Wind Generator

Make an LED light up with the power of the wind!

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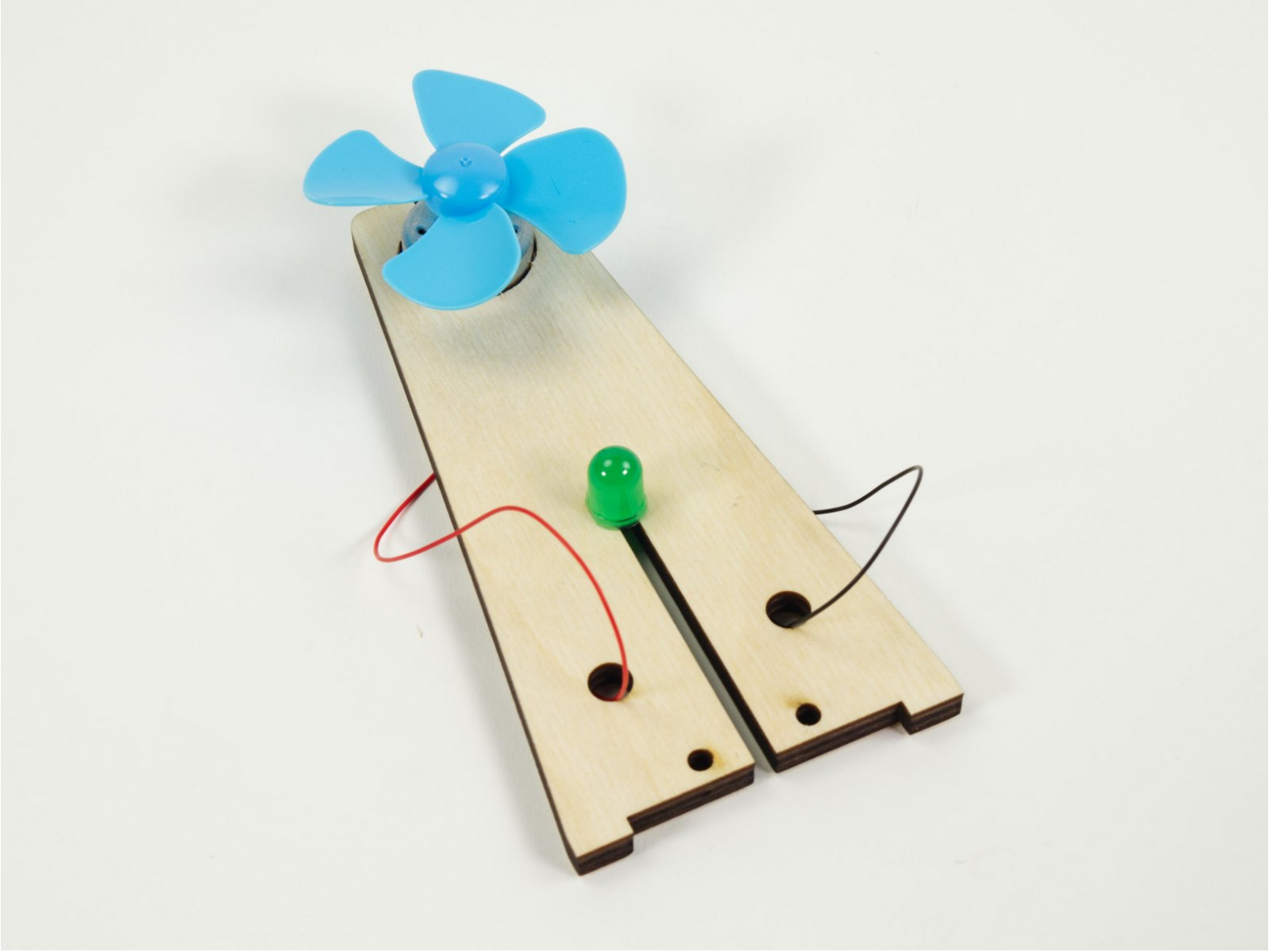


INTRODUCTION

Make an LED light up with the power of the wind! We'll connect an LED to our fan ("Wind Generator") and make the LED turn on using electricity generated from air making the motor spin. The Solar House Kit has all the parts needed for this activity.

