

PHOTOVOLTAICS SUPPORTING CULTURAL AND COMMUNITY ECOSYSTEM SERVICES (PV-SUCCESS)

Developing a Framework for Sociocultural and Biophysical Considerations in Solar Development

The concept of **ecosystem services**¹ is used to understand and communicate the benefits that nature provides to people. However, existing **frameworks**² are not tailored to the unique challenges and opportunities of solar energy development.

The PV-SUCCESS project seeks to bridge this gap by developing a framework for solar contexts, helping decision-makers identify and use the appropriate **tools**³ to assess trade-offs and synergies between land use, environmental benefits, and community values.

Key Concepts

1. What are Ecosystem Services ?

Ecosystem services are the benefits people receive from nature. Benefits are not always financial and are crucial for environmental and community well-being.

2. What's a Framework ?

A framework is like a blueprint—it makes the key ideas and relationships within a complex issue explicit. It helps stakeholders with different perspectives find common ground by providing a shared language and guiding principles for decision-making.

3. Frameworks vs. Tools

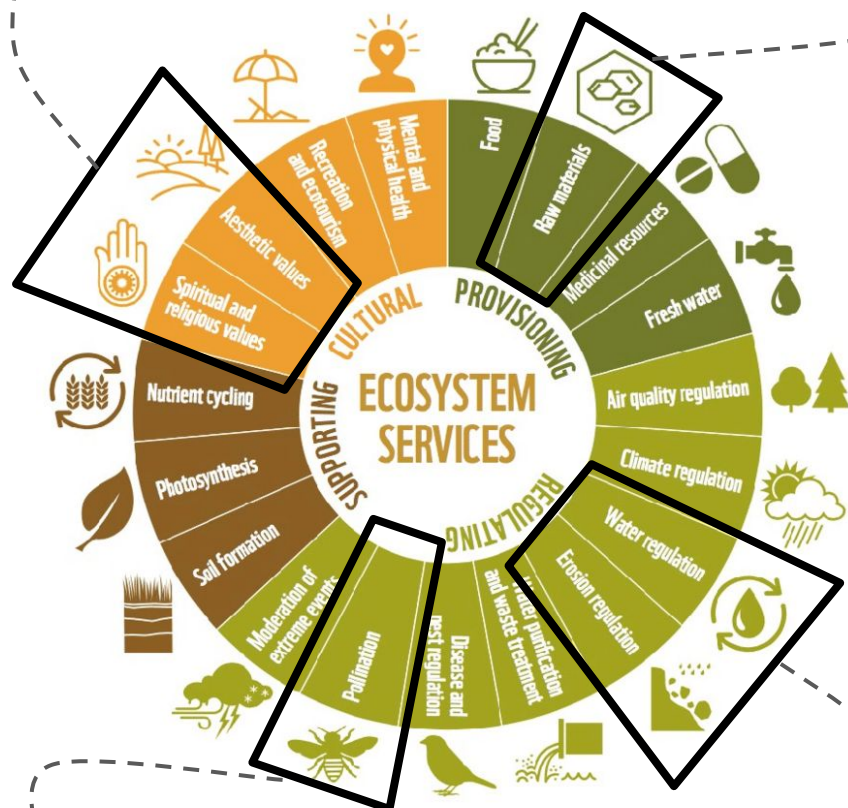
A tool is a part of a framework that makes it actionable for specific use cases. Decision-support tools and ecosystem service calculators help assess trade-offs and optimize outcomes in solar project planning.



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AgriSolar Clearinghouse



Monarch Joint Venture



PV-SMaRT

Figure 1. Solar projects have implications for ecosystem services including (a) aesthetic and cultural values, (b) production of materials, such as wool, (c) pollination services, and (d) soil and water quality.

Project information:

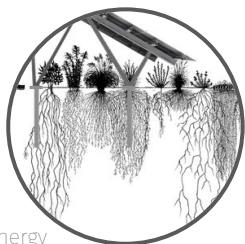
<https://pv-success.betterenergy.org>

Contact Us:

Amy Waananen, waana001@umn.edu

Nat Springer, sprin126@umn.edu

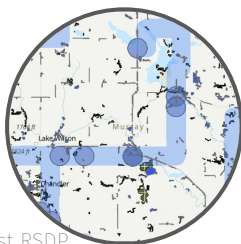
Solar Project Decisions – Ecosystem Service Trade-Offs and Synergies



Fresh Energy

Vegetation Management

Decisions about vegetative cover and management—e.g., ground cover and seed mix choices—affect the delivery biophysical ecosystem services, such as habitat provision. Ecosystem service impacts may scale up from the site to the landscape level, providing synergy of benefits.



Southwest RSDP

Project Siting

Solar projects can provide benefits for water quality and soil health. The magnitude of the benefit may depend on location, e.g., proximity to waterways. At the same time, project siting will have implications for other priorities, such as energy production potential and farmland access.



EPRI

Agrioltaics / Ecovoltaics

Managing solar sites for dual-use, such as agriculture, may help to mediate concerns about cultural ecosystem services, such as agricultural identity and material goods. However, decisions may come with trade-offs for other values, such as fencing limiting wildlife movement.

How Do Solar Projects Affect Ecosystem Services?

The impact of solar projects on ecosystem services depends on:

- **Siting:** What is the alternative land use at that location?
- **Stakeholder Values:** What are the priorities of stakeholders and local communities?
- **Management Practices:** How is the project designed and maintained?
- **Stakeholder Engagement:** Who was involved in the decision-making process?

Decision-makers need tools to assess trade-offs based on site-specific and community-specific priorities. A solar ecosystem services framework provides a pathway for finding compatibility between renewable energy goals and ecological and social considerations.

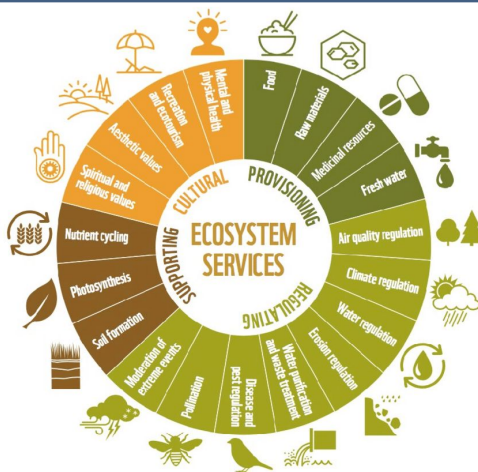
Envisioning a Solar Ecosystem Services Framework

1. Connect priorities to ecosystem services

2. Identify relevant indicators and data

3. Produce analyses and visualizations

The first step will involve connecting priorities or concerns to relevant ecosystem services, such as aesthetic value, soil health, or habitat provision. This will enable identification of metrics and data that could be used to assess those services and issues.



Services and indicators are then linked to a variety of existing tools and data, which can be leveraged to produce insights, analyses, and visuals. Scan this QR code for a summary of ecosystem service tools ([linked here](#)).

