WELCOME TO THE 26TH ANNUAL NATIONAL SOLAR TOUR

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# ASES NATIONAL

Fall 2021

# **The ASES National Solar Tour**

### October 2 - 3, 2021

By Carly Rixham, Executive Director, American Solar Energy Society

What began as a local solar and sustainability tour at the Solar Living Institute, a former ASES Chapter, in Hopland, California, under the direction of John Schaeffer, expanded to become the National Solar Tour in 1995. Here we are in our 26th year and the first ever hybrid National Solar Tour. Over the years, the Tour has grown and is now the largest grassroots solar event in the nation!

It is an opportunity for solar enthusiasts to share their process of going solar - the benefits and the lessons learned - to attendees to educate and further the integration of renewable energy. It is also an opportunity for people interested or considering going solar to learn about going solar from real people in their area - or across the country! They can get their questions answered and find resources for financing, get recommendations on installers, learn about any local laws or incentives, and start their transition to solar.

Research shows that people are inspired to install solar panels because they see them on nearby homes. Solar panels tend to be clustered in certain neighborhoods rather than evenly distributed through a city. A Yale study shows that the installation of one additional solar photovoltaic rooftop project within the past six months increases the average number of installations within a half- mile radius by almost one-half. The findings suggest that "seeding" solar panels on a few houses in neighborhoods where they are sparse could help residential solar spread faster to more homes. The strongest predictor of whether a house will have solar panels is the density of solar panels on neighboring properties.

Although in these times of COVID we don't like the idea of something that is contagious, the National Solar Tour is helping to spread solar contagion. It creates a platform for organizers to host their events, resources and support before, during and after hosting the events, and promotion of Local Solar Tours and Solar Sites! With the new hybrid format, there are both in-person and virtual events. Learn more and find online and in-person events near you at nationalsolartour.org.



Community | Education | Events Join today with promo code SOLARTOUR to save 10% off your membership ases.org/join

Thank you for getting involved in the National Solar Tour.

SOLAR TOUR



media.volvocars.com iea.org advocacy.consumerreports.org

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# Solar FAQs

Solar can provide energy to buildings in many ways. The sun can heat the building interiors passively or naturally through south-facing windows. Solar collectors and PV (photovoltaic) arrays, mounted on the roof or ground-mounted, can heat water and generate electricity for the building, and charge electric vehicles for the homeowners or employees. Adding solar to any new or retrofit building should include a holistic conservation approach that addresses such features as insulation, air tightness, ventilation, healthy building materials and water conservation. The National Solar Tour focuses on the PV systems, but many Solar Sites showcase other sustainable and energy efficient features too.

### How do solar panels work?

Solar electric (photovoltaic - PV) panels absorb the sun's energy (photons) that produce an electric current by moving electrons. PV produces direct current (DC) electricity whereas grid connected homes and businesses use more common alternating current (AC) electricity. The solar produced DC electricity is passed through an inverter to convert it to AC electricity. The AC electricity is then used to power your home or business. Any excess electricity is sent back to the grid to help power your area.

### What if it is cloudy, snowy or rainy, will my panels still produce energy?

PV panels produce peak energy when it is sunny, however, your solar panels will still generate some electricity even when it is cloudy, it will just be less (~10% to 25% of optimal production). Snow will greatly reduce the energy generated from PV panels but with an appropriate tilt angle for the panels, snow can slide off or can be brushed off. Rain is good for panels as it cleans off dirt and debris so they operate efficiently and decreases the need for manual cleaning of solar panels which can risk damaging them.

### How long do solar panels last?

Most solar panels are guaranteed for 25 years but last even longer since there are no moving parts as a solid state device. There is also very little maintenance with solar panels after installation with occasional inverter replacement expected after about 15 years of continuous operation. It is important that the solar power system is properly bonded and grounded to reduce any potential damage for lightning strikes and any other power surges.

### Is my roof good for solar? Do I need to replace my roof?

The ideal orientation for a roof is south facing with little to no shade. This orientation will produce the most energy, however, there are many workarounds. Meet with a solar installer to come up with the best alternative solutions. Whether or not you have to replace your roof is dependent on the condition of your roof. It can be costly to remove and reinstall solar panels during roof replacement or maintenance. Therefore, if you are expecting to do work on your roof it is best to finish that work before installing solar. Ask your solar installer about the condition of your roof before installing solar or ask for the evaluation to include looking at ground-mounted panels as an option.

