

**Main Criteria:** National Theatre for Children  
**Secondary Criteria:** Next Generation Science Standards (NGSS)  
**Subject:** Science  
**Grades:** 9, 10, 11, 12

## National Theatre for Children

How energy is used unwisely

Next Generation Science Standards (NGSS)

Science

Grade 9 - Adopted: 2013

STRAND	NGSS.HS-ESS.	EARTH AND SPACE SCIENCE
TITLE	HS-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE EXPECTATION	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
PERFORMANCE EXPECTATION	HS-ESS3-3.	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
PERFORMANCE EXPECTATION	HS-ESS3-4.	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
STRAND	NGSS.HS-ETS.	ENGINEERING DESIGN
TITLE	HS-ETS1.	Engineering Design
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
PERFORMANCE EXPECTATION	HS-ETS1-3.	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

Next Generation Science Standards (NGSS)

Science

Grade 10 - Adopted: 2013

STRAND	NGSS.HS-ESS.	EARTH AND SPACE SCIENCE
TITLE	HS-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE EXPECTATION	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
PERFORMANCE EXPECTATION	HS-ESS3-3.	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
PERFORMANCE EXPECTATION	HS-ESS3-4.	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
STRAND	NGSS.HS-ETS.	ENGINEERING DESIGN
TITLE	HS-ETS1.	Engineering Design
		Students who demonstrate understanding can:

PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
PERFORMANCE EXPECTATION	HS-ETS1-3.	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

**Next Generation Science Standards (NGSS)**  
**Science**

Grade 11 - Adopted: 2013

<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE EXPECTATION	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
PERFORMANCE EXPECTATION	HS-ESS3-3.	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
PERFORMANCE EXPECTATION	HS-ESS3-4.	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
<b>STRAND</b>	<b>NGSS.HS-ETS.</b>	<b>ENGINEERING DESIGN</b>
<b>TITLE</b>	<b>HS-ETS1.</b>	<b>Engineering Design</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
PERFORMANCE EXPECTATION	HS-ETS1-3.	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

**Next Generation Science Standards (NGSS)**  
**Science**

Grade 12 - Adopted: 2013

<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE EXPECTATION	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
PERFORMANCE EXPECTATION	HS-ESS3-3.	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
PERFORMANCE EXPECTATION	HS-ESS3-4.	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
<b>STRAND</b>	<b>NGSS.HS-ETS.</b>	<b>ENGINEERING DESIGN</b>
<b>TITLE</b>	<b>HS-ETS1.</b>	<b>Engineering Design</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
PERFORMANCE EXPECTATION	HS-ETS1-3.	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

How natural gas is engineered to get to you

Next Generation Science Standards (NGSS)

Science

Grade 9 - Adopted: 2013

<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

Next Generation Science Standards (NGSS)

Science

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<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

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Science

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<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

Next Generation Science Standards (NGSS)

Science

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<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

How to conserve and be safe around natural gas

Next Generation Science Standards (NGSS)

Science

Grade 9 - Adopted: 2013

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		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-1.</b>	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-3.</b>	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.

PERFORMANCE EXPECTATION	HS-ESS3-4.	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
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**Science**

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		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-1.</b>	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-3.</b>	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-4.</b>	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-6.</b>	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
<b>STRAND</b>	<b>NGSS.HS-ETS.</b>	<b>ENGINEERING DESIGN</b>
<b>TITLE</b>	<b>HS-ETS1.</b>	<b>Engineering Design</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ETS1-1.</b>	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

How we use natural resources

**Next Generation Science Standards (NGSS)**

**Science**

Grade 9 - Adopted: 2013

<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-1.</b>	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-6.</b>	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
<b>STRAND</b>	<b>NGSS.HS-ETS.</b>	<b>ENGINEERING DESIGN</b>
<b>TITLE</b>	<b>HS-ETS1.</b>	<b>Engineering Design</b>
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**Next Generation Science Standards (NGSS)**

**Science**

Grade 10 - Adopted: 2013

<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-1.</b>	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
STRAND	NGSS.HS-ETS.	ENGINEERING DESIGN
TITLE	HS-ETS1.	Engineering Design
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

**Next Generation Science Standards (NGSS)**

**Science**

Grade **11** - Adopted: **2013**

STRAND	NGSS.HS-ESS.	EARTH AND SPACE SCIENCE
TITLE	HS-ESS3.	Earth and Human Activity
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PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
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PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
STRAND	NGSS.HS-ETS.	ENGINEERING DESIGN
TITLE	HS-ETS1.	Engineering Design
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

