

Main Criteria: National Theatre for Children

Secondary Criteria: Pennsylvania Core and Academic Standards, Next Generation Science Standards (NGSS)

Subject: Science

Grades: 3, 4, 5

National Theatre for Children

How electricity is made

Next Generation Science Standards (NGSS)

Science

Grade 4 - Adopted: 2013

STRAND	NGSS.4-PS.	PHYSICAL SCIENCE
TITLE	4-PS3.	Energy
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-PS3-2.	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
STRAND	NGSS.4-ESS.	EARTH AND SPACE SCIENCE
TITLE	4-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-ESS3-1.	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Pennsylvania Core and Academic Standards

Science

Grade 3 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.3.A2.	Identify that some systems are found in nature and some systems are made by humans.
DESCRIPTOR / STANDARD	3.4.3.A3.	Identify how the study of technology uses many of the same ideas and skills as many other subjects.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.3.B1.	Describe how using technology can be good or bad.
DESCRIPTOR / STANDARD	3.4.3.B4.	Illustrate how people have made tools to provide food, clothing, and shelter.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.3.E1.	Identify the technologies that support and improve quality of life.

Pennsylvania Core and Academic Standards

Science

Grade 4 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.2.	Physical Sciences: Chemistry and Physics
STANDARD	3.2.B.	Physics
DESCRIPTOR / STANDARD	3.2.4.B2.	Identify types of energy and their ability to be stored and changed from one form to another.
DESCRIPTOR / STANDARD	3.2.4.B6.	(ENERGY) Give examples of how energy can be transformed from one form to another.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.4.A1.	Understand that tools, materials, and skills are used to make things and carry out tasks.
DESCRIPTOR / STANDARD	3.4.4.A3.	Describe how various relationships exist between technology and other fields.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.4.B1.	Describe how technology affects humans in various ways.
DESCRIPTOR / STANDARD	3.4.4.B2.	Explain how the use of technology affects the environment in good and bad ways.
DESCRIPTOR / STANDARD	3.4.4.B3.	Explain why new technologies are developed and old ones are improved in terms of needs and wants.
DESCRIPTOR / STANDARD	3.4.4.B4.	Describe how the history of civilization is linked closely to technological development.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.4.D3.	Investigate and assess the influence of a specific technology or system on the individual, family, community, and environment.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.4.E3.	Identify types of energy and the importance of energy conservation.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment

STANDARD	4.5.4.A.	Identify how people use natural resources in sustainable and non-sustainable ways.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.4.D.	Describe a waste stream.
DESCRIPTOR / STANDARD	4.5.4.D.3	Describe how everyday activities may affect the environment.

Pennsylvania Core and Academic Standards

Science

Grade 5 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.SI.	Science as Inquiry
STANDARD AREA / STATEMENT	SI.6.	Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories.
STANDARD AREA / STATEMENT	SI.7.	Analyze alternative explanations and understanding that science advances through legitimate skepticism.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.2.	Physical Sciences: Chemistry and Physics
STANDARD	3.2.B.	Physics
DESCRIPTOR / STANDARD	3.2.5.B4 b.	Demonstrate how electromagnets can be made and used.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.5.A1.	Explain how people use tools and techniques to help them do things.
DESCRIPTOR / STANDARD	3.4.5.A3.	Describe how technologies are often combined.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.5.B1.	Explain how the use of technology can have unintended consequences.
DESCRIPTOR / STANDARD	3.4.5.B4.	Identify how the way people live and work has changed history in terms of technology.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.C.	Technology and Engineering Design
DESCRIPTOR / STANDARD	3.4.5.C3.	Identify how invention and innovation are creative ways to turn ideas into real things.
SUBJECT /	PA.3.	Science and Technology and Engineering Education

STANDARD AREA		
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.5.D3.	Determine if the human use of a product or system creates positive or negative results.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.5.E3.	Explain how tools, machines, products, and systems use energy in order to do work.

