

Energy Investigations

Grade Levels: 4, 7–8

Program Description:

Energy is both in the news and in the Massachusetts Framework. This award-winning curriculum will help you and your students understand where our energy comes from in Massachusetts and how it is generated. You will explore both renewable and non-renewable energy sources and generate electricity using a simple generator, solar collectors, mini-wind mills (turbines), and water wheels (turbines). There is an emphasis on sustainable technologies and carbon emissions, and making the connection between human activities and climate change.

Massachusetts Curriculum Standards:

Grade 4: Earth and Space Sciences

ESS3. Earth and Human Activity

4-ESS3-1. Obtain information to describe that energy and fuels humans use are derived from natural resources and that some energy and fuel sources are renewable and some are not.

Grade 4: Physical Science

PS3. Energy

4-PS3-2. Make observations to show that energy can be transferred from place to place by sound, light, heat, and electric currents.

Grade 4: Technology/Engineering

ETS1. Engineering Design

4.3-5-ETS1-3. Plan and carry out tests of one or more design features of a given model or prototype in which variables are controlled and failure points are considered to identify which features need to be improved. Apply the results of tests to redesign a model or prototype.

4.3-5-ETS1-5(MA). Evaluate relevant design features that must be considered in building a model or prototype of a solution to a given design problem.

Grade 7: Earth and Space Sciences

ESS3. Earth and Human Activity

7.MS-ESS3-4. Construct an argument supported by evidence that human activities and technologies can mitigate the impact of increases in human population and per capita consumption of natural resources on the environment.



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Grade 7: Technology/Engineering

ETS1. Engineering Design

7.MS-ETS1-2. Evaluate competing solutions to a given design problem using a decision matrix to determine how well each meets the criteria and constraints of the problem. Use a model of each solution to evaluate how variations in one or more design features, including size, shape, weight, or cost, may affect the function or effectiveness of the solution.

7.MS-ETS1-4. Generate and analyze data from iterative testing and modification of a proposed object, tool, or process to optimize the object, tool, or process for its intended purpose.

7.MS-ETS1-7(MA). Construct a prototype of a solution to a given design problem.

Grade 8: Earth and Space Sciences

ESS3. Earth and Human Activity

8.MS-ESS3-5. Examine and interpret data to describe the role that human activities have played in causing the rise in global temperatures over the past century.



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