Montgomery County Climate Team

Interactive Youth Climate Education Slides

Energy and Transportation

Start!

All About Energy

Humans use energy from many different sources. We mostly burn oil, coal, and natural gas for energy, but we can also harness the power of wind, water, and sunlight.

Renewable Energy

Renewable sources are replenished naturally and over relatively short periods of time. The five major renewable energy resources are **solar, wind, water (hydro), biomass, and geothermal.**

Non-renewable Energy

Non-renewable energy sources come from resources that are not regenerated or are regenerated very slowly by natural processes. The primary sources for non-renewable energies in the world are **fossil fuels - coal, gas, and oil.** As we previously learned, these contribute to climate change by increasing the amount of heat-trapping gases in the atmosphere when they are burned.

Next

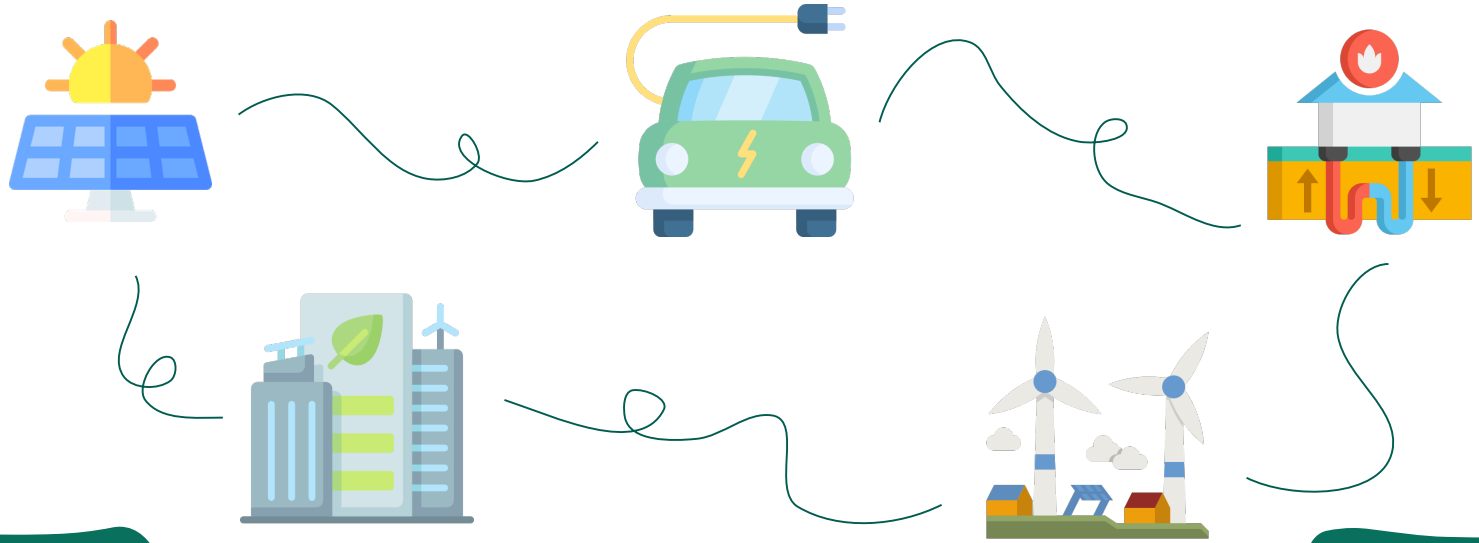
How do we use energy?

The United States gets 81% of its total energy from fossil fuels such as oil, coal, and natural gas. We currently depend on those fuels to heat our homes, run our vehicles, power industry and manufacturing, and provide us with electricity. We are starting to see more and more use of renewable energy as people are becoming aware of fossil fuels' effect on the climate.

Back

Next

Renewable Energy Map!
Click on an icon to learn more.



Back

Next

Solar Panels

The solar panels that are installed on the roof of a house capture energy from the sun. They take this energy and use it to provide the house with electricity. Solar panels can even work on cloudy days when the sun isn't very visible at all.

*Montgomery County aims to increase the use of solar panels by financing community solar projects, implementing strict codes that require certain buildings to implement solar panels, and making solar more accessible across the county. Learn more in the Climate Action Plan

Back to map

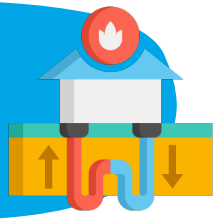
Electric Vehicles

Electric vehicles (EVs) have a battery instead of a gasoline tank, and an electric motor instead of an internal combustion engine. Electric vehicles are often powered by nonrenewable energy, however, they still emit fewer heat-trapping gases and air pollutants than traditional gasoline and diesel-powered vehicles.