**Next Generation Science Standards (NGSS)**

**Science**

Grade **12** - Adopted: **2013**

STRAND	NGSS.HS-ESS.	EARTH AND SPACE SCIENCE
TITLE	HS-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE EXPECTATION	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
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STRAND	NGSS.HS-ETS.	ENGINEERING DESIGN
TITLE	HS-ETS1.	Engineering Design
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PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

The science of energy and technology

**Next Generation Science Standards (NGSS)**

**Science**

Grade **9** - Adopted: **2013**

STRAND	NGSS.HS-PS.	PHYSICAL SCIENCE
TITLE	HS-PS3.	Energy

		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-PS3-1.	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.
STRAND	NGSS.HS-ESS.	EARTH AND SPACE SCIENCE
TITLE	HS-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE EXPECTATION	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
STRAND	NGSS.HS-ETS.	ENGINEERING DESIGN
TITLE	HS-ETS1.	Engineering Design
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

### Next Generation Science Standards (NGSS)

#### Science

Grade 10 - Adopted: 2013

STRAND	NGSS.HS-PS.	PHYSICAL SCIENCE
TITLE	HS-PS3.	Energy
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-PS3-1.	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.
STRAND	NGSS.HS-ESS.	EARTH AND SPACE SCIENCE
TITLE	HS-ESS3.	Earth and Human Activity
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PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
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STRAND	NGSS.HS-ETS.	ENGINEERING DESIGN
TITLE	HS-ETS1.	Engineering Design
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<b>TITLE</b>	<b>HS-ETS1.</b>	<b>Engineering Design</b>
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<b>TITLE</b>	<b>HS-PS3.</b>	<b>Energy</b>
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**The science of natural resources**

**Next Generation Science Standards (NGSS)  
Science**

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**Science**

Grade 12 - Adopted: 2013

STRAND	NGSS.HS-ESS.	EARTH AND SPACE SCIENCE
TITLE	HS-ESS3.	Earth and Human Activity
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced

		human activity.
PERFORMANCE EXPECTATION	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
STRAND	NGSS.HS-ETS.	<b>ENGINEERING DESIGN</b>
TITLE	HS-ETS1.	<b>Engineering Design</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

**What YOU can do to conserve energy**

**Next Generation Science Standards (NGSS)**

**Science**

Grade 9 - Adopted: 2013

STRAND	NGSS.HS-LS.	<b>LIFE SCIENCE</b>
TITLE	HS-LS2.	<b>Ecosystems: Interactions, Energy, and Dynamics</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-LS2-7.	Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
STRAND	NGSS.HS-ESS.	<b>EARTH AND SPACE SCIENCE</b>
TITLE	HS-ESS3.	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE EXPECTATION	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
PERFORMANCE EXPECTATION	HS-ESS3-3.	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
PERFORMANCE EXPECTATION	HS-ESS3-4.	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
STRAND	NGSS.HS-ETS.	<b>ENGINEERING DESIGN</b>
TITLE	HS-ETS1.	<b>Engineering Design</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
PERFORMANCE EXPECTATION	HS-ETS1-3.	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

**Next Generation Science Standards (NGSS)**

**Science**

Grade 10 - Adopted: 2013

STRAND	NGSS.HS-LS.	<b>LIFE SCIENCE</b>
TITLE	HS-LS2.	<b>Ecosystems: Interactions, Energy, and Dynamics</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-LS2-7.	Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
STRAND	NGSS.HS-ESS.	<b>EARTH AND SPACE SCIENCE</b>
TITLE	HS-ESS3.	<b>Earth and Human Activity</b>

		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE EXPECTATION	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
PERFORMANCE EXPECTATION	HS-ESS3-3.	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
PERFORMANCE EXPECTATION	HS-ESS3-4.	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
<b>STRAND</b>	<b>NGSS.HS-ETS.</b>	<b>ENGINEERING DESIGN</b>
<b>TITLE</b>	<b>HS-ETS1.</b>	<b>Engineering Design</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
PERFORMANCE EXPECTATION	HS-ETS1-3.	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

### Next Generation Science Standards (NGSS)

#### Science

Grade 11 - Adopted: 2013

<b>STRAND</b>	<b>NGSS.HS-LS.</b>	<b>LIFE SCIENCE</b>
<b>TITLE</b>	<b>HS-LS2.</b>	<b>Ecosystems: Interactions, Energy, and Dynamics</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-LS2-7.	Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE EXPECTATION	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
PERFORMANCE EXPECTATION	HS-ESS3-3.	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
PERFORMANCE EXPECTATION	HS-ESS3-4.	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
<b>STRAND</b>	<b>NGSS.HS-ETS.</b>	<b>ENGINEERING DESIGN</b>
<b>TITLE</b>	<b>HS-ETS1.</b>	<b>Engineering Design</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
PERFORMANCE EXPECTATION	HS-ETS1-3.	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

