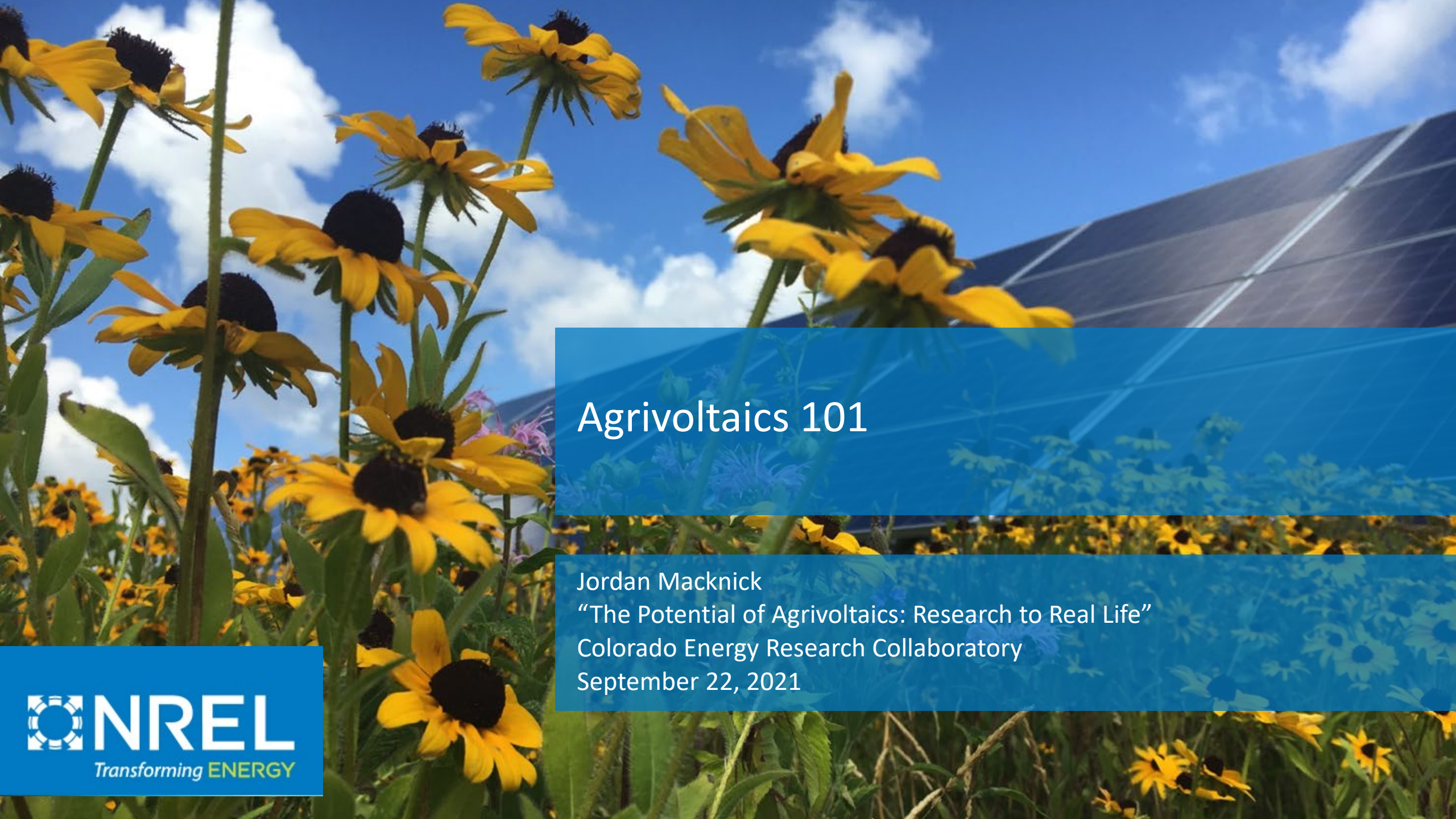


Agrivoltaics 101

Jordan Macknick
"The Potential of Agrivoltaics: Research to Real Life"
Colorado Energy Research Collaboratory
September 22, 2021

