm Technology (SWiFT) site at Texas Tech University's National Wind Institute Research Center were measured experimentally and simulated under a range of operating conditions. The two V27 wind turbines were aligned in series with the dominant wind direction, and the upwind turbine was yawed to investigate the impact of wake steering on the downwind turbine. Two conditions were investigated, including that of the leading turbine operating alone and both turbines operating in series. The field measurements include meteorological evaluation tower (MET) data and light detection and ranging (LiDAR) data. Computations were performed by coupling large eddy simulations (LES) in the three-dimensional, transient code Nalu with engineering models of the wind turbines in FAST.Farm. A computationally efficient simulation, consisting of a coarse precursor without the turbines followed by refinement near the turbines, is demonstrated. Three meshes are investigated. Good agreement between simulations and field data is shown. This demonstrates that multilevel-multifidelity models hold promise for the optimization of the design of entire wind farms with reasonable computational resources.**