

FACT SHEET: ENVIRONMENTAL IMPACTS OF RENEWABLE ENERGY— WIND AND SOLAR

Renewables have been the fastest growing energy source since 2017 when costs reached a key milestone. Costs dropped enough to make wind and solar the cheapest form of conventional energy.¹ Rural communities often carry this infrastructure. This fact sheet looks at the environmental impacts of wind and solar development.

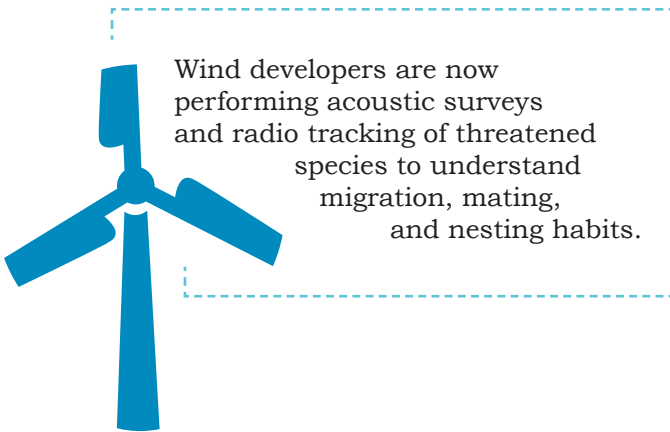


WIND

- Bird and bat species are a top concern for protection from wind turbines.



Especially key protected, threatened, or endangered species: Indiana bat, northern long-eared bat, little brown bat, tri-colored bat, and bald eagles.



- Each developer must file for an Incidental Take Permit with the nearest U.S. Fish & Wildlife Service Ecological Services Office, which sets a limit to the amount of damage by wind turbines to vulnerable species.



That application includes a Habitat Conservation Plan detailing how the developer will not only avoid damaging, but protect vulnerable species.²

- These plans are part of complying with the Endangered Species Act.³
- Operating wind farms must conduct baseline bird and bat fatality monitoring in compliance with state and federal law.
- ✓ Turbines are checked weekly for bird and bat fatalities.
- Investing in habitat conservation and considering the nesting and migration patterns are also options to meet requirements.

1 “Levelized Cost of Energy and Levelized Cost of Storage 2018.” Lazard, Nov. 8, 2018, lazard.com/perspective/levelized-cost-of-energy-and-levelized-cost-of-storage-2018/. Accessed December 2018.

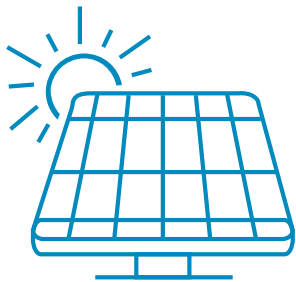
2 “Habitat Conservation Plan Handbook.” U.S. Fish & Wildlife Service, Jan. 18, 2018, fws.gov/endangered/what-we-do/hcp_handbook-chapters.html. Accessed December 2018.

3 “Habitat Conservation Plans: Section 10 of the Endangered Species Act.” U.S. Fish & Wildlife Service, Aug. 29, 2018, fws.gov/midwest/endangered/permits/hcp/hcp_wofactsheet.html. Accessed December 2018.



SOLAR

- Land used for utility scale solar projects can cause habitat loss.
 - » Pollinator-friendly solar sites can combine habitat for pollinators with solar arrays, and has been supported through state policy in Maryland, Minnesota, New York, and Illinois.^{4,5}
- Three states—Connecticut,⁶ North Carolina,⁷ and Washington⁸—have passed policies restricting siting solar projects on agricultural land through either state legislation or county ordinances.
 - » As an alternative, low-impact solar and co-location of solar and agriculture is a growing area of research with three categories of design:
 1. Solar-centric
 2. Vegetation-centric
 3. Co-location⁹



Solar developers have found that combining solar generation with pollinator habitat or grazing land can reduce operations and maintenance costs.¹⁰

4 “Conservation: (525 ILCS55/1) Pollinator Friendly Solar Site Act.” Illinois General Assembly, Aug. 21, 2018, ilga.gov/legislation/ilcs/ilcs3.asp?ActID=3900&ChapterID=44. Accessed December 2018.

5 “Department of Natural Resources - Solar Generation Facilities - Pollinator-Friendly Designation.” General Assembly of Maryland, June 1, 2017, mgaleg.maryland.gov/webmg/frmMain.aspx?pid=SB1158&stab=01&pid=billpage&tab=subject3&ys=2017rs. Accessed December 2018.

6 “File No. 275: An Act Concerning the Installation of Certain Solar Facilities on Productive Farmlands.” State of Connecticut General Assembly, March 28, 2017, cga.ct.gov/2017/fc/2017SB-00943-R000275-FC.htm. Accessed December 2018.

7 “PB 16-28.” Currituck County Board of Commissioners, Feb. 20, 2017, co.currituck.nc.us/wp-content/uploads/2017/12/pb-16-28-currituck-county-udo-amendment-chapter-4-use-standards-02-20-2017.pdf. Accessed December 2018. This ordinance was put in place in February 2017 and repealed 18 months later.

8 “Solar Regulations.” Kittitas County Washington, Aug. 24, 2018, co.kittitas.wa.us/uploads/cds/comp-plan/SFCAC/Proposed-Amendments-KCC-Regarding-Solar-Power-Production-Facilities.pdf. Accessed December 2018.

9 Mow, Benjamin. “Solar Sheep and Voltaic Veggies: Uniting Solar Power and Agriculture.” U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy–National Renewable Energy Laboratory, June 6, 2018, nrel.gov/state-local-tribal/blog/posts/solar-sheep-and-voltaic-veggies-uniting-solar-power-and-agriculture.html. Accessed December 2018.

10 Macknick, Jordan. “Overview of Opportunities for co-location of agriculture and solar PV.” U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy–National Renewable Energy Laboratory, June 14, 2016, eandt.org/wp-content/uploads/2013/01/NREL-Overview-of-opportunities-for-co-location-of-agriculture-and-solar-PV-1.pdf. Accessed December 2018.

