

Fall 2022

ASES NATIONAL
SOLAR TOUR



WELCOME TO THE 27TH ANNUAL
NATIONAL SOLAR TOUR

The ASES National Solar Tour

October 1 - 2, 2022

By Carly Rixham, Executive Director, American Solar Energy Society

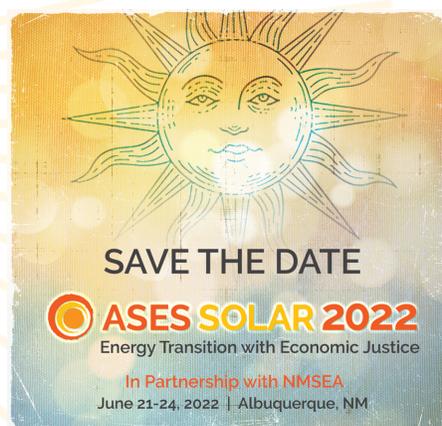
What began as a local solar and sustainability tour at the Solar Living Institute, a former ASES Chapter, in Hopland, California, under the direction of John Schaeffer, expanded to become the National Solar Tour in 1995. Here we are in our 26th year and the first ever hybrid National Solar Tour. Over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

Thank you for getting involved in the National Solar Tour.



What You Should Know Before You Buy an ELECTRIC CAR



Electric Cars by the Numbers



How to Charge an Electric Car



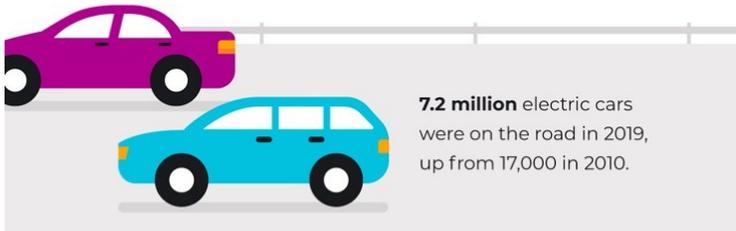
63% of respondents in a 2019 *Consumer Reports* survey were interested in buying an electric car.



JP Morgan predicts EVs will represent **30%** of vehicle sales by 2025.



All new Volvos will be **hybrid or electric** as of 2019.



7.2 million electric cars were on the road in 2019, up from 17,000 in 2010.



Globally, the number of publicly accessible fast and slow chargers increased by **60%** in 2019.

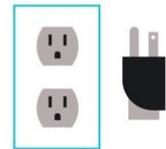


Global electric car sales increased **40%** between 2019 and 2020.

Sources:
media.volvocars.com iea.org
advocacy.consumerreports.org jpmorgan.com

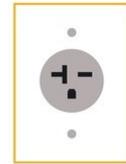
Level 1 (L1) Charging

Uses a regular **home 110-volt** outlet to charge 2 to 5 miles of range per hour.



Level 2 (L2) Charging

Uses a **240- or 208-volt plug** to charge 10 to 20 miles of range per hour.



Level 3 (L3) DC Fast Charging

Uses high-powered equipment to charge at **480 volts** to deliver 60 to 80 miles of range in 20 minutes.



Sources:
energy.gov

say
INSURANCE

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.

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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