

A photograph showing a person in a white beekeeping suit and a man in a baseball cap working with bees in front of solar panels. The person in the suit is on the left, and the man is on the right. They are both looking down at a beehive. The background shows solar panels and a clear blue sky.

solar + agriculture + conservation

DESIGNING FOR SUCCESS

SOLAR ENERGY is an increasingly popular electricity source thanks to its low cost and zero carbon footprint. Solar expansion is happening at the same time that family farms and ranches find themselves under increased economic pressure, and this has raised questions about the potential impacts of solar arrays on other land uses, particularly farms, ranches, and wildlife. Are utility-scale solar arrays compatible with farming, livestock grazing, and conservation? The answer is—with innovation and planning—yes.

With the right design, utility-scale solar can coexist alongside healthy crops, grazing land, and wildlife. The "dual-use solar" approach combines solar development with other productive land uses, such as native plant restoration, farming, livestock grazing, and pollination. The result is expanded clean energy production, more profitable farms and ranches, and conserved wildlife habitat.

Dual-Use Solar in the Field



GRAZING

Adjusted solar array spacing promotes forage growth between and under panels, providing space for smaller livestock like sheep and chickens.

BENEFITS

- Offer low-cost vegetation management with grazing sheep
- Offers large, fenced, shaded area of forage
- Can be combined with pollinators

CHALLENGE

- Planning for flock access, provision of water, and if forage is depleted



AGRIVOLTAICS

Layered solar arrays facilitate sun exposure for crops and enable easier access for equipment and workers.

BENEFITS

- Offers increased efficiency for land use with compatible crops through providing water savings and light condition control
- Use of tracking panels to manage sunlight could offer higher yields and efficiency

CHALLENGE

- May not be compatible with all crops due to light, irrigation, or harvest equipment requirements



POLLINATOR

Seeding and cultivation of wildflowers, pollinator-friendly plants and native species within a solar array can create and enhance pollinator habitat with benefits for crops and other ecosystems.

BENEFITS

- Supports pollinators and proximate pollinate-dependent agriculture
- Can be lower-impact with less site preparation required
- Reduced maintenance costs and need for dust control or herbicide
- Cooler microclimate promoting pane efficiency
- Improved run-off control
- Invasive species control, preservation of native species
- Aesthetic improvement

CHALLENGE

- Increased costs of seeding for pollinator-friendly or native planting



CONSERVATION

Restoration of native plants, grasses, prairies and/or bird-friendly species around solar arrays – at times in conjunction with site-appropriate fencing – creates a sanctuary for native wildlife and birds.

BENEFITS

- Improved water filtration, cleaning of storm-water runoff, protection from invasive species
- Soil conservation through deep-rooted native plants, supports preservation of carbon stocks
- Improves soil condition for future use
- Reduces impact to wildlife, mitigates habitat disturbance
- Habitat for pollinators and local bird species
- Cooler microclimate promoting panel efficiency

CHALLENGE

- Difficulty locating native plantings and seeds

With modern best practices, solar developers can minimize land disturbance so land can be restored to its previous use after the life of a solar project. Farmers can also enjoy benefits from locating solar arrays alongside traditional agriculture. For example, the shade from solar arrays can help conserve soil moisture, resulting in longer grazing seasons and improved pollinator services for surrounding farms.

The bottom line? With a dual-use solar approach, farmers, ranchers and other landowners can maximize the productivity of their land while tapping into valuable new income.

Dual-Use by Design

An illustration at the top of the page depicts a farm scene. In the foreground, there are several solar panels with a grid pattern. To the left, there are stalks of corn and a yellow butterfly. To the right, a white cow with blue spots is standing near some green trees. A yellow and black bee is flying above the solar panels.

States are using a variety of innovative tools to support dual-use solar. These include pollinator scorecards for solar sites, monetary incentives for agrivoltaics systems, and tax incentives for solar arrays that preserve agriculture uses onsite. In addition to these tools, states and municipalities can ensure new solar projects are compatible with agriculture and wildlife conservation by recognizing dual-use solar in policy design. This can include:

- 1 LEGAL REVIEW** of definitions of solar generation, farmland, and farm uses in state and local laws to ensure these laws do not inadvertently preclude dual-use solar development.
- 2 POLICY REVIEW** to ensure farmers are not penalized for diverse farming systems with dual-use solar.
- 3 INCENTIVES** for dual-use solar approaches like tax incentives and other rebates.

By avoiding barriers to dual-use solar and adding carefully-designed incentives, states and municipalities can provide a means to generate more clean energy while helping landowners maximize the productivity of their land and generate valuable supplemental income.

Dual-use solar is a classic win-win.