How energy is used unwisely

Next Generation Science Standards (NGSS)

Science

Grade 4 - Adopted: 2013

STRAND	NGSS.4-PS.	PHYSICAL SCIENCE
TITLE	4-PS3.	Energy
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-PS3-2.	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
STRAND	NGSS.4-ESS.	EARTH AND SPACE SCIENCE
TITLE	4-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-ESS3-1.	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Next Generation Science Standards (NGSS)

Science

Grade 5 - Adopted: 2013

STRAND	NGSS.5-ESS.	EARTH AND SPACE SCIENCE
TITLE	5-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Pennsylvania Core and Academic Standards

Science

Grade 3 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.3.A2.	Identify that some systems are found in nature and some systems are made by humans.
DESCRIPTOR / STANDARD	3.4.3.A3.	Identify how the study of technology uses many of the same ideas and skills as many other subjects.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.3.B1.	Describe how using technology can be good or bad.
DESCRIPTOR / STANDARD	3.4.3.B4.	Illustrate how people have made tools to provide food, clothing, and shelter.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.3.E1.	Identify the technologies that support and improve quality of life.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.3.B.	Identify local natural resources.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.3.A.	Identify resources humans take from the environment for their survival.

Pennsylvania Core and Academic Standards

Science

Grade 4 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.4.A1.	Understand that tools, materials, and skills are used to make things and carry out tasks.
DESCRIPTOR / STANDARD	3.4.4.A3.	Describe how various relationships exist between technology and other fields.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.4.B1.	Describe how technology affects humans in various ways.
DESCRIPTOR / STANDARD	3.4.4.B2.	Explain how the use of technology affects the environment in good and bad ways.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD	3.4.	Technology and Engineering Education

AREA / STATEMENT		
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.4.D3.	Investigate and assess the influence of a specific technology or system on the individual, family, community, and environment.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.4.E3.	Identify types of energy and the importance of energy conservation.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.A.	Identify ways humans depend on natural resources for survival.
DESCRIPTOR / STANDARD	4.3.4.A.1.	Identify resources used to provide humans with energy, food, employment, housing and water.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.B.	Identify the geographic origins of various natural resources.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.4.A.	Identify how people use natural resources in sustainable and non-sustainable ways.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.4.D.	Describe a waste stream.
DESCRIPTOR / STANDARD	4.5.4.D.3.	Describe how everyday activities may affect the environment.

Pennsylvania Core and Academic Standards

Science

Grade 5 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.3.	Earth and Space Sciences
STANDARD	3.3.A.	Earth Structure, Processes and Cycles
DESCRIPTOR / STANDARD	3.3.5.A2.	Describe the usefulness of Earth's physical resources as raw materials for the human made world.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education

STATEMENT		
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.5.A1.	Explain how people use tools and techniques to help them do things.
DESCRIPTOR / STANDARD	3.4.5.A3.	Describe how technologies are often combined.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.5.B1.	Explain how the use of technology can have unintended consequences.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.5.D3.	Determine if the human use of a product or system creates positive or negative results.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.5.E3.	Explain how tools, machines, products, and systems use energy in order to do work.

How we use natural resources

Next Generation Science Standards (NGSS)

Science

Grade 4 - Adopted: 2013

STRAND	NGSS.4-ESS.	EARTH AND SPACE SCIENCE
TITLE	4-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-ESS3-1.	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Pennsylvania Core and Academic Standards

Science

Grade 3 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.3.A2.	Identify that some systems are found in nature and some systems are made by humans.
DESCRIPTOR / STANDARD	3.4.3.A3.	Identify how the study of technology uses many of the same ideas and skills as many other subjects.
SUBJECT / STANDARD	PA.3.	Science and Technology and Engineering Education

AREA		
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.3.B1.	Describe how using technology can be good or bad.
DESCRIPTOR / STANDARD	3.4.3.B4.	Illustrate how people have made tools to provide food, clothing, and shelter.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.3.E1.	Identify the technologies that support and improve quality of life.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.3.B.	Identify local natural resources.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.3.A.	Identify resources humans take from the environment for their survival.

Pennsylvania Core and Academic Standards

Science

Grade 4 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.3.	Earth and Space Sciences
STANDARD	3.3.A.	Earth Structure, Processes and Cycles
DESCRIPTOR / STANDARD	3.3.4.A2.	Identify basic properties and uses of Earth's materials including rocks, soils, water, and gases of the atmosphere.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.4.A1.	Understand that tools, materials, and skills are used to make things and carry out tasks.
DESCRIPTOR / STANDARD	3.4.4.A3.	Describe how various relationships exist between technology and other fields.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society

DESCRIPTOR / STANDARD	3.4.4.B1.	Describe how technology affects humans in various ways.
DESCRIPTOR / STANDARD	3.4.4.B2.	Explain how the use of technology affects the environment in good and bad ways.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.4.D3.	Investigate and assess the influence of a specific technology or system on the individual, family, community, and environment.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.4.E3.	Identify types of energy and the importance of energy conservation.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.A.	Identify ways humans depend on natural resources for survival.
DESCRIPTOR / STANDARD	4.3.4.A.1.	Identify resources used to provide humans with energy, food, employment, housing and water.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.B.	Identify the geographic origins of various natural resources.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.4.D.	Describe a waste stream.
DESCRIPTOR / STANDARD	4.5.4.D.3.	Describe how everyday activities may affect the environment.

