JULY 2026

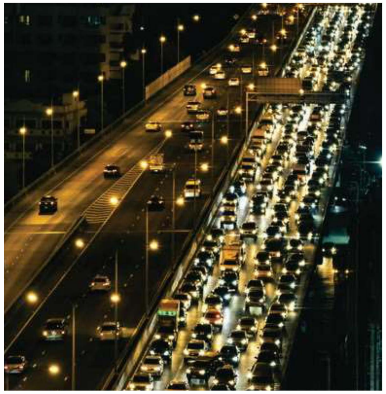
LEARNING ACTIVITY:

Energy Consumption and CO_2: Analyzing Trends

GRADES 6–12

MATERIALS

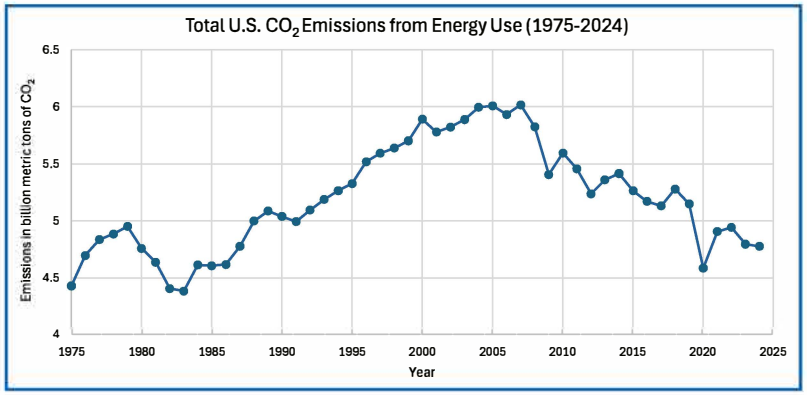
- Computer with internet access



Credit: Photo by Koushik Pal on Unsplash

Source: Earth Science Information Partners.

Human beings rely on energy. We heat and cool our homes, move ourselves from place to place, transport supplies overseas, land, and through air, and produce the things we need to live and work around the world. The sources of energy we use (e.g. fossil fuels, renewables, nuclear) play a key role in how CO_2 emissions change over time. Decreasing CO_2 emissions is a goal of the United Nations Net-Zero Coalition. Many countries are striving for a 45% reduction in global carbon emissions by 2030. In this activity, you will make a claim supported by energy data as evidence to argue for one strategy for reducing CO_2 emissions to consider how we might accomplish this goal in the U.S.



Data Source: U.S. Energy Information Administration

PROCEDURE

1. Use an interactive graph to explore U.S. energy consumption: **https://bit.ly/US-energy-consumption.**
2. During the last 50 years, CO_2 emissions have changed in the U.S.
   a. Describe the trend of CO_2 data in the U.S. from 1975–2024 using the graph on this page.
   b. Consider three major world events and describe how CO_2 emissions changed during and after each event:
      - Oil Crisis, 1979–1980
      - Global Financial Crisis, 2008–2009
      - COVID-19 Outbreak, 2019–2023
   c. Compare the graphs of energy consumption and CO_2 emissions.
3. Describe trends of CO_2 emissions by energy source in the U.S.: **https://bit.ly/CO2-by-energy-source**.
4. The U.S. is the largest per capita CO_2 emitter in the world.
   a. Explore this chart: **https://bit.ly/US-energy-chart**.
   b. What sources and sectors contribute to CO_2 emissions?

ANALYSIS

1. **Background:** Write something you learned about energy consumption in the U.S.
2. **Claim:** Make a claim about how you might reduce CO_2 emissions based on the data you analyzed.
3. **Evidence:** Share energy data that provides evidence for your claim.
4. **Societal Implications:** Consider the sectors that would be impacted by your plan to reduce CO_2 emissions. Are there other methods for carbon mitigation that you might consider?

FURTHER STEPS

This activity was developed by the ESIP Education Committee which promotes the use of Earth science data with students (**https://bit.ly/ESIP-edu-committee**) and is based on material from the Evaluating Sources and Claims project, an IGES project. Learn more at **https://serc.carleton.edu/mel/index.html**.

NGSS CONNECTIONS

SEP: Analyzing and Interpreting Data, Engaging in Argument from Evidence
DCI: ESS3.D: Global Climate Change
CCC: Patterns; Cause and Effect; Energy and Matter

SDG CONNECTIONS

7: Affordable and clean energy
13: Climate action