### What is the payback period of my solar array?

The payback period is dependent on your system size, installation cost, financing payments, local weather, and the local electricity rate as well as the building's electrical use. However, solar can be reduced by rebates and tax incentives that vary depending on where you live. There is a federal tax credit of 26% for 2021, and some states, municipalities and utilities provide additional tax credit, rebates and/or other incentives. In the USA, residential rooftop solar systems are installed at about \$3.00 per Watt, payback often realized in under 5 years taking full advantage of state and federal tax incentives. Financing options often start at \$0 down. Energy savings vary based on the size of the PV system (number of solar panels) and the building's energy use therefore, energy-efficient buildings can achieve 100% electricity savings for less than buildings that use a lot of energy. All of these factors affect the payback period of your array. In most of the country, solar increases the resale value of your home as well.

### How much money will I save?

There are a lot of factors that go into how much money you will spend and save which include: system size, production, weather, etc. Estimate a PV system size at pvwatts.nrel.gov. Calculate and estimate your solar savings at energysage.com/solar/calculator.

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### **40 Questions to Ask a Solar Installer**

- 1. What year was the company established? Where are the offices?
- 2. Are you licensed and insured?
- 3. Who designs the system and forecasts estimated annual output?
- 4. Are the installers your employees? Do you use subcontractors for any part of the installation?
- 5. Do you have your own electricians on-staff in-house?
- 6. What financing options do you offer (Lease, PPA, Loan, Cash) and how do they differ?
- 7. How much can I save using solar?

8. Who does the paperwork for utility interconnection and permits? Are associated fees included in the price of the system or extra?

- 9. Will someone from your team be present when inspectors come to inspect?
- 10. Have you worked with my building department before?
- 11. Can my homeowner's association stop me from putting solar on my house?
- 12. What happens if I sell my home?
- 13. Do you offer a system performance guarantee?
- 14. Does your system include panel-level monitoring? Does it cost anything extra? How do I access it?
- 15. Will the system meet local building and fire codes?
- 16. Do you confirm that my roof is structurally OK to hold panels?
- 17. Do you recommend using a central inverter, micro-inverters or optimizers? Why?
- 18. Should my panels be interconnected to the grid? Can I get power during a blackout?
- 19. Will you give me a firm quote or an estimate prior to signing a contract?
- 20. How are contract changes addressed? Do I have the right to cancel?
- 21. How long will be between the time I sign the contract until installation?
- 22. How long will the installation take?
- 23. Will there be a master electrician on site?
- 24. Do I need to be home during the entire installation?
- 25. How much money is due upfront? When are other payments due?
- 26. Which rebates and incentives come to me? Federal? State? Other?
- 27. Who is responsible for fixing any damage to my home if caused during installation? Or due to a penetration in the roof that results in a water leak?

28. Do you pro-actively monitor my system's performance after installation and notify me if there are issues?

- 29. Can I add more panels/modules later?
- 30. Should I wait for newer technology?
- 31. Can I apply for shared solar or community aggregated solar?
- 32. What warranties are there on the different parts of the system? Who do I call if there is a problem?
- 33. Will my home value change? Will my real estate taxes go up?
- 34. Will the panel performance degrade over time?
- 35. Can you provide customer references?
- 36. What is the process for future roof replacement? Cost for removing and replacing panels?
- 37. What if a new building is built and shades my system?

38. Can you install a canopy system, a ground mounted system, or a tracking system if my roof isn't appropriate?

39. Will you perform a whole house audit and let me know how to reduce all my energy demands? 40. If I have an electric vehicle, how much solar energy is needed to charge it? Can I charge it when the sun isn't shining?

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## **Local Solar Tours**

### Check out these Local Solar Tours and more at nationalsolartour.org

### Alaska Northwest Alaska Solar Tour - Deerborn Fairbanks Solar Tour - Fairbanks Alabama Birmingham Solar Tour - Birmingham Huntsville Solar Tour - Huntsville Arkansas Arkansas Renewable Energy Association Tour - Little Rock Arizona 2021 Sustainable Building Tour - Flagstaff California Davis Driving on Sunshine - Davis Solar Cookers International Virtual Tour - Sacramento Bay Area Nonprofit Solar Tour - San Francisco Colorado Berthoud Solar Tour - Berthoud Boulder Green Home Tour - Boulder Chaffee County Green Homes Tour Buena Vista -Buena Vista 4CORE Solar and Net Zero Tour - Durango Fort Collins Solar Tour - Fort Collins Denver Metro Green Home Tour - Golden Loveland Solar Tour - Loveland Chaffee County Green Homes Tour Salida - Salida Delaware Sussex County Solar Tour - Rehoboth beach

