

LEARN MORE!

- Animated explanation of how silicon solar cells work:
www.solarschoolhouse.org/hascw/solar_cell.swf
- The Story of Solar Electricity:
www.californiasolarcenter.org/fste/fste.html
- DOE solar animations including sunlight to electricity movie:
www1.eere.energy.gov/solar/animations.html
- Illinois Solar Energy Association:
www.illinoissolar.org
- Illinois Clean Energy Community Foundation:
www.illinoiscleanenergy.org
- American Solar Energy Society:
www.ases.org
- US DOE's Solar Decathlon:
www.solardecathlon.org
- Energy 101: Solar PV video
www1.eere.energy.gov/multimedia/video_energy101_pv.html

Solar powered charging station for electric cars at Argonne National Laboratory.

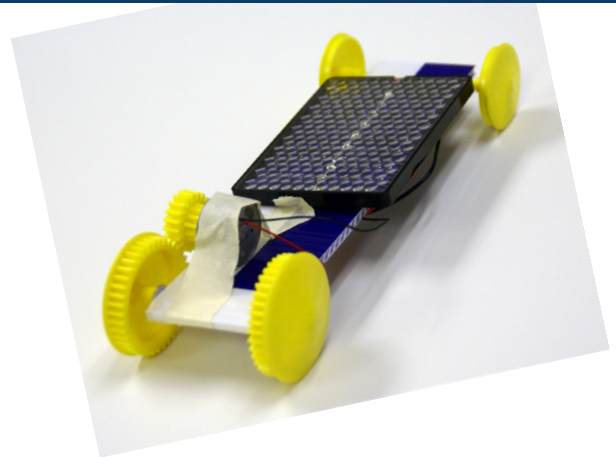


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 **TCIPG** TRUSTWORTHY CYBER
INFRASTRUCTURE FOR
THE POWER GRID

t c i p g . o r g

Build a TCIPG Solar Powered Car



This photo shows one possible design. Use your engineering skills to invent and perfect a design of your own!

YOU WILL NEED:

- Solar Panel
- Motor
- Vehicle Base
- Wheels
- Axles
- Gears
- Tape
- Washers (optional)
- Sun or other light source



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Totally solar powered cars, like this experimental car, are not yet commercially available. Solar panels on the roof that power accessories like AC or the radio are now an option for some car models.

To build your solar car...

- Design your base. Think about where you want to put the solar panel and the wheels.
- Push the axles through tunnels in the corrugated plastic body.
- Attach the wheels to the axles. Washers may help reduce friction.
- Use tape to connect the solar panel to the motor. Tape the red wire from the solar panel to the red wire from the motor and also tape the black to black.
- Attach a small gear to the motor shaft and use it to drive a gear on one of the wheels.
- Tape the motor to the vehicle body so the teeth of the gears work together.
- Attach the solar panel to the base.

Take your solar car for a test run! What happens?

After your test run...

Make adjustments to make your car travel straight and fast.

- What is the best position for the solar panel?
- What happens when the vehicle moves into shade or a shadow?
- What happens if you change the size or shape of the body?
- What happens if you change the position of the wheels?



DOE - NREL photo
The solar panels on these golf carts charge batteries that operate the carts.

Did you know?

The sun is the source of almost all of our energy. Wind results from changes in temperatures on land. Plants convert energy from sunlight through photosynthesis. For thousands of years people have burned forms of plant life for heating, cooking and light. Coal and gasoline were once plant life.

Heat from the sun can warm a room just by shining through a window. The sun's heat is also used to heat water and can be concentrated to produce steam for electricity generation.

Photovoltaic (PV) cells, or solar cells produce electricity directly from light. PV powered calculators have been common for many years, and PV cells have become especially useful for providing electricity in places that are not near conventional sources. Solar panels composed of many solar cells have been used in space to power satellites since 1958.