TOOLS:

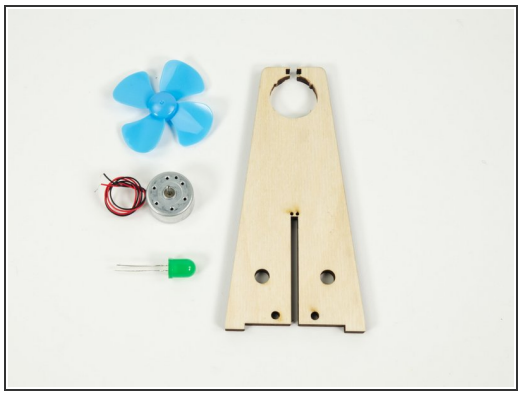
- Scissors (1)
- Compressed Air (1)

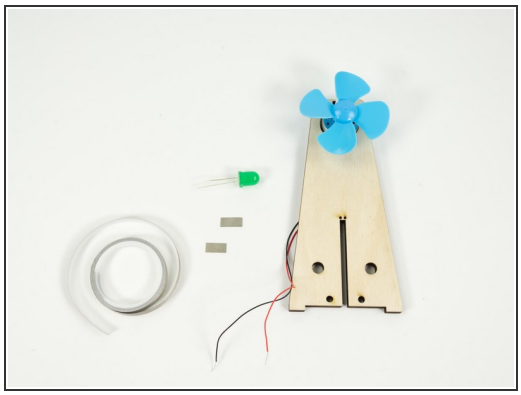
Optional

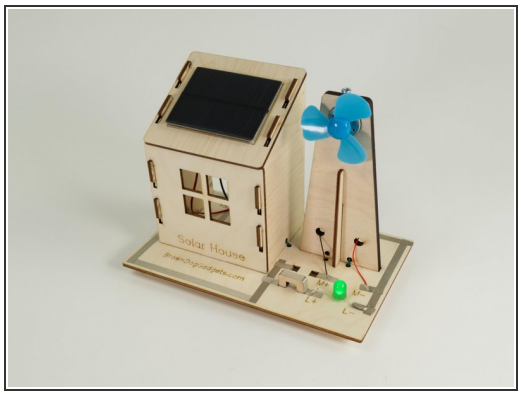
PARTS:

- Solar House Kit (1)

