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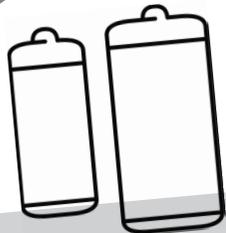
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BATTERIES AND POWER

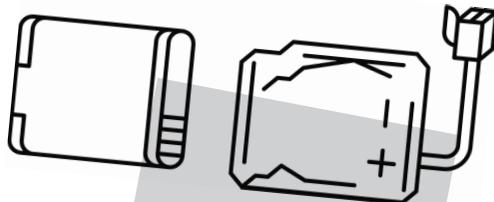


Alkaline are the classic AA and AAA batteries that are seen in stores and power lots of toys and devices. Typically they are single use and are not considered hazardous waste so they can be discarded in an ordinary household trash can.

Convenience ★★★★★
Environmental Impact ★★★

Lead-acid batteries are used to power gas automobiles. Turning on the ignition causes a chemical reaction that generates an electric current. The alternator in a car charges the car battery as you drive.

Convenience ★★★★★
Environmental Impact ★★★



Lithium Ion Batteries often power our smaller devices like tablets and smartphones, earphones and other small electronic gadgets. They're efficient and small but they require toxic chemicals to process the lithium that can harm the soil and contaminate the air in areas where it is processed.

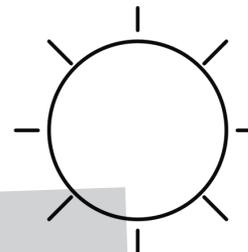
Convenience ★★★★★
Environmental Impact ★

Rechargeable batteries come in all forms, shapes, and sizes. They have a much lower total cost and environmental impact compared to single-use batteries. Rechargeable batteries can look like every battery on this page!

Convenience ★★★★★
Environmental Impact ★★★★★

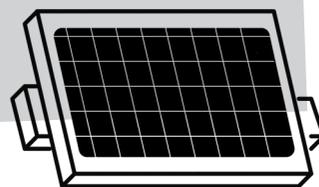


Now that you've seen some batteries and our ratings, try rating the next ones on your own! Consider how easy this fuel source is to use. Can you buy it at a store? Do you think it might be bad for the environment? And will we still use it in the far future?



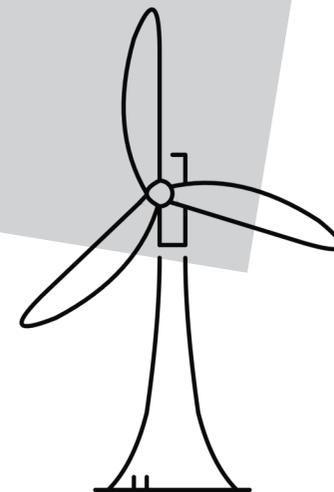
Solar: Sunlight is one of the most abundant natural resources. Solar panels are made with photovoltaic cells that collect sunlight and generate Direct Current (DC) energy. They convert that energy into Alternating Current (AC) to make usable power! Solar batteries store the energy absorbed by solar panels.

Convenience ★★★★★
Environmental Impact ★★★★★



Wind/Turbine: Wind is another source of clean energy. Wind spins the blades on a turbine around a rotor that spins a generator. This process uses mechanical energy (turning parts) to create usable electricity! Great for the environment.

Convenience ★★★★★
Environmental Impact ★★★★★

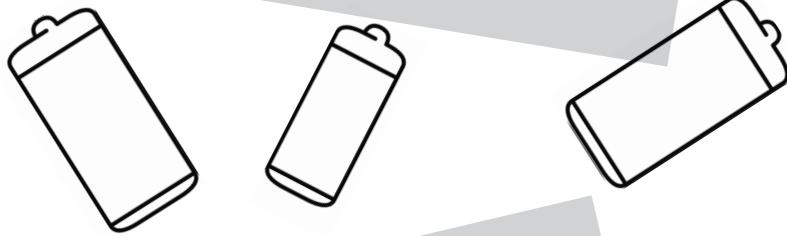


Renewable and Alternative Sources of Energy: Renewable energy sources are sustainable, meaning that they cannot run out. Both words renewable and alternative are synonyms when describing various types of low-carbon or low-emission energy sources.

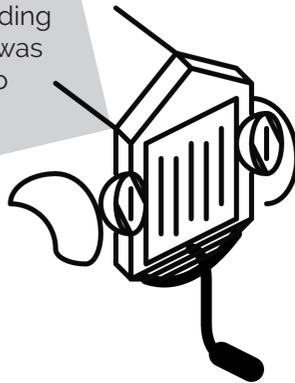
Convenience ★★★★★
Environmental Impact ★★★★★

ELECTRIC CARS

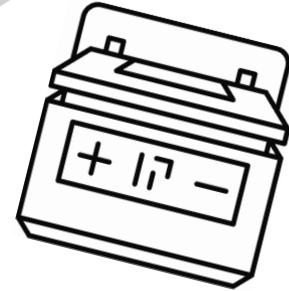
Electric Vehicles, or "EV's", are pretty common on the roads these days. They're powered by high capacity lithium-ion batteries and charged via an outlet like a phone or tablet! Plug it into the wall, drive it around until the battery is low, then plug it in to charge again. But you might be surprised to know that batteries have been in cars for a very long time!



Have you ever seen a video of an old-timey car with a crank on the front? That crank will start the engine spinning to turn on the car! It's almost like a windmill, but your arm is providing the power instead of the wind. This is what was used before the battery, and it could lead to some very tired arms.



Eventually, in 1920's, the power of your arm was replaced by the power stored in a battery! This new battery delivered an electric shock to wake up the car's engine. Once the engine is on, it starts to charge the battery so that the battery will always be ready to turn on the car when it's needed!



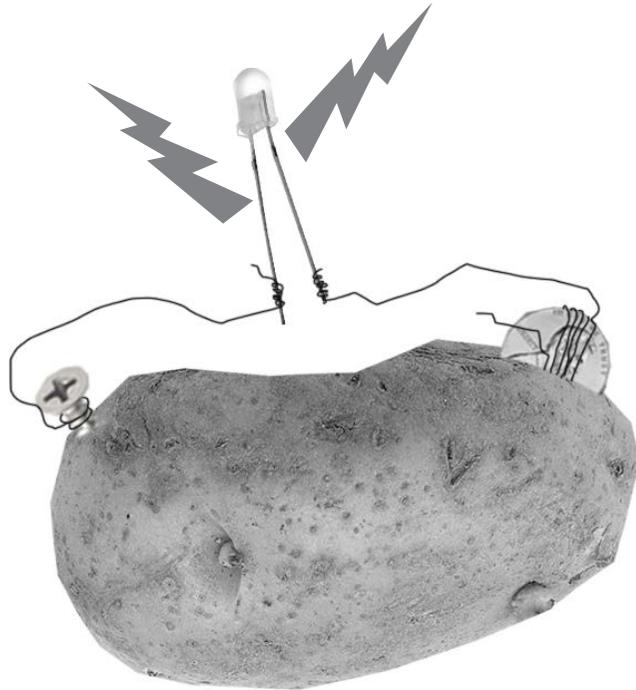
So, yes! It's true - even gas powered cars are, to some extent, battery powered! Along with turning on the engine, the battery is responsible for powering the lights, the radio, the AC, and all the other electrical components of the car.



POTATO BATTERY

Potatoes are conductive (electricity can travel through them easily), and they have ingredients similar to our household batteries. This means we can turn them into a power source by adding just a few things: zinc and copper.

Put a copper penny in one end of a potato, and a zinc-plated screw in the other. Add a bit of wire to each metal, and then connect those wires to an LED light or another small electronic. It forms a circuit! There's a chemical reaction happening between the metal and the potato liquids that can last several days. Is there a potato powered future in sight?



GRAPE PLASMA

Two grapes placed in the microwave so that they're touching will create plasma when the microwave is run!

Grapes are round water spheres, and when they're heated with micro waves the point at which they touch each other gets really really hot. It's the perfect recipe to make a tiny amount of plasma when the salt and potassium catch on fire. One day, we might see water spheres used to generate plasma lasers that cut wood or metal.



THE POTATO BOT

Design your own potato bot! Each new part of the potato bot will need a penny, screw, and wire to power it! What kind of potato bot will you design? A rugged rescue bot? A limber tree-climbing bot? A deep-sea crab-bot? Send us your potato-bots at: codeva.info/SubmitYourSnailMail

PROTOTYPES



SEE YOU NEXT MONTH!

Thank you for participating in this month's Snail Mail! Did you know you can sign up a friend for free? Tell us your favourite part and get involved with other Eureka programs! You can share your projects and drawings with us directly at: codeva.info/SubmitYourSnailMail

Sincerely Yours **The Snail Mail Team**

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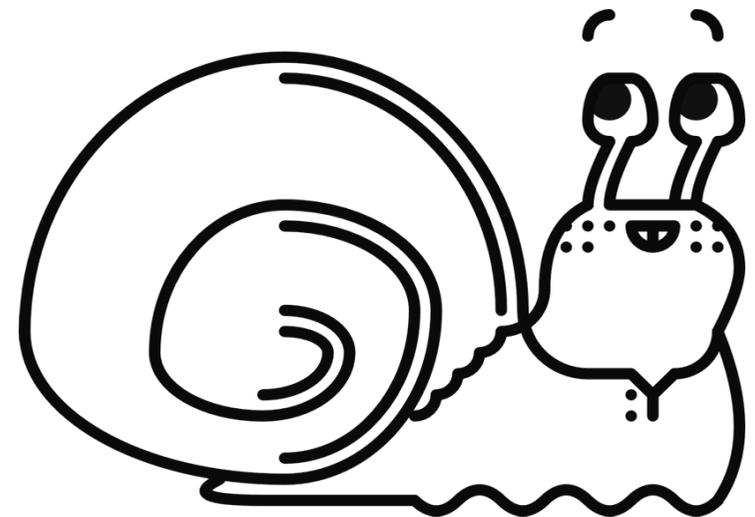
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