NREL
Transforming ENERGY

Land Use Requirements of Solar Deployment Projections

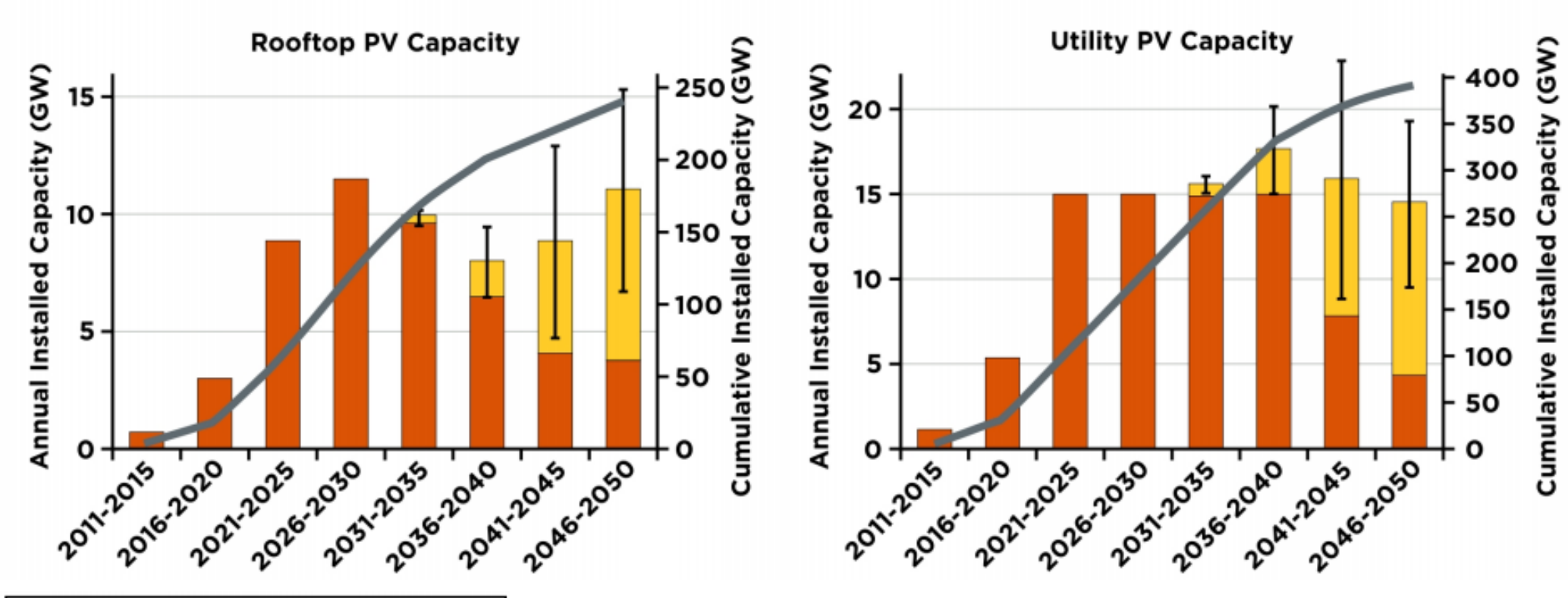
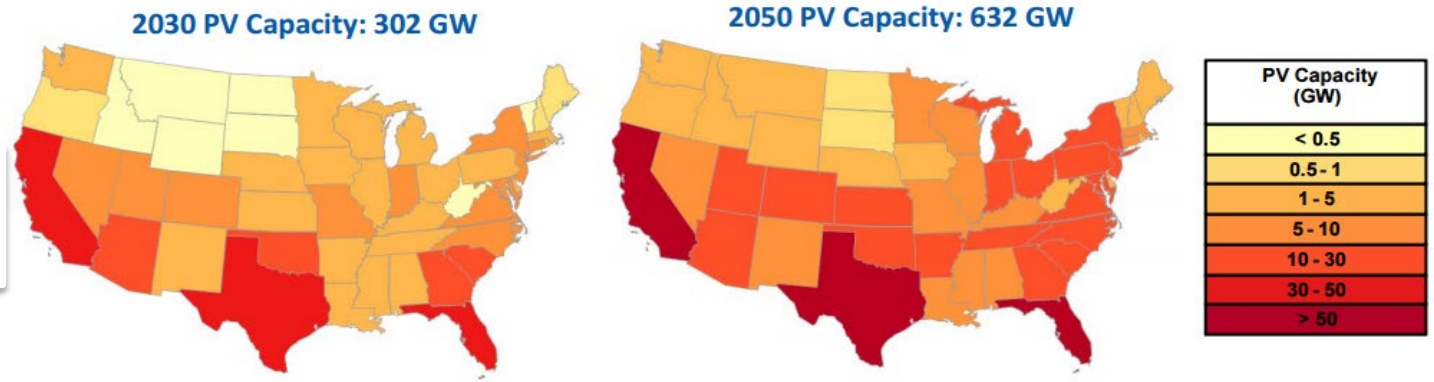
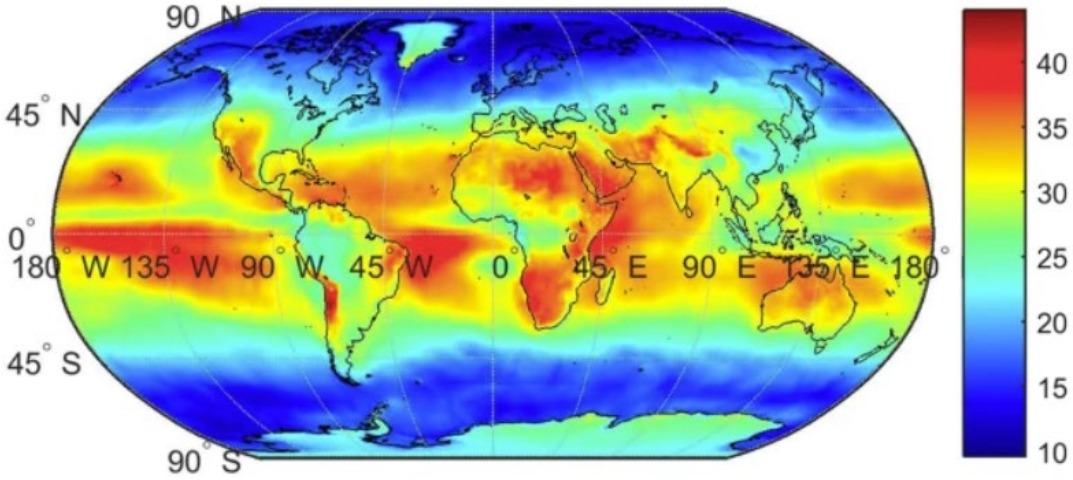


