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# AGRIVOLTAICS

***Merging Solar Energy and Agricultural Production***

## WHAT IS AGRIVOLTAICS?

Agrivoltaics is the concept of **combining solar energy and food production** to optimize land use and generate greater income and market diversity for landowners.

## HOW MUCH LAND AREA ARE WE TALKING ABOUT?


**4-5 acres** to produce **1MW energy** to power **172 homes** on average


Solar power could provide **40% of US electricity by 2035**, using up to **5.7 million acres of land, and another 4.6 million acres by 2050.**

- **0.5% of total land area** in the US / **1.1% of area** currently used for **agriculture**
- 10% of the total land area currently used for **urban areas and roads**, or 5 x the land area currently used for **golf courses**

**Overall, land area requirements for solar power do not pose a constraint in the US. However, competition for land can be an issue near major population centers and in arid regions.**

## WHAT TYPES OF AGRICULTURE ARE MOST COMPATIBLE WITH INSTALLATIONS OF SOLAR ARRAYS?

Plantings of **native grasses** and/or **pollinator species** which benefit neighboring crops as well as wildlife.

**Livestock agriculture** (especially sheep), vegetable farming, and **crops** that do not require irrigation, and **aquaculture.**

## WHAT ARE THE BENEFITS AND CONSTRAINTS OF AGRIVOLTAICS?

### Benefits:

- Optimization of land use and diversification of farm income sources.
- Soil moisture retention.
- Reduced soil temperature = reduced water. demand, soil moisture loss, and water table stress.
- Reduced heat stress for animals.
- Power generation for direct farm/system use, including aquaculture.

### Constraints:

- Shading can significantly reduce crops yields.
- Redistribution of rainfall / inconsistent soil moisture.
- High costs of site preparation and installation.
- Utility-scale installations need to be located near power transmission lines or sub-stations.

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