Step 1 — Gather Parts

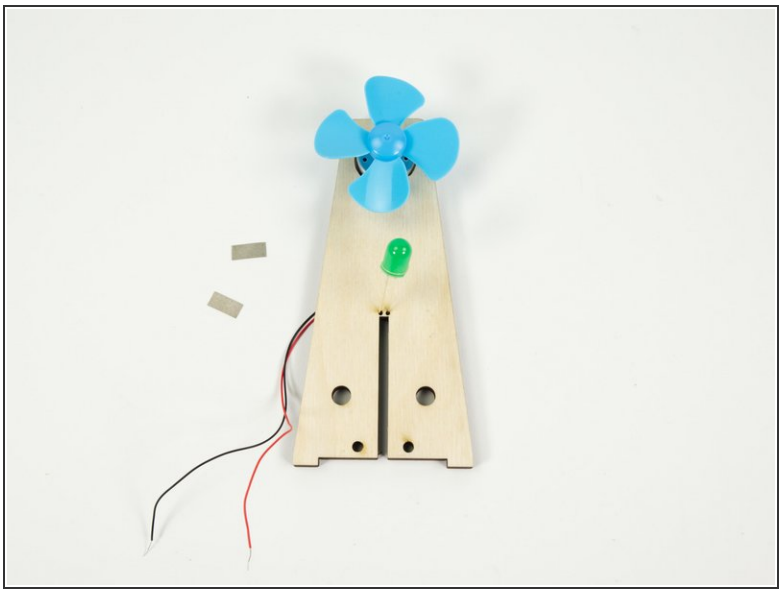


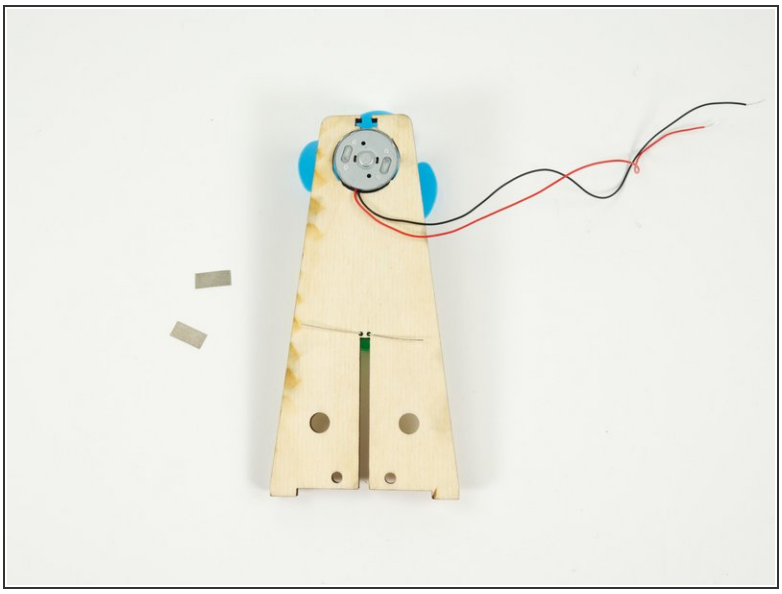




- If you've already built the Solar House Kit you'll need to remove the Windmill you added starting with Step 11.
  - Alternately if you have not built the Windmill yet gather the parts shown in the photo and assemble it.
- You'll also need two small pieces of Maker Tape. We'll use Maker Tape because it's conductive and will give a better electrical connection to our circuit.

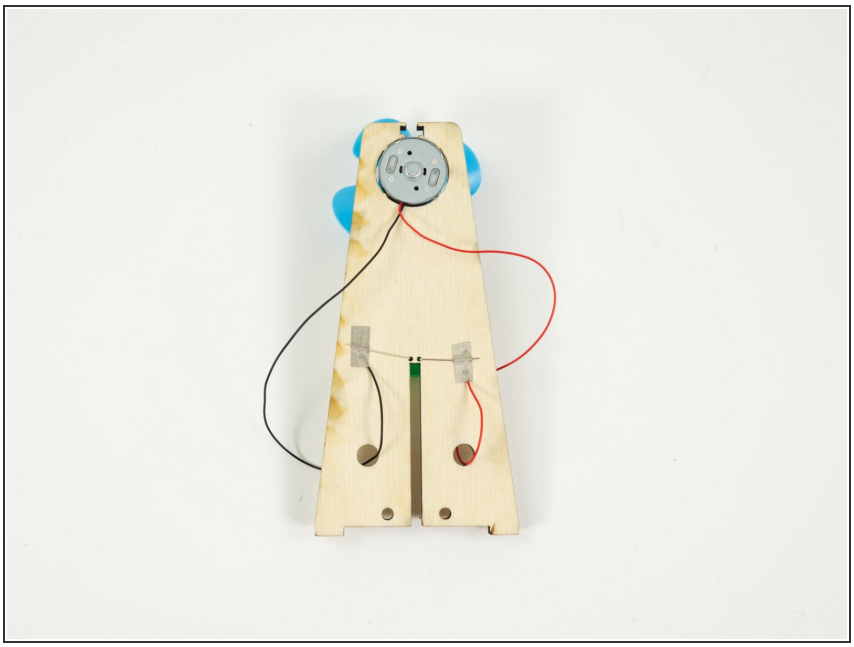
Step 2 — Add LED





- We're going to insert a Green LED's legs into the two small holes at the top of the slot.
- Make note of which LED leg is longer, as that is the **Positive** leg of the LED.
- In this example we placed the longer leg on the **right** side in the first photo, which means it's on the **left** side when we flip over the Windmill.
- Bend the LED legs down flat against the wood.
- If you forgot which LED leg was longer you should be able to tell once they are flattened just by looking at them.