Pennsylvania Core and Academic Standards

Science

Grade 5 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.3.	Earth and Space Sciences
STANDARD	3.3.A.	Earth Structure, Processes and Cycles
DESCRIPTOR / STANDARD	3.3.5.A2.	Describe the usefulness of Earth's physical resources as raw materials for the human made world.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD	3.4.	Technology and Engineering Education

AREA / STATEMENT		
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.5.A1.	Explain how people use tools and techniques to help them do things.
DESCRIPTOR / STANDARD	3.4.5.A3.	Describe how technologies are often combined.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.5.B1.	Explain how the use of technology can have unintended consequences.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.5.D3.	Determine if the human use of a product or system creates positive or negative results.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.5.E3.	Explain how tools, machines, products, and systems use energy in order to do work.

The science of energy and technology

Next Generation Science Standards (NGSS)

Science

Grade 4 - Adopted: 2013

STRAND	NGSS.4-PS.	PHYSICAL SCIENCE
TITLE	4-PS3.	Energy
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-PS3-2.	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
STRAND	NGSS.4-ESS.	EARTH AND SPACE SCIENCE
TITLE	4-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-ESS3-1.	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Pennsylvania Core and Academic Standards

Science

Grade 3 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.2.	Physical Sciences: Chemistry and Physics

STANDARD	3.2.B.	Physics
DESCRIPTOR / STANDARD	3.2.3.B2a	Explore energy's ability to cause motion or create change.
DESCRIPTOR / STANDARD	3.2.3.B2b	Explore how energy can be found in moving objects, light, sound, and heat.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.3.A2.	Identify that some systems are found in nature and some systems are made by humans.
DESCRIPTOR / STANDARD	3.4.3.A3.	Identify how the study of technology uses many of the same ideas and skills as many other subjects.
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DESCRIPTOR / STANDARD	3.4.3.B1.	Describe how using technology can be good or bad.
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STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.3.E1.	Identify the technologies that support and improve quality of life.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.3.B.	Identify local natural resources.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.3.A.	Identify resources humans take from the environment for their survival.

Pennsylvania Core and Academic Standards

Science

Grade 4 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.2.	Physical Sciences: Chemistry and Physics
STANDARD	3.2.B.	Physics
DESCRIPTOR / STANDARD	3.2.4.B2.	Identify types of energy and their ability to be stored and changed from one form to another.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.4.A1.	Understand that tools, materials, and skills are used to make things and carry out tasks.
DESCRIPTOR / STANDARD	3.4.4.A3.	Describe how various relationships exist between technology and other fields.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.4.B1.	Describe how technology affects humans in various ways.
DESCRIPTOR / STANDARD	3.4.4.B2.	Explain how the use of technology affects the environment in good and bad ways.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.4.D3.	Investigate and assess the influence of a specific technology or system on the individual, family, community, and environment.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
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DESCRIPTOR / STANDARD	3.4.4.E3.	Identify types of energy and the importance of energy conservation.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.A.	Identify ways humans depend on natural resources for survival.
DESCRIPTOR / STANDARD	4.3.4.A.1.	Identify resources used to provide humans with energy, food, employment, housing and water.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.B.	Identify the geographic origins of various natural resources.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.4.D.	Describe a waste stream.
DESCRIPTOR /	4.5.4.D.3	Describe how everyday activities may affect the environment.

STANDARD	.	
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Pennsylvania Core and Academic Standards

Science

Grade 5 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.3.	Earth and Space Sciences
STANDARD	3.3.A.	Earth Structure, Processes and Cycles
DESCRIPTOR / STANDARD	3.3.5.A2.	Describe the usefulness of Earth's physical resources as raw materials for the human made world.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.5.A1.	Explain how people use tools and techniques to help them do things.
DESCRIPTOR / STANDARD	3.4.5.A3.	Describe how technologies are often combined.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.5.B1.	Explain how the use of technology can have unintended consequences.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.5.D3.	Determine if the human use of a product or system creates positive or negative results.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.5.E3.	Explain how tools, machines, products, and systems use energy in order to do work.

