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Evaluating the Ecosystem Service Benefits of Native Vegetation Management at Solar Energy Facilities

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Concomitant with the increase in solar photovoltaic (PV) energy development over the past decade has been the increasing emphasis on land sharing strategies that maximize the land use efficiency of solar energy developments. Many of these strategies focus on improving the compatibility of solar energy development with other co-located land uses (e.g., agriculture) and by improving several ecosystem services that could have natural, societal, and industrial benefits. One such land opportunity is the restoration and management of native grassland vegetation beneath ground-mounted PV solar energy facilities, which has the potential to restore native habitat to conserve biodiversity and restore previously altered ecosystem services (e.g., natural pollination services). This presentation will discuss various assessment and modeling approaches to evaluate the scale and magnitude of the ecosystem services provided by different vegetation management strategies at solar PV energy development sites. This work demonstrates how multifunctional land uses in energy systems represents a win-win solution for energy and the environment by optimizing energy-food-ecology synergies. This work was conducted by Argonne National Laboratory for the U.S. Department of Energy Solar Energy Technologies Office under Contract No. DE-AC02-06CH11357.