Step 3 — Connect Motor



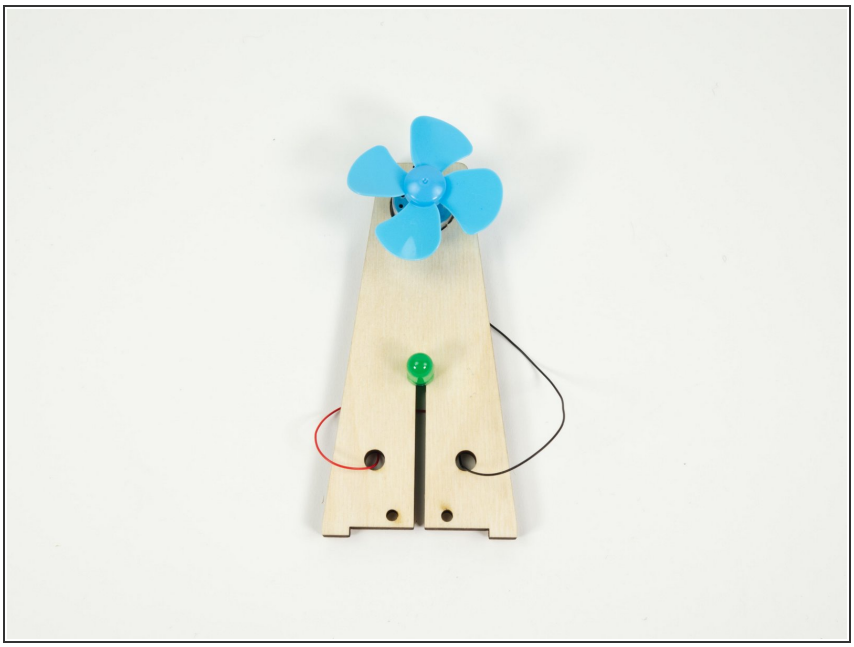
- We'll now connect the motor wires to the LED legs.
- Use Maker Tape to connect the **black** wire from the Motor to the **longer leg** of the LED, and the **red** wire from the Motor to the **shorter leg** of the LED.

⚠ Wait! Isn't that backwards!? Usually **black is Negative** and **red is Positive**, so it appears we're connecting things *backwards*, but we are not...

⚠ Since we are using the Motor to **generate electricity** instead of **powering the motor with electricity** we need to reverse the polarity.

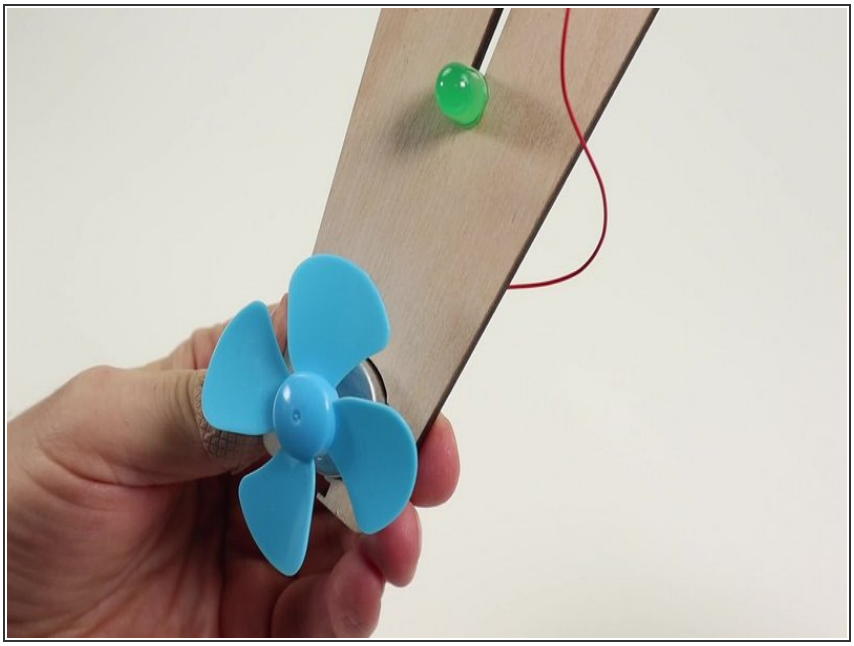
Make sure the wire and the LED leg are securely held down with Maker Tape to ensure a good connection.