Figure 3-6. Cumulative Installed PV and CSP Capacity in the SunShot Scenario in 2030 and 2050



2030: 2-3 million acres
2050: 4-6 million acres

Agricultural Lands and Solar Development



Solar PV Power Potential is Greatest Over Croplands

Elnaz H. Adeh, Stephen P. Good, M. Calaf & Chad W. Higgins

Scientific Reports **9**, Article number: 11442 (2019) | Cite this article

Farm profitability remains a challenge

American Bankers Association and the Federal Agricultural Mortgage Corporation release results of joint survey.

Rural communities can resist solar development on farms

Sections

The Washington Post
Democracy Dies in Darkness

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Georgetown's 'green' plan to destroy a forest for a solar farm is met with resistance

METRO | SPORTS | BUSINESS | OPINION | RHODE ISLAND | POLITICS | EDUCATION | LIFESTYLE | MARIJUANA | ARTS | MAGAZINE | CARS

Solar projects increasingly meeting local resistance

By Katheleen Conti Globe Staff, May 5, 2013, 12:00 a.m.

The New York Times

He Set Up a Big Solar Farm. His Neighbors Hated It.

A push toward renewable energy is facing resistance in rural areas where conspicuous panels are affecting vistas and squeezing small farmers.

Vision: Low-Impact Solar Development provides Mutual Benefits

Photos courtesy of Rob Davis, Fresh Energy; Dennis Schroeder, NREL

Agrivoltaics = agriculture + photovoltaics

Green America

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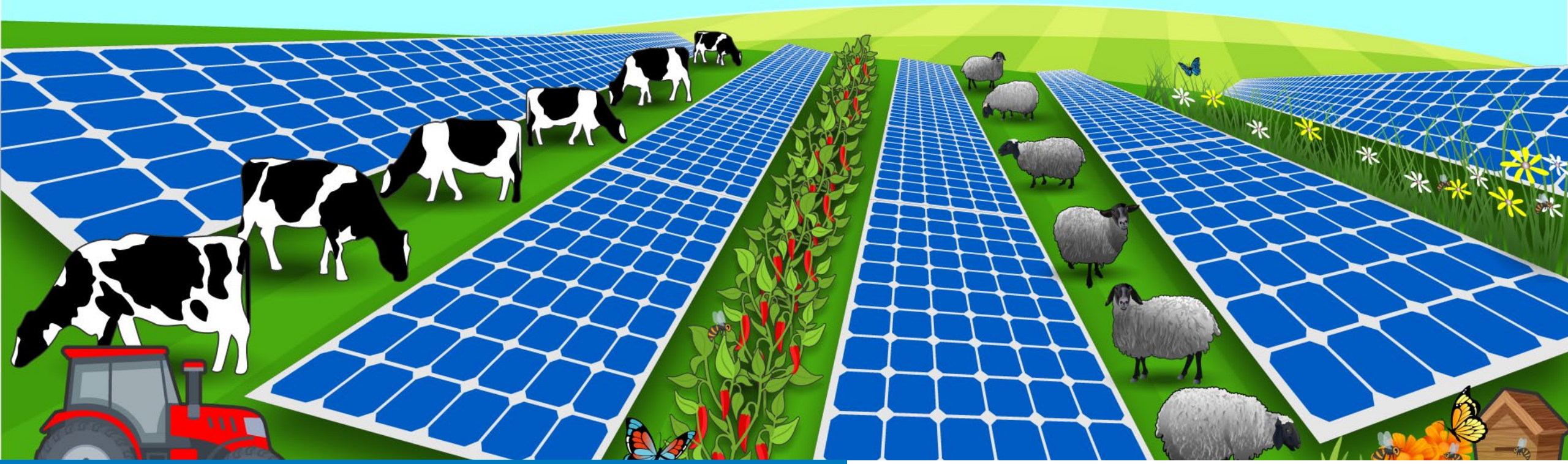
CLIMATE FOOD FINANCE LABOR SOCIAL JUSTICE GREEN LIVING

Farms That Harvest the Sun—Twice

By Eleanor Greene

Photo by Moses Thompson

*photovoltaics (PV)= renewable energy production from solar panels



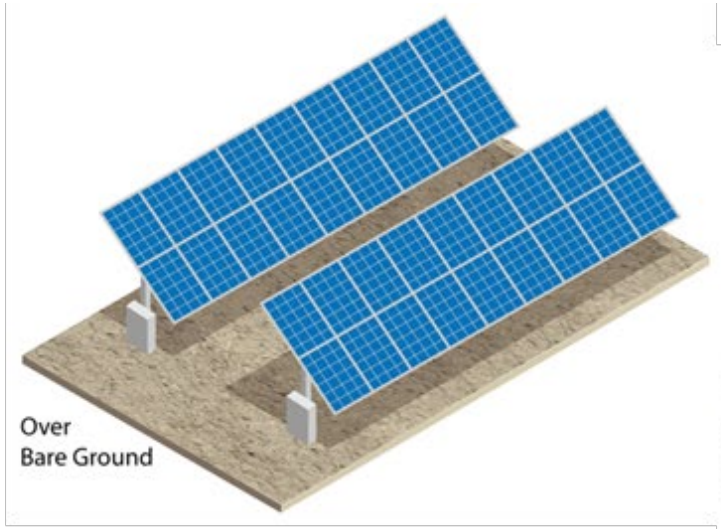
What is Agrivoltaics?

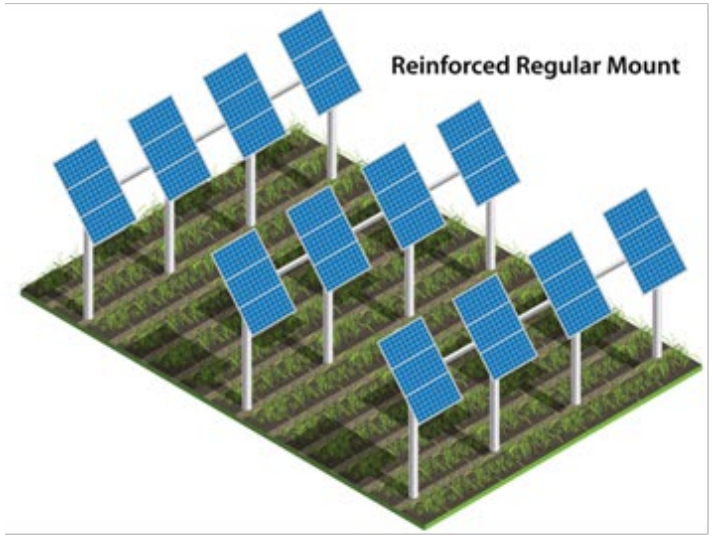
Agricultural activities performed underneath and around solar arrays:

