Abstract Submitted
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Effects of height configuration on heat shedding and flow characteristics in a model solar PV farm[1] JAMES MCNEAL, Portland State University, ANDREW GLICK, None, SARAH SMITH[2], Portland State University, NASEEM ALI, JULIAAN BOSSUYT, None, BROOKE STANISLAWSKI, MARC CALAF, University of Utah, RAUL CAL[3], Portland State University — Large scale solar farms supply an increasing amount of the worlds electricity supply. However, high operation temperatures can strongly reduce efficiency and panel lifetime, negatively affecting the levelized cost of energy. The convective heat transfer coefficient for a utility-scale solar farm with varied PV panel height configurations is studied with combined thermal and particle-image-velocimetry measurements in a scaled wind tunnel experiment. The measurements show that height configuration plays a major role in both mid-array flow behavior and array heat shedding. Subsequent flow analysis shows the complex relationship between the array and the passing wind contributes to the heat transfer coefficient.

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