Step 4 — Wind Generator Complete



- Your Wind Generator is now complete, and ready for testing!

Step 5 — Test it Out!



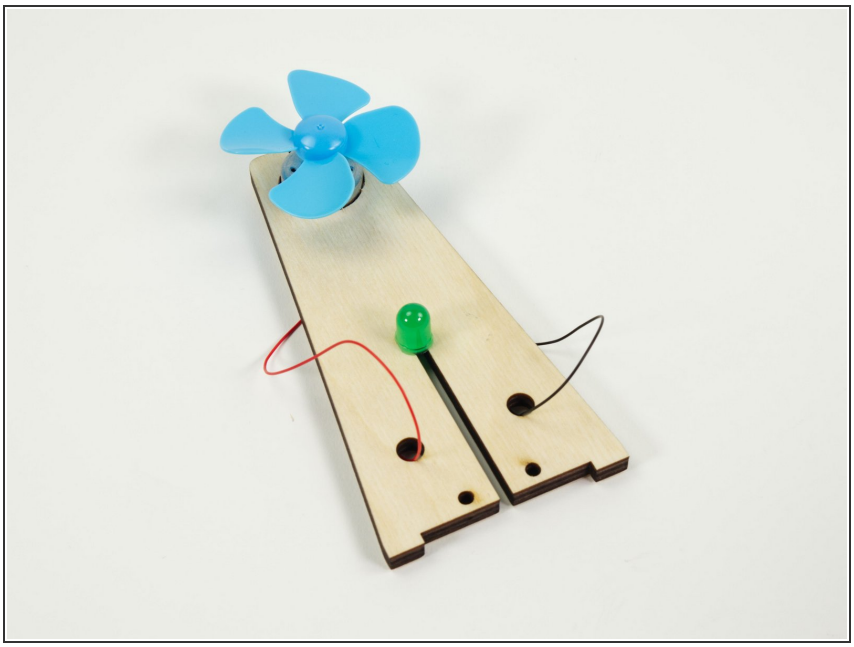
- Try to light up the LED!
- We first tried by blowing on the fan blade with a huge breath... and it worked!
- We then used a can of compressed air and that worked even better!

Step 6 — More Air!

- If you find it a bit difficult to light up the LED by blowing on it (or just want to lower the number of people blowing their breathe in a closed area) consider using compressed air instead.
- Compressed air comes in cans, and is typically used as a "duster" to clean out dust from computers and other equipment.
- A warning with the cans is that they should be used in an upright position, not pointed downward, so hold your Wind Generator upright, do not lay it on a table...
- And note that the cans are meant for short bursts, not sustained use, and can get **very** cold when you spray too much. So we do have another suggestion...

This Rechargeable Air Duster is a reusable solution with a long-lasting battery and no freeze-ups.

Step 7 — Take it Further



- In our tests the green LED performed the best, but you can try using a red or white LED to compare the results.
- Can adults (with more lung capacity) get the LED to light up longer than children with smaller lungs?
- What other data can you gather about this experiment?
- Check out the Solar House Kit section for more guides as well as lessons and curriculum.