The science of natural resources

Next Generation Science Standards (NGSS)

Science

Grade 4 - Adopted: 2013

STRAND	NGSS.4-ESS.	EARTH AND SPACE SCIENCE
TITLE	4-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:

PERFORMANCE EXPECTATION	4-ESS3-1.	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
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Pennsylvania Core and Academic Standards

Science

Grade 3 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.3.A2.	Identify that some systems are found in nature and some systems are made by humans.
DESCRIPTOR / STANDARD	3.4.3.A3.	Identify how the study of technology uses many of the same ideas and skills as many other subjects.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.3.B1.	Describe how using technology can be good or bad.
DESCRIPTOR / STANDARD	3.4.3.B4.	Illustrate how people have made tools to provide food, clothing, and shelter.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.3.E1.	Identify the technologies that support and improve quality of life.

SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.3.B.	Identify local natural resources.

SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.3.A.	Identify resources humans take from the environment for their survival.

Pennsylvania Core and Academic Standards

Science

Grade 4 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.3.	Earth and Space Sciences
STANDARD	3.3.A.	Earth Structure, Processes and Cycles
DESCRIPTOR /	3.3.4.A2.	Identify basic properties and uses of Earth's materials including rocks, soils, water,

STANDARD		and gases of the atmosphere.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.4.A1.	Understand that tools, materials, and skills are used to make things and carry out tasks.
DESCRIPTOR / STANDARD	3.4.4.A3.	Describe how various relationships exist between technology and other fields.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.4.B1.	Describe how technology affects humans in various ways.
DESCRIPTOR / STANDARD	3.4.4.B2.	Explain how the use of technology affects the environment in good and bad ways.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.4.D3.	Investigate and assess the influence of a specific technology or system on the individual, family, community, and environment.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.4.E3.	Identify types of energy and the importance of energy conservation.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.A.	Identify ways humans depend on natural resources for survival.
DESCRIPTOR / STANDARD	4.3.4.A.1.	Identify resources used to provide humans with energy, food, employment, housing and water.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.B.	Identify the geographic origins of various natural resources.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.4.D.	Describe a waste stream.

DESCRIPTOR / STANDARD	4.5.4.D.3 .	Describe how everyday activities may affect the environment.
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Pennsylvania Core and Academic Standards

Science

Grade 5 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.3.	Earth and Space Sciences
STANDARD	3.3.A.	Earth Structure, Processes and Cycles
DESCRIPTOR / STANDARD	3.3.5.A2.	Describe the usefulness of Earth's physical resources as raw materials for the human made world.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.5.A1.	Explain how people use tools and techniques to help them do things.
DESCRIPTOR / STANDARD	3.4.5.A3.	Describe how technologies are often combined.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.5.B1.	Explain how the use of technology can have unintended consequences.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.5.D3.	Determine if the human use of a product or system creates positive or negative results.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.5.E3.	Explain how tools, machines, products, and systems use energy in order to do work.

The uses of electricity

Next Generation Science Standards (NGSS)

Science

Grade 4 - Adopted: 2013

STRAND	NGSS.4-ESS.	EARTH AND SPACE SCIENCE
TITLE	4-ESS3.	Earth and Human Activity

		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-ESS3-1.	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Next Generation Science Standards (NGSS)

Science

Grade 5 - Adopted: 2013

STRAND	NGSS.5-ESS.	EARTH AND SPACE SCIENCE
TITLE	5-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Pennsylvania Core and Academic Standards

Science

Grade 3 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.2.	Physical Sciences: Chemistry and Physics
STANDARD	3.2.B.	Physics
DESCRIPTOR / STANDARD	3.2.3.B6.	(ENERGY) Recognize that light from the sun is an important source of energy for living and nonliving systems and some source of energy is needed for all organisms to stay alive and grow.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.3.A2.	Identify that some systems are found in nature and some systems are made by humans.
DESCRIPTOR / STANDARD	3.4.3.A3.	Identify how the study of technology uses many of the same ideas and skills as many other subjects.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.3.B1.	Describe how using technology can be good or bad.
DESCRIPTOR / STANDARD	3.4.3.B4.	Illustrate how people have made tools to provide food, clothing, and shelter.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.3.E1.	Identify the technologies that support and improve quality of life.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources

STATEMENT		
STANDARD	4.3.3.B.	Identify local natural resources.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.3.A.	Identify resources humans take from the environment for their survival.