Illinois Green Build Home Tour - Chicago Illinois Solar Tour - Elk Grove Village

### Kentucky

Landsdowne subdivision Tour - Lexington Wilmore Solar Tour - Wilmore

### Michigan

25 Rooftop Solar Homes Tour - Detroit Michigan Solar Home Tour - East Lansing Grand Rapids MI Solar Tour - Grand Rapids Meridian Solar & Sustainable Tour - Okemos Ypsilanti Solar Tour - Ypsilanti

### Mississippi

Jackson, Mississippi Local Solar Tour - Jackson Minnesota

MRES Sustainability Tour - Minneapolis Missouri

Heartland Renewable Energy Solar Home Tour -Kansas City

### Montana

Bozeman Brewery and Bike Solar Tour - Bozeman Whitefish Solar Tour by Northstone Solar - Whitefish North Carolina Sierra Club Croatan Group - Emerald Isle NC Solar Tour - Raleigh Nebraska Omaha Solar Tour - Omaha New Jersey MSSIA's New Jersey Solar Tour - Bordentown Sustainable Voorhees Solar Tour - Voorhees New Mexico New Mexico Sustainable Everything Tour -Albuquerque New York WNY Solar Tour - Buffalo Ohio Ohio "Wish You Were Here" Tour - Mentor Oregon 2021 Go Zero Tour - Portland Pennsylvania Lower Merion Solar and Green Homes Tour -Ardmore Chester County Clean Energy Tour - Chester County Solar Tour of Lansdale - Lansdale Philadelphia Solar Tour - Philadelphia Philly Green Roofs Solar Tour - Philadelphia Solar States Yo Sun Tour! - Philadelphia Springfield/Montco Solar Tour - Springfield Exact Solar's Awesome Customers Tour - Yardley Tennessee TSEA Solar Tour - Nashville EcoLogical - Northeastern Texas DFW Solar Tour - Grand Prairie Virginia Rocktown Energy Fest - Harrisonburg Hampton Roads Solar Tour - Norfolk Wisconsin Central Sands Bike Tour - Custer Door County Solar Tour - Sturgeon Bay Lambs Quarters Lane Solar Tour- Waupaca Wyoming Wyoming National Solar Tour - Laramie

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# **Individual Solar Sites**

### Alaska

Colleen & Colin's Alaska Solar Home -Wasilla

#### Alabama

Southern Cypress - Citronelle Solar Technology Center - Eva Media Fusion Solar Installation -Huntsville

#### Arkansas

Church Parking Lot Array - Little Rock Owen Solar Home - Little Rock

#### Arizona

Solar Pool Heat & Solar Electric Generation & Storage - Chandler East Mesa Solar - Mesa Virtual Solar Tour, Mesa, Arizona - Mesa Alfini House - Phoenix

### California

Show Room - Alpine Niles - Fremont Solar Home - Fremont UC Merced Science & Engineering Breezeway - Merced Solaterre at EcoAcre - Perris Solar Cooker Site - Sacramento Living Vehicle Solar Site - Santa Barbara Major Solar - Santa Rosa Solar Photovoltaic & Hot Water Home -Sunnyvale

### Colorado

CU Boulder "SPARC" House - Fraser Ambient House - Pagosa Springs

### Connecticut

TWT - Suburban Single-family -Hamden

### Florida

Sun-Powered Belleair Bluffs Home -Belleair Bluffs

Dave Finnigan Solar Site - Celebration Garcia's Solar Express - Fort Lauderdale PV + Thermal - Hobe Sound Florida Rooftop Solar Site - Hollywood North Pointe Solar Site - Kissimmee Cutler Bay Solar Solutions - Miami Residential Solar Home - Miami Charlie Behrens - Orlando Ovideo Tesla Solar Tile - Oviedo Fortress at Treasure Hills - Pensacola Seminole Solar Home - Seminole Solar Steve's Solar Home - Seminole Historic Solar Home - Titusville

### Georgia

45 Cory Court - Covington Yunzow Family Farm - Lilburn

### lowa

Aging-in-Place Regular home - Salem Illinois

Bull Valley Solar Home - Bull Valley Indiana

The Ryerson's Home - Indianapolis Joey's HOA Solar Home - Indianapolis HOA Approved Solar Home - Lafayette **Kentucky** 