### Next Generation Science Standards (NGSS)

#### Science

Grade 12 - Adopted: 2013

<b>STRAND</b>	<b>NGSS.HS-LS.</b>	<b>LIFE SCIENCE</b>
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<b>TITLE</b>	<b>HS-LS2.</b>	<b>Ecosystems: Interactions, Energy, and Dynamics</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-LS2-7.</b>	Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-1.</b>	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-3.</b>	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-4.</b>	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-6.</b>	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
<b>STRAND</b>	<b>NGSS.HS-ETS.</b>	<b>ENGINEERING DESIGN</b>
<b>TITLE</b>	<b>HS-ETS1.</b>	<b>Engineering Design</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ETS1-1.</b>	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ETS1-3.</b>	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

### What are energy resources

#### Next Generation Science Standards (NGSS) Science

Grade 9 - Adopted: 2013

<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-1.</b>	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-6.</b>	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
<b>STRAND</b>	<b>NGSS.HS-ETS.</b>	<b>ENGINEERING DESIGN</b>
<b>TITLE</b>	<b>HS-ETS1.</b>	<b>Engineering Design</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ETS1-1.</b>	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

#### Next Generation Science Standards (NGSS) Science

Grade 10 - Adopted: 2013

<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE</b>	<b>HS-</b>	Construct an explanation based on evidence for how the availability of natural

EXPECTATION	ESS3-1.	resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE EXPECTATION	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
STRAND	NGSS.HS-ETS.	<b>ENGINEERING DESIGN</b>
TITLE	HS-ETS1.	<b>Engineering Design</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

**Next Generation Science Standards (NGSS)**

**Science**

Grade **11** - Adopted: **2013**

STRAND	NGSS.HS-ESS.	<b>EARTH AND SPACE SCIENCE</b>
TITLE	HS-ESS3.	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE EXPECTATION	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
STRAND	NGSS.HS-ETS.	<b>ENGINEERING DESIGN</b>
TITLE	HS-ETS1.	<b>Engineering Design</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

**Next Generation Science Standards (NGSS)**

**Science**

Grade **12** - Adopted: **2013**

STRAND	NGSS.HS-ESS.	<b>EARTH AND SPACE SCIENCE</b>
TITLE	HS-ESS3.	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE EXPECTATION	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
PERFORMANCE EXPECTATION	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
STRAND	NGSS.HS-ETS.	<b>ENGINEERING DESIGN</b>
TITLE	HS-ETS1.	<b>Engineering Design</b>
		Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

What is and how to be Energy Efficient

**Next Generation Science Standards (NGSS)**

**Science**

Grade **9** - Adopted: **2013**

<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-1.</b>	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-3.</b>	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-4.</b>	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
<b>STRAND</b>	<b>NGSS.HS-ETS.</b>	<b>ENGINEERING DESIGN</b>
<b>TITLE</b>	<b>HS-ETS1.</b>	<b>Engineering Design</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ETS1-3.</b>	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

**Next Generation Science Standards (NGSS)**

**Science**

Grade **10** - Adopted: **2013**

<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-1.</b>	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-3.</b>	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-4.</b>	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
<b>STRAND</b>	<b>NGSS.HS-ETS.</b>	<b>ENGINEERING DESIGN</b>
<b>TITLE</b>	<b>HS-ETS1.</b>	<b>Engineering Design</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ETS1-3.</b>	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

**Next Generation Science Standards (NGSS)**

**Science**

Grade **11** - Adopted: **2013**

<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-1.</b>	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-3.</b>	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-4.</b>	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.

<b>STRAND</b>	<b>NGSS.HS-ETS.</b>	<b>ENGINEERING DESIGN</b>
<b>TITLE</b>	<b>HS-ETS1.</b>	<b>Engineering Design</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ETS1-3.</b>	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

**Next Generation Science Standards (NGSS)**

**Science**

Grade 12 - Adopted: 2013

<b>STRAND</b>	<b>NGSS.HS-ESS.</b>	<b>EARTH AND SPACE SCIENCE</b>
<b>TITLE</b>	<b>HS-ESS3.</b>	<b>Earth and Human Activity</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-1.</b>	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-2.</b>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-3.</b>	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ESS3-4.</b>	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
<b>STRAND</b>	<b>NGSS.HS-ETS.</b>	<b>ENGINEERING DESIGN</b>
<b>TITLE</b>	<b>HS-ETS1.</b>	<b>Engineering Design</b>
		Students who demonstrate understanding can:
<b>PERFORMANCE EXPECTATION</b>	<b>HS-ETS1-3.</b>	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.