Pennsylvania Core and Academic Standards

Science

Grade 4 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.4.A1.	Understand that tools, materials, and skills are used to make things and carry out tasks.
DESCRIPTOR / STANDARD	3.4.4.A3.	Describe how various relationships exist between technology and other fields.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.4.B1.	Describe how technology affects humans in various ways.
DESCRIPTOR / STANDARD	3.4.4.B2.	Explain how the use of technology affects the environment in good and bad ways.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.4.D3.	Investigate and assess the influence of a specific technology or system on the individual, family, community, and environment.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.4.E3.	Identify types of energy and the importance of energy conservation.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.A.	Identify ways humans depend on natural resources for survival.
DESCRIPTOR / STANDARD	4.3.4.A.1.	Identify resources used to provide humans with energy, food, employment, housing and water.
SUBJECT /	PA.4.	Environment and Ecology

STANDARD AREA		
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.B.	Identify the geographic origins of various natural resources.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.4.A.	Identify how people use natural resources in sustainable and non-sustainable ways.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.4.D.	Describe a waste stream.
DESCRIPTOR / STANDARD	4.5.4.D.3	Describe how everyday activities may affect the environment.

Pennsylvania Core and Academic Standards

Science

Grade 5 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.SI.	Science as Inquiry
STANDARD AREA / STATEMENT	SI.6.	Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.3.	Earth and Space Sciences
STANDARD	3.3.A.	Earth Structure, Processes and Cycles
DESCRIPTOR / STANDARD	3.3.5.A2.	Describe the usefulness of Earth's physical resources as raw materials for the human made world.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.5.A1.	Explain how people use tools and techniques to help them do things.
DESCRIPTOR / STANDARD	3.4.5.A3.	Describe how technologies are often combined.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.5.B1.	Explain how the use of technology can have unintended consequences.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education

STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.5.D3.	Determine if the human use of a product or system creates positive or negative results.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.5.E3.	Explain how tools, machines, products, and systems use energy in order to do work.

What YOU can do to conserve energy

Next Generation Science Standards (NGSS)

Science

Grade 4 - Adopted: 2013

STRAND	NGSS.4-ESS.	EARTH AND SPACE SCIENCE
TITLE	4-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-ESS3-1.	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Next Generation Science Standards (NGSS)

Science

Grade 5 - Adopted: 2013

STRAND	NGSS.5-ESS.	EARTH AND SPACE SCIENCE
TITLE	5-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Pennsylvania Core and Academic Standards

Science

Grade 3 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.3.A2.	Identify that some systems are found in nature and some systems are made by humans.
DESCRIPTOR / STANDARD	3.4.3.A3.	Identify how the study of technology uses many of the same ideas and skills as many other subjects.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.3.B1.	Describe how using technology can be good or bad.

DESCRIPTOR / STANDARD	3.4.3.B4.	Illustrate how people have made tools to provide food, clothing, and shelter.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.3.E1.	Identify the technologies that support and improve quality of life.

Pennsylvania Core and Academic Standards

Science

Grade 4 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.4.A1.	Understand that tools, materials, and skills are used to make things and carry out tasks.
DESCRIPTOR / STANDARD	3.4.4.A3.	Describe how various relationships exist between technology and other fields.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.4.B1.	Describe how technology affects humans in various ways.
DESCRIPTOR / STANDARD	3.4.4.B2.	Explain how the use of technology affects the environment in good and bad ways.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.4.D3.	Investigate and assess the influence of a specific technology or system on the individual, family, community, and environment.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.4.E3.	Identify types of energy and the importance of energy conservation.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.4.A.	Identify how people use natural resources in sustainable and non-sustainable ways.
STANDARD	4.5.4.C.	Describe how human activities affect the environment.

SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.4.D.	Describe a waste stream.
DESCRIPTOR / STANDARD	4.5.4.D.3.	Describe how everyday activities may affect the environment.