Perkins Home - Louisville Massachusetts

### Beach Nearby Solar Site - Hull Seaside Solar Site - Winthrop

### Maryland

Water-Side & Pier Arrays - Glen Burnie Solar Rooftop/EV Strategies - Rockville **Maine** 

Bayside Solar Homestead - Machias Downeast Solar Tour - Jonesport **Michigan** 

South-Facing Solar Site Dearborn Midwest Solar Home Edwardsburg Calvin Christian Reformed Church, 53.55kW Array Grand Rapids Forest Hills Home - Grand Rapids

### Minnesota

Rooftop Solar w/ Powerwall and EV Charging - Edina Ground Mounted Solar, Residential Home - Minnetonka West 7th Home - Saint Paul Northern Light Farm - Solway Doc Smith - Woodbury

#### Missouri

Brentwood Solar Home - Brentwood Meadowbrook Home Solar - Eureka **Montana** 

#### Pozomon

Bozeman 3.6 kW Solar Electric System -Bozeman Ann & Nathan's House - Missoula

Ann & Nathan's House - Missoula Sawtooth Solar II - Whitefish North Carolina

Sunlit Catnip Gardens - Studio - Charlotte Mountain Solar and Wind Home - Clyde New Hampshire

Averill House Vineyard - Brookline Fowl Language Farm - Gilmanton

### New Jersey

Solar Electric & Solar Thermal - Fairlawn "Helios" Zero Net Energy Home -Lafavette

Sussex Solar Gardens - Lafayette New Mexico

Historic Downtown Solar House -Albuquerque Rooftop Solar Walk by - Albuquerque

Corrales, NM, Residential Solar Site -Corrales

### New York

Alfred University Tiny House - Alfred Farm Solar Home - Chaffee 1830 Carlson Farm House - Clifton Park Ohio Beaverbrook Solar - Beavercreek Barb's Solar Tour - Eastlake Armco Park Solar Array - Warren County -Lebahon ACE Hardware - New Middleton Cari & Kurt's Solar Open House - Stow Oregon Adams' Acres - Bend Pennsylvania Lower Gwynedd Township - Ambler Fitch Consulting - Berwick The Gap in the Clouds - Canadensis West Vincent Community Day - Chester Springs

Mallon Patch - Leeper

Saint Francis University Tiny Classroom on Wheels - Loretto Hope - Monaca SpohnHome @SunnyField - Pittsburgh 98 Solar Panels on Thomas Blvd -Pittsburgh South Carolina Solar+EV+Battery Backup - Greer Tennessee Kalmer Solar Home - Collinwood Texas 7866 Enchanted Ridge - El Paso Rio Valley Solar Home - El Paso KWT's X-VAP Solar Thermal Desalination System - Houston Santa Rita Solar Home - San Angelo Credit Human HQ - San Antonio Utah Solar with Sonnen Battery Backup - SLC Virginia Off Grid Studio - Arlington Two Self-Powered Buildings - Arlington Hearne at Bloomingdale Ave - Henrico DIY Solar Site - Herndon Park Place Solar - Norfolk Clinch River Farms Solar Array - Pounding Mill Our Home - Roanoke Agritourism Farm & Solar Residence -Strasbourg Suburban Solar Home - Vienna Yorktown Solar Home - Yorktown Washington Banner Power Solutions Office Solar -Burlington The Bullitt Center - Seattle Sequim Energy Efficiency House -Sequim Sunset Hill 12 kW Rooftop w/ Electric Vehicle - Spokane Cottage Garden Solar - Washougal Washington DC Capitol Hill Green Home Wisconsin Bellevue Place- Appleton Summerland Ct - KJ - Appleton Up North Solar - Bryant MREA's Headquarters - Custer Couillard Solar Foundation - Deerfield NWTC - Green Bay Sisters of St. Francis Solar Site - Green Bay UWW-Rock Solar Project - Janesville The G Farm - Larsen Struye-Johnson Solar Home - Madison Hallquist Home PV system - Oshkosh NE Wisconsin Residence - Oshkosh Country Solar Home - Shawano Poem Homes - Spring Green Lake Michigan Wind & Sun - Sturgeon Bav Solar + Geothermal - Wauwatosa Solar in the Kettle Moraine - West Bend Wyoming Wild Horse - Laramie

Shamrock Rentals, LLC - Lock Haven