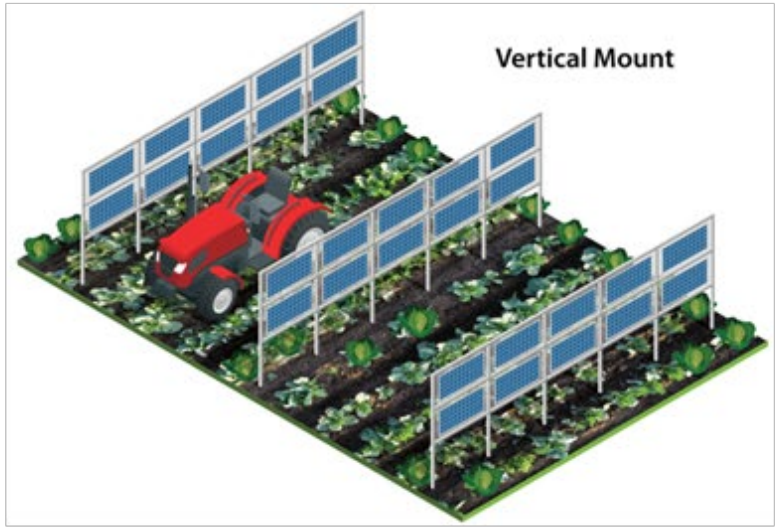
- Crop production
- Grazing
- Pollinator Habitat and Apiaries
- Controlled Environment

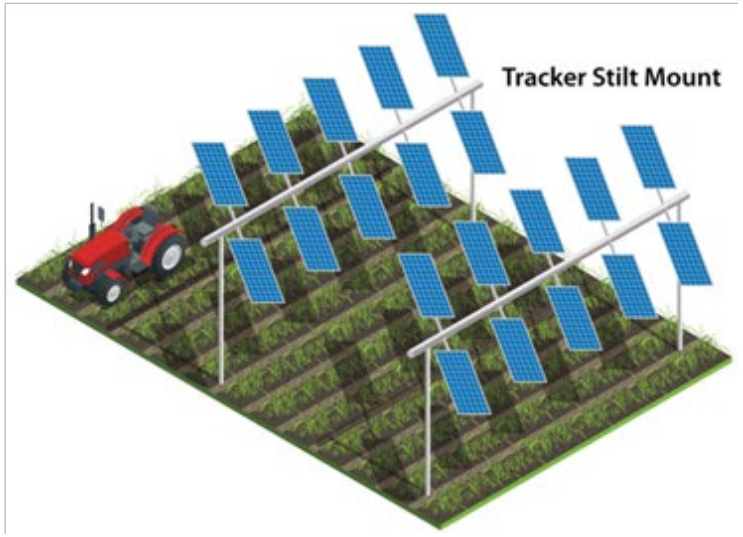
Source: Burton (NREL)