Pennsylvania Core and Academic Standards

Science

Grade 5 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.5.A1.	Explain how people use tools and techniques to help them do things.
DESCRIPTOR / STANDARD	3.4.5.A3.	Describe how technologies are often combined.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.5.B1.	Explain how the use of technology can have unintended consequences.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.5.D3.	Determine if the human use of a product or system creates positive or negative results.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.5.E3.	Explain how tools, machines, products, and systems use energy in order to do work.

What are energy and electricity

Next Generation Science Standards (NGSS)

Science

Grade 4 - Adopted: 2013

STRAND	NGSS.4-PS.	PHYSICAL SCIENCE
TITLE	4-PS3.	Energy
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-PS3-2.	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

Pennsylvania Core and Academic Standards

Science

Grade 3 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.2.	Physical Sciences: Chemistry and Physics
STANDARD	3.2.B.	Physics
DESCRIPTOR / STANDARD	3.2.3.B2a	Explore energy's ability to cause motion or create change.
DESCRIPTOR / STANDARD	3.2.3.B2b	Explore how energy can be found in moving objects, light, sound, and heat.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.3.A2.	Identify that some systems are found in nature and some systems are made by humans.
DESCRIPTOR / STANDARD	3.4.3.A3.	Identify how the study of technology uses many of the same ideas and skills as many other subjects.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.3.B4.	Illustrate how people have made tools to provide food, clothing, and shelter.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.3.E1.	Identify the technologies that support and improve quality of life.

Pennsylvania Core and Academic Standards

Science

Grade 4 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.2.	Physical Sciences: Chemistry and Physics
STANDARD	3.2.B.	Physics
DESCRIPTOR / STANDARD	3.2.4.B2.	Identify types of energy and their ability to be stored and changed from one form to another.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education

STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.4.A1.	Understand that tools, materials, and skills are used to make things and carry out tasks.
DESCRIPTOR / STANDARD	3.4.4.A3.	Describe how various relationships exist between technology and other fields.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.4.B1.	Describe how technology affects humans in various ways.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.4.D3.	Investigate and assess the influence of a specific technology or system on the individual, family, community, and environment.

Pennsylvania Core and Academic Standards

Science

Grade 5 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.5.A1.	Explain how people use tools and techniques to help them do things.
DESCRIPTOR / STANDARD	3.4.5.A3.	Describe how technologies are often combined.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.5.B1.	Explain how the use of technology can have unintended consequences.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.5.D3.	Determine if the human use of a product or system creates positive or negative results.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World

DESCRIPTOR / STANDARD	3.4.5.E3.	Explain how tools, machines, products, and systems use energy in order to do work.
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What are energy resources

Next Generation Science Standards (NGSS)

Science

Grade 4 - Adopted: 2013

STRAND	NGSS.4-PS.	PHYSICAL SCIENCE
TITLE	4-PS3.	Energy
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-PS3-2.	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
STRAND	NGSS.4-ESS.	EARTH AND SPACE SCIENCE
TITLE	4-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-ESS3-1.	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Pennsylvania Core and Academic Standards

Science

Grade 3 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.3.A2.	Identify that some systems are found in nature and some systems are made by humans.
DESCRIPTOR / STANDARD	3.4.3.A3.	Identify how the study of technology uses many of the same ideas and skills as many other subjects.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.3.B1.	Describe how using technology can be good or bad.
DESCRIPTOR / STANDARD	3.4.3.B4.	Illustrate how people have made tools to provide food, clothing, and shelter.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.3.E1.	Identify the technologies that support and improve quality of life.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.3.B.	Identify local natural resources.

SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.3.A.	Identify resources humans take from the environment for their survival.

Pennsylvania Core and Academic Standards

Science

Grade 4 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.3.	Earth and Space Sciences
STANDARD	3.3.A.	Earth Structure, Processes and Cycles
DESCRIPTOR / STANDARD	3.3.4.A2.	Identify basic properties and uses of Earth's materials including rocks, soils, water, and gases of the atmosphere.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.4.A1.	Understand that tools, materials, and skills are used to make things and carry out tasks.
DESCRIPTOR / STANDARD	3.4.4.A3.	Describe how various relationships exist between technology and other fields.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.4.B1.	Describe how technology affects humans in various ways.
DESCRIPTOR / STANDARD	3.4.4.B2.	Explain how the use of technology affects the environment in good and bad ways.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.4.D3.	Investigate and assess the influence of a specific technology or system on the individual, family, community, and environment.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.4.E3.	Identify types of energy and the importance of energy conservation.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology

STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.A.	Identify ways humans depend on natural resources for survival.
DESCRIPTOR / STANDARD	4.3.4.A.1.	Identify resources used to provide humans with energy, food, employment, housing and water.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.B.	Identify the geographic origins of various natural resources.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.4.A.	Identify how people use natural resources in sustainable and non-sustainable ways.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.4.D.	Describe a waste stream.
DESCRIPTOR / STANDARD	4.5.4.D.3.	Describe how everyday activities may affect the environment.

