



# Solar Energy

Image Details (/media/158269)

Solar energy systems convert radiant light and heat from the sun into electrical energy. There are many ways to harness solar energy. Photovoltaic and concentrating solar power technologies in the United States are most commonly used to build large-scale, commercial solar power plants. Photovoltaic (PV) technology uses semiconductors to convert radiant light directly into electricity. Panels of solar cells containing photovoltaics may either be stationary or track to follow the sun's path. If you have used a solar powered calculator, you have seen solar cells in action on a much smaller scale.

Concentrating solar power (CSP) uses mirrors to collect heat energy by focusing sunlight at specially engineered fluids that can be heated to over 650 degrees Fahrenheit. Picture a child using a magnifying glass to "zap" an insect. Instead of focusing sunlight through a small lens onto a single point on a sidewalk, CSP facilities gather sunlight using mirrors spread over very large areas and use the heat energy to generate electricity.

## Fish and Wildlife Considerations

The United States has some of the best solar resources in the world, and its solar "hot spot" is located in the Pacific Southwest. Much of this land remains undeveloped and is distanced from human development and disturbance. The American Southwest is rich in flora and fauna that are specially adapted to the harsh environment created by the same relentless sun and heat that makes it such a valuable solar energy resource.

Commercial solar energy facilities require a large amount of land, often thousands of acres. Before a facility is constructed, the land is completely cleared of all vegetation. In some cases, the land must also be graded to have minimal slope. The loss, degradation and fragmentation of habitat that result from building a solar energy facility are concerns when considering the needs of wildlife in the area.

The scarcity of water shapes the desert ecosystem, and changes in the abundance and distribution of water are immediately felt by all organisms that depend on it. Solar energy facilities require water for cooling and washing dust off panels. Water requirements vary depending on which technology is used. Removing water from the ecosystem for use at solar energy facilities may negatively affect plants and animals, making its use an important consideration in areas where water is scarce.

It is also important to consider how wildlife interacts with human development and disturbance. General concerns include whether the presence of structures and human activity will disturb local wildlife to the point where they avoid the area and whether this has a negative effect on the wildlife. Other concerns are unique to solar energy facilities. For example, the reflective surfaces of the mirrors and solar panels may appear to a flying bird to be a body of water. Deaths and injuries to birds colliding with mirrors and panels is a potential problem that should be considered. Certain concentrating solar power facilities known as "power towers" produce beams of sunlight intense enough to injure or kill birds, bats and insects.



*Working with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people.*

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