Example Agrivoltaic Configurations



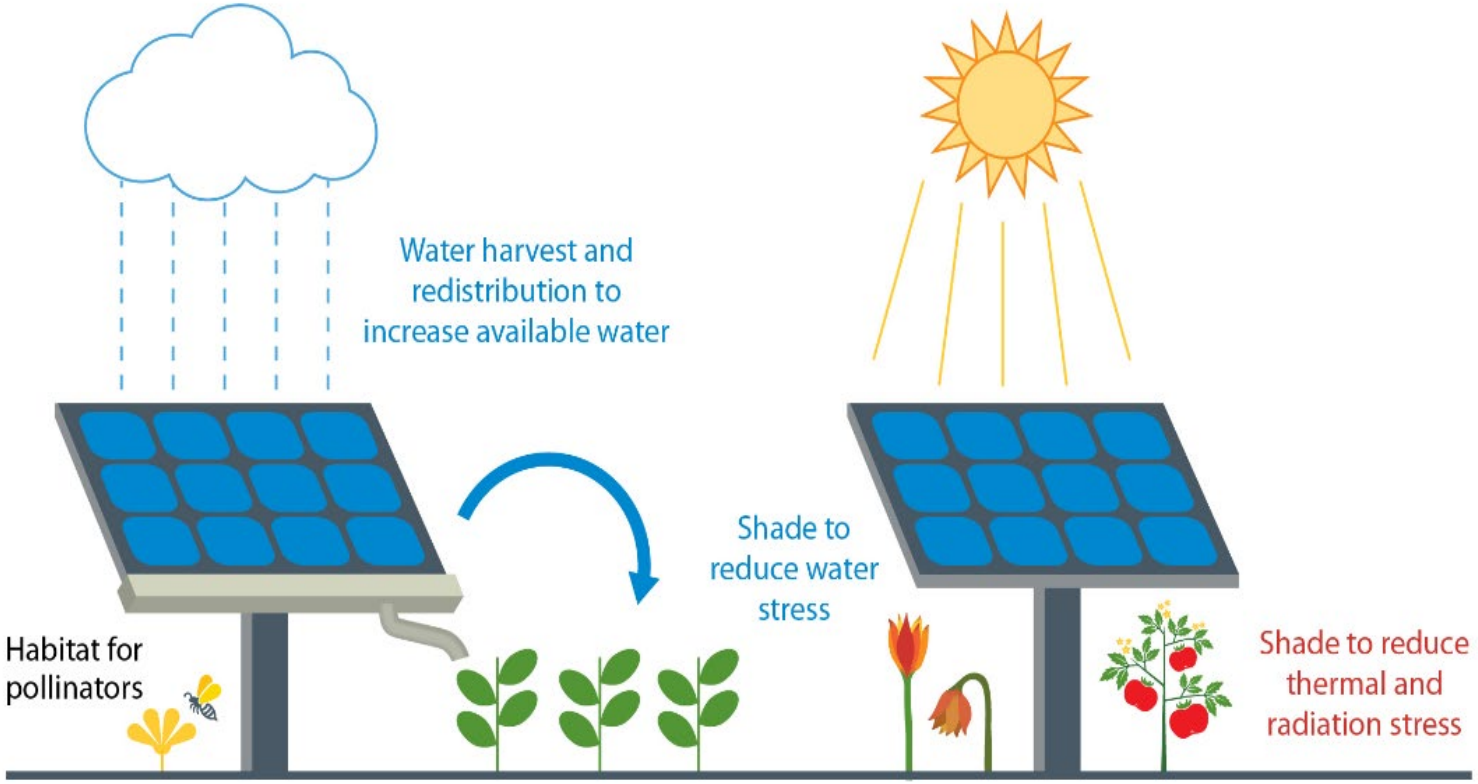




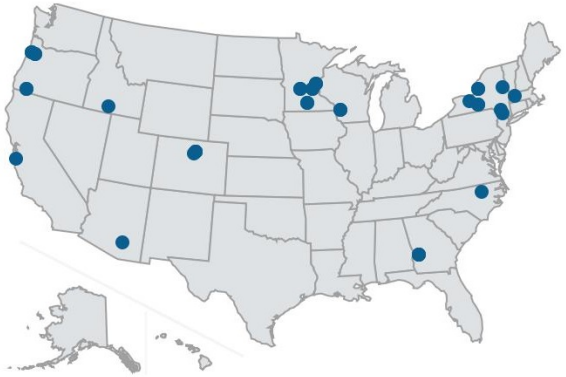


Kelsey Horowitz, Vignesh Ramasamy, Jordan Macknick and Robert Margolis. 2020. *Capital Costs for Multi-Land Use Photovoltaic Installations*. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-77811

DOE InSPIRE Research



InSPIRE Project Sites



Select from the options below to display all sites using that technology.

- Beekeeping
- Co-location of Solar and Agriculture
- Native Vegetation
- Solar-Integrated Greenhouse
- Beneficial Predators
- Dryland Agriculture Co-location
- Pollinator Habitat

Field-based research topics:

(1) Economic viability of solar-agriculture co-location configurations
(2) Increasing agricultural yields in arid environments
(3) Energy, water, and food security in remote, off-grid areas
(4) Pollinator habitat and ecological services

Analytical research topics:

(1) Satellite imagery analysis of current land groundcover practices
(2) Cost-benefit analysis of O&M ground cover practices
(3) Quantification of ecological services of groundcover options

https://openei.org/wiki/InSPIRE

Thank you

Jordan.Macknick@nrel.gov

https://openei.org/wiki/InSPIRE

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