



HIGH SCHOOL 2021-2022

Energy Efficiency & Conservation

STEAM Activity: 9th – 12th grade



Title: Meeting Energy Needs for All

Objective: Students will explore energy burdens and its overlap with environmental justice and identify solutions taking place at a local level. Students will write a persuasive proposal outlining their plan for reducing energy burdens and build resilience based on research.

Materials: Computer or Article printouts

Estimated Time Needed: 120 minutes

Vocabulary:

energy burden - A household is considered energy burdened when energy costs exceed six percent of household income.

environmental justice – The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies.

Procedures:

1. Students read the following articles on energy burdens (suggested: use the [Jigsaw strategy](#)):
 - a. [Environmental Justice Perspective](#),
 - b. [Energy Burdens](#),
 - c. [Energy Burdens in Miami](#)
2. As a class discuss findings and how energy needs relate to environmental justice.
3. Students research Miami's plans to reduce energy burdens:
 - a. [Create Multiple Benefits through Equitable Climate Action](#) (Catalyst Miami)
 - b. [Housing Resiliency - Cost-Benefit Analysis](#) (UM)
 - c. [City of Miami Greenhouse Gas Reduction Plan and Pathway to Carbon Neutrality by 2050](#) (pg. 31-33)
4. Students use the [Department of Energy tool: Low-Income Energy Affordability Data](#) to see energy burden data in their area or area of interest.
5. Students write a persuasive proposal outlining their plan for reducing energy burdens and build resilience based on research. For more on proposal writing see [basic components of proposals](#)

Guiding Questions:

- How will climate change affect energy burdens?
- What are leading causes of energy burdens?
- What can be done to reduce energy burdens?
- How can renewables reduce energy burdens? Hint: Solar is now the cheapest electricity available. Solar systems have a lifetime of at least 25-years. Making this technology a long-term investment with a great return on investment and can also be a wealth building strategy for solar homeowners.
- How can energy-burdened households access alternative financing for energy efficiency upgrades and solar energy?
- What does it mean to build resilience in terms of climate change?

Evaluation: Submit examples of written proposal of methods to reduce energy burdens and build resilience



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Additional Resources:

- [Chatham University: Energy and Class Justice](#)
- [Low Income Community Solutions](#)
- [30 Million Solar Homes: Save money, create jobs, address energy injustice, and protect our climate](#)
- [Energy Burden: What It Is and how renewables can help](#)
- [Solar Energy and Loan Fund](#)
- [Department of Energy: Low-Income Energy Affordability Data: Mapping and table tool](#) (zoom into state, counties and cities to see how it changes.)

Benchmarks:

Science

- SC.912.E.6.6 Analyze past, present, and potential future consequences to the environment
- SC.912.E.7.1 Analyze the movement of matter and energy
- SC.912.L.17.11 Evaluate the costs and benefits of renewable and nonrenewable resources
- SC.912.L.17.15 Discuss the effects of technology on environmental quality.

Language Arts

- LAFS.910.WHST.1.1 Write arguments focused on discipline-specific content
- LAFS.1112.WHST.1.1 Write arguments focused on discipline-specific content
- LAFS.1112.W.1.1 Write arguments to support claims
- ELA.11.C.1.3 Write literary analysis to support claims
- ELA.12.C.1.3 Write literary analysis to support claims
- ELA.12.R.2.4 Compare the development of multiple arguments in related text