Pennsylvania Core and Academic Standards

Science

Grade 5 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.3.	Earth and Space Sciences
STANDARD	3.3.A.	Earth Structure, Processes and Cycles
DESCRIPTOR / STANDARD	3.3.5.A2.	Describe the usefulness of Earth's physical resources as raw materials for the human made world.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.5.A1.	Explain how people use tools and techniques to help them do things.
DESCRIPTOR / STANDARD	3.4.5.A3.	Describe how technologies are often combined.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.5.B1.	Explain how the use of technology can have unintended consequences.
SUBJECT / STANDARD	PA.3.	Science and Technology and Engineering Education

AREA		
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.5.D3.	Determine if the human use of a product or system creates positive or negative results.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.5.E3.	Explain how tools, machines, products, and systems use energy in order to do work.

What is and how to be Energy Efficient

Next Generation Science Standards (NGSS)

Science

Grade 4 - Adopted: 2013

STRAND	NGSS.4-PS.	PHYSICAL SCIENCE
TITLE	4-PS3.	Energy
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-PS3-2.	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
STRAND	NGSS.4-ESS.	EARTH AND SPACE SCIENCE
TITLE	4-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	4-ESS3-1.	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Next Generation Science Standards (NGSS)

Science

Grade 5 - Adopted: 2013

STRAND	NGSS.5-ESS.	EARTH AND SPACE SCIENCE
TITLE	5-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Pennsylvania Core and Academic Standards

Science

Grade 3 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.3.A2.	Identify that some systems are found in nature and some systems are made by humans.
DESCRIPTOR / STANDARD	3.4.3.A3.	Identify how the study of technology uses many of the same ideas and skills as many other subjects.
SUBJECT /	PA.3.	Science and Technology and Engineering Education

STANDARD AREA		
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.3.B4.	Illustrate how people have made tools to provide food, clothing, and shelter.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.3.E1.	Identify the technologies that support and improve quality of life.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.3.B.	Identify local natural resources.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.3.A.	Identify resources humans take from the environment for their survival.

Pennsylvania Core and Academic Standards

Science

Grade 4 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.4.A1.	Understand that tools, materials, and skills are used to make things and carry out tasks.
DESCRIPTOR / STANDARD	3.4.4.A3.	Describe how various relationships exist between technology and other fields.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society
DESCRIPTOR / STANDARD	3.4.4.B1.	Describe how technology affects humans in various ways.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.4.D3.	Investigate and assess the influence of a specific technology or system on the individual, family, community, and environment.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.4.E3.	Identify types of energy and the importance of energy conservation.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.A.	Identify ways humans depend on natural resources for survival.
DESCRIPTOR / STANDARD	4.3.4.A.1.	Identify resources used to provide humans with energy, food, employment, housing and water.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.3.	Natural Resources
STANDARD	4.3.4.B.	Identify the geographic origins of various natural resources.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.5.	Humans and the Environment
STANDARD	4.5.4.A.	Identify how people use natural resources in sustainable and non-sustainable ways.

Pennsylvania Core and Academic Standards

Science

Grade 5 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.3.	Earth and Space Sciences
STANDARD	3.3.A.	Earth Structure, Processes and Cycles
DESCRIPTOR / STANDARD	3.3.5.A2.	Describe the usefulness of Earth's physical resources as raw materials for the human made world.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology
DESCRIPTOR / STANDARD	3.4.5.A1.	Explain how people use tools and techniques to help them do things.
DESCRIPTOR / STANDARD	3.4.5.A3.	Describe how technologies are often combined.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.B.	Technology and Society

DESCRIPTOR / STANDARD	3.4.5.B1.	Explain how the use of technology can have unintended consequences.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World
DESCRIPTOR / STANDARD	3.4.5.D3.	Determine if the human use of a product or system creates positive or negative results.
SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World
DESCRIPTOR / STANDARD	3.4.5.E3.	Explain how tools, machines, products, and systems use energy in order to do work.