Abstract (300 words):
Solar photovoltaic (PV) systems are a promising renewable energy technology to offset the negative impacts of conventional energy. However, inherently they are not a perfect solution. While advancements have been made in efficiency, they remain as a low-density energy source that requires a larger consumption of land compared with the high density conventional sources we have used for decades. As the Solar industry has grown, conventional practices are often implemented with utility scale solar PV, despite the inherently different nature of this renewable energy source. Even with smaller scaled systems within an urban context, PV systems are implemented without considerations of context and opportunities for integration into the urban fabric.

Timing and forecasts indicate that we are in the pilot stage for solar development as efforts for a larger slice of the world’s energy portfolio continue. Therefore, it is imperative that we find a way to balance the pattern of development now to avoid altering our
landscape at the expense of significant natural resources, and economically and socially valuable land.

In this study, we reflect on and critique current practices of ground mount solar PV implementation using eight case-studies in Tucson, Arizona. We explore potential synergistic solutions to enhance landscape performance by applying theoretical developments to the study of context for each case. Findings indicate promise for land use layering for a more robust and integrated solar development with fewer negative impacts on the land.

• Author(s) Biography (200 words each):

Kirk Dimond, LEED AP is an assistant professor of landscape architecture at the University of Arizona where he teaches graduate level design studios, and site engineering and construction. His research is focused on landscape performance, specifically exploring solar energy in the landscape along with other synergies – such as food, water, and accessibility – toward resilient and productive landscapes. His most recent publication in Sustainable Cities and Society compares green roof systems with roof top Solar PV, to aid planners, engineers, and designers in aligning appropriate sustainable solutions with contextual concerns and challenges. He has also integrated his research into his teaching as a recent Landscape Performance Education Grant recipient, with resulting publications and shared resources for other educators. Kirk strives for interdisciplinary perspectives considering social and environmental opportunities and constraints. Stemming from his interdisciplinary background in practice and education, he values collaborations and has partnered with faculty from Architecture, Art, Geography, and others, both internal and external to the University of Arizona. His background includes a professional Bachelor of Landscape Architecture from Utah State University and a Master of Science in Landscape Architecture from the Pennsylvania State University, with the Community and Urban Design Option.

Aaron Johnson is a Graduate Research Assistant and Master of Landscape Architecture student at the University of Arizona. He graduated with a Bachelor of Science degree in Urban Ecology with a Product Design Minor from the University of Utah. Growing up in Salt Lake City, Utah with the surrounding scenic mountains gave Aaron an appreciation of the outdoor environments as amenities to our everyday lives. Aaron has a deep interest in exploring how the built environment interacts with and relates to the natural environment, specifically through sustainable practices. He seeks to learn how to effectively create sustainable landscapes that improve the quality of life for the community members and contribute to the local ecosystem. He is intrigued by the practice of delineating space through natural and built amenities to create a sense of place for the users. Aaron has been recognized for his efforts, along with his team, with
a 2015 Student Group Project Award from the American Planning Association (APA) – Utah Chapter, for their service learning project titled, “Listening to Springdale.” Additionally, Aaron has a background in art (oil painting and pencil drawing), art history, and photography.