



With its dramatic drop in cost, solar photovoltaics has become the go-to source for meeting the country's demand for clean, affordable, and secure electricity. More rural communities are being asked to host projects, and concerns about the impact on soils, economic base, and rural identity are growing. Projects that combine solar photovoltaics with agriculture, or agrivoltaics, can be designed to provide many community benefits while reducing the potential for conflict with existing land use priorities.

What is agrivoltaics?

Agrivoltaics is the practice of integrating solar with agricultural activities on the same land. Also known as “dual-use solar,” it allows rural communities to develop local energy resources while sustaining agricultural lands and practices.

Key things to know:

- Agricultural activities within agrivoltaic systems vary widely, from crop production to animal grazing to beekeeping.
- Each system has unique design considerations that must be tailored to specific agricultural operations.
- Agrivoltaics can deliver meaningful benefits to individual farmers and the wider community, including financial, cultural, and ecological benefits.



What are the benefits of agrivoltaics?

While solar leases can provide financial security to farmers, with many receiving **\$1,000 or more per acre** for allowing solar installations on their land, combining solar with agriculture or agriculture-beneficial vegetation on the same site creates additional benefits for the landowner or community:

- **Solar panels have temperature-regulating effects**, which can increase the number of growing days, reduce heat stress, and prevent frost damage to crops.
- **Shade from solar panels can lower the body temperature of animals**, reducing heat stress, and can protect crops and animals from extreme weather, such as heavy rain and hail.
- Agrivoltaic sites can provide **land access for emerging farmers**, helping to grow the next generation of agricultural producers.
- **Larger insect and bird populations** from planting native pollinator vegetation can **increase production of pollinator-dependent crops** in surrounding fields, in addition to improving **soil health** and **water quality**.
- Keeping agricultural land in production benefits the community by retaining rural identity, mitigating the visual impact of development, and diversifying local agricultural production.



Agrivoltaics as “dual use”

Solar farms are made up of rows of interconnected solar panels (called solar arrays) spaced so as to avoid shading each other, with the entire array area surrounded by buffers and setback areas. Over half of the site is open space, and over 90 percent of the site, including the land under the arrays, is vegetated. Solar developers and host communities can decide to use that land to create project and community benefits in ways that have no or minimal impact on the solar production. The project site thus is “dual use,” providing solar energy and other uses that can include different forms of agriculture, natural habitat, water quality protection, or other solar-compatible uses.

Agricultural activities within solar projects include crop production, animal husbandry and grazing, and beekeeping. Crop production is usually focused on local markets rather than commodity crops, including [leafy greens](#), herbs, root vegetables, [tomatoes](#), [apple trees](#), and [cranberries](#). While animal husbandry has largely consisted of [grazing sheep](#), some projects have included [cattle](#) and [chickens](#).

Agrivoltaics is a closely related concept to [ecovoltaics](#) (or conservation solar as a dual use). Ecovoltaics combines solar and ecosystem services on the same piece of land, such as a solar project planted with native grasses and pollinator species, providing habitat, improved surface and groundwater quality, and visual benefits.



Photo credit: “[Solar Grazing_Encore_Nature](#)” by U.S. Department of Energy, United States Government Work.

Resources on agrivoltaics

- **AgriSolar Clearinghouse:**
<https://www.agrisolarclearinghouse.org/>
- **Solar Farm Summit AgPV 101:**
<https://solarfarmsummit.com/agpv-101>
- **Colorado Agrivoltaic Learning Center:**
<https://www.coagrivoltaic.org/agrivoltaics-101>
- **American Solar Grazing Association:**
<https://solargrazing.org/what-is-solar-grazing/>
- **InSPIRE Agrivoltaics Calculator:**
https://openei.org/wiki/InSPIRE/Financial_Calculator
- **American Farmland Trust Smart SolarSM Principles:**
<https://farmland.org/smart-solar>