NYC Department of Environmental Protection: Climate Change Module Standards Connections

New York State K-12 Science Learning Standards

Grade	DEP Lesson	Standard*	Amplify Lesson(s)**
K-2	• Approaching the School Climate Solutions Challenge • Breaking Down OneNYC • Analyzing the Urban Heat Island Effect	• K-2-ETS1-1: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool • K-2-ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem • K-2-ETS1-3: Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	• Sunlight and Weather K.5.4: Investigating Flooding Solutions • Sunlight and Weather K.5.5: Reflecting on Weather and Sunlight • Plant and Animal Relationships 2.1.4: Discovering the Problem in the Reserve • Plant and Animal Relationships 2.1.7: Explaining Why There Are No New Chalta Trees • Plant and Animal Relationships 2.2.5: Why Aren't New Chalta Trees Growing • Changing Landforms 2.3.2: Investigating Differences in Scale • Plant and Animal Relationships 2.3.6: Explaining the Problem in the Reserve
K	• Distinguishing Between Weather and Climate • Recording Weather and Climate • Modeling the Earth's Atmosphere • Analyzing the Urban Heat Island Effect	• K-PS3-1: Make observations to determine the effect of sunlight on Earth's surface. • K-PS3-2: Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area • K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time • K-ESS3-2: Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather	• Sunlight and Weather K.1.1: What is the Weather Like Today • Sunlight and Weather: Introducing Temperature • Sunlight and Weather K.1.4: Weather and Playgrounds • Sunlight and Weather K.2.1: Modeling the Sun Warming Earth's Surface • Sunlight and Weather K.2.2: Learning More about Models • Sunlight and Weather K.2.3: Investigating Sunlight on Earth's Surface • Sunlight and Weather K.2.4: Applying Sunlight Warming on Earth's Surface • Sunlight and Weather K.3.1: Getting Warm in the Sunlight • Sunlight and Weather K.3.2: Discussing Warming Over Time • Sunlight and Weather K.3.3: Showing Ideas About Warming Over Time • Sunlight and Weather K.3.4: Reflecting on Warming Through Time • Sunlight and Weather K.4.1: Modeling Warming of Different Surfaces • Sunlight and Weather K.4.2: Reflecting on Warming of Different Surfaces • Sunlight and Weather K.4.4: Revisiting Sunlight Warming Earth's Surface
K	• Creating the Systems Thinking Web • Understanding Objects with Systems Thinking • Discovering New York City's Water Supply System	• K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive • K-ESS2-2: Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs • K-ESS3-1: Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live • K-ESS3-3: Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment	• Needs of Plants and Animals K.1.2: Science Walk • Needs of Plants and Animals K.1.3 Observing a Place • Needs of Plants and Animals K.1.4 Exploring Animal Needs

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1	• Recording Weather and Climate • Distinguishing Between Weather and Climate	• 1-ESS1-2: Make observations at different times of year to relate the amount of daylight to the time of year.	• Spinning Earth 1.3.3: The Sun's Position in the Sky • Spinning Earth 1.3.4: What Spins • Spinning Earth 1.4.1: Predicting Sun Patterns • Spinning Earth 1.4.3: Explaining the Sun's Repeating Pattern • Spinning Earth 1.4.4: Explaining What Sai Will See • Spinning Earth 1.5.1: A Walk Through the Seasons • Spinning Earth 1.5.2: Exploring and Explaining Daylight in Different Seasons
2	• Navigating New York City's Wastewater System • Placing Climate Change in New York City • Connecting Climate Change to the Water Cycle • Discovering New York City's Water Supply System	• 2-ESS1-1: Use information from several sources to provide evidence that Earth events can occur quickly or slowly • 2-ESS2-1: Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land • 2-ESS2-2: Develop a model to represent the shapes and kinds of land and bodies of water in an area • 2-ESS2-3: Obtain information to identify where water is found on Earth and that it can be solid or liquid	• Plant and Animal Relationships 2.3.4: Diagramming a System • Plant and Animal Relationships 2.3.5: Plant and Animal Interdependence • Changing Landforms 2.3.3: Accumulation of Small Changes • Changing Landforms 2.3.4: Landform Change Over Time
3-5	• Approaching the School Climate Solutions Challenge • Breaking Down OneNYC • Exploring Resiliency with the NPCC • Building Resiliency in New York City • Discovering New York City's Water Supply System • Navigating New York City's Wastewater System	• 3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost • 3-5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem	• Environments and Survival 3.2.8: Sharing and Revising Designs • Environments and Survival 3.3.2: Environment News • Environments and Survival 3.4.5: Presenting Design Arguments • Weather and Climate 3.1.1: Presenting Design Arguments • Weather and Climate 3.1.6: Writing Island Arguments • Weather and Climate 3.2.1: Introducing Line Plots • Weather and Climate 3.2.2: Seeing the World Through Numbers • Weather and Climate 3.2.5: Revisiting Island Arguments • Energy Conversions 4.1.2: Introducing Systems • Energy Conversions 4.1.3: Exploring Systems • Energy Conversions 4.2.3: Energy in the System • The Earth System 5.2.7: Freshwater Collection Systems • The Earth System 5.2.8: Engineering Clean Water • The Earth System 5.3.4: Iterating on Freshwater Collection Systems • Ecosystem Restoration 5.2.6: Why Do Scientists Argue • Ecosystem Restoration 5.3.2: Walk in the Woods
3	• Creating the Systems Thinking Web • Accepting the Anthropocene	• 3-LS2-1: Construct an argument that some animals form groups that help members survive • 3-LS3-2: Use evidence to support the explanation that traits can be influenced by the environment • 3-LS4-3: Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all • 3-LS4-4: Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change	• Inheritance and Traits 3.3.4: The Role of The Environment • Inheritance of Traits: Investigating Sparrow Offspring • Environments and Survival 3.1.4: The Survival Model • Environments and Survival 3.2.3: Investigating Traits and Survival • Environments and Survival 3.2.4: The Survival Model: Traits • Environments and Survival 3.2.5: Making Sense of Traits and Survival • Environments and Survival 3.3.1: Changing Environment • Environments and Survival 3.3.3: Environmental Change and Adaptive Traits

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3	• Recording Weather and Climate • Distinguishing Between Weather and Climate • Connecting Climate Change to the Water Cycle • Analyzing the Urban Heat Island Effect	• 3-ESS2-1: Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season • 3-ESS2-2: Obtain and combine information to describe climates in different regions of the world • 3-ESS3-1: Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard	• Weather and Climate 3.1.2: Measuring Rainfall • Weather and Climate: 3.1.3: Measuring Temperature • Weather and Climate 3.1.4: Sky Notebook • Weather and Climate 3.1.5: Making Sense of Weather • Weather and Climate 3.2.3: Finding