*Montgomery County aims to increase the use of electric vehicles to 100% by 2035, including all private sector vehicles, by stopping all purchases of non-electric buses by 2022 and electrifying 100% of the transit buses and Montgomery County Public Schools (MCPS) school buses by 2027. Learn more in the Climate Action Plan

Back to map

Geothermal Heat Pumps



Geothermal energy uses energy in the ground to heat or cool the building above it. For heating, a geothermal heat pump removes the heat from the fluid in the earth, concentrates it, and then transfers it to the building. For cooling, the process is reversed.

*Montgomery County aims to increase the use of geothermal pumps by requiring that all new public buildings be designed to net-zero emissions standards. Learn more in the Climate Action Plan

Back to map

Net Zero Energy Buildings

Net-zero energy buildings are highly energy efficient and use renewable energy.

*Montgomery County aims to decrease building emissions by electrifying public buildings, promoting and incentivizing energy audits, and raising the energy performance standard for both new and existing commercial and multifamily buildings. Learn more in the Climate Action Plan

Back to map

Wind Turbines

Wind energy is the energy from the movement of air. Wind turns the propeller-like blades of a turbine around a rotor, which spins a generator, and creates electricity. This electricity is typically used to power water pumps or communications. However, homeowners, farmers, and ranchers in windy areas can also use wind turbines as to cut their electric bills.

*Montgomery County aims to increase the use of wind energy by increasing renewables' development and accessibility. Learn more in the Climate Action Plan

Back to map

Montgomery County Government

Climate Action Plan

The **Climate Action Plan (CAP)** is Montgomery County's strategic plan to lower heat-trapping gases like carbon dioxide and methane. It details the effects of a changing climate on Montgomery County and includes strategies to reduce greenhouse gas* emissions and climate-related risks to the County's residents, businesses, and the built and natural environment.

*Greenhouse gases, also known as heat-trapping gasses, trap heat in the atmosphere. When we burn fossil fuels like coal and natural gas for energy, we add to the blanket of heat-trapping gases like carbon dioxide and methane that surround the planet.

Next

Montgomery County Government
Climate Action Plan

The Vision

Montgomery County....

- uses and invests in clean, reliable, affordable electricity
- is home to resilient and efficient buildings
- safely, affordably, and sustainably moves people and connects places.
- has conserved and enhanced its nature-based solutions, including forest, meadow, and wetland ecosystems, greenspaces, and trees, while reversing carbon dioxide emissions
- is equipped with the resources and infrastructure to withstand the impacts of climate change
- fosters creativity and collaboration to develop climate solutions
- motivates community members to take action against climate change

Back to map

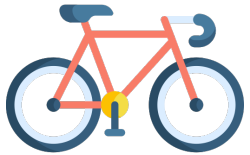
Read Full CAP
(exit slides)

Transportation

How does transportation affect climate change?

Emissions from cars, buses, planes, and other forms of transportation put carbon dioxide and other greenhouses gases into our atmosphere, contributing to climate change.

A typical passenger vehicle emits about 4.6 metric tons of carbon dioxide per year. This number can vary based on a vehicle's fuel, fuel economy, and the number of miles driven per year.



To reduce your carbon footprint, walk, bike, or ride transit when possible.

Back

Next

Montgomery County's Climate Action Plan: Transportation Vision

Transportation

Montgomery County safely, affordably, and sustainably moves people and connects places.

- Transition to 100% zero emissions transportation and expand the supporting infrastructure.
- Provide clean, efficient, frequent, and reliable public transit.
- Reduce the use of personal automobiles and increase use of transit and active transportation options, such as biking, walking, and micromobility services, with safe, supportive infrastructure and land use, along with greater use of transportation demand management to achieve trip reduction.
- Introduce new technologies and approaches to transition to a green transportation system.

Back

Next

Conserving Energy

Conserving energy is an important part of fighting climate change. The less energy you use, the lower your carbon footprint is. Your carbon footprint is the amount of carbon dioxide released into the air because of your own energy needs. Watch the video to learn more about the importance of conserving energy.

Write down three ways you can conserve energy shared in the video on a piece of paper or an editable copy of these slides.

- ✓ _____
- ✓ _____
- ✓ _____

Back

Done

Restart

Congrats! You've completed Montgomery County Climate Team's Interactive Youth Education Slides - Energy and Transportation

If you haven't already, complete our Climate Change - Interactive Youth Climate Education Slides

To learn more about climate change, visit the resources below:

Nasa Climate Kids is an educational website with activities, resources, and games to teach kids of all ages about Earth's systems, water cycle, weather and climate.

Climatedu is a student-led initiative that offers a free, online seven-unit course on climate change.

The AMHN *Ology*'s climate page offers games, stories, and hands-on activities to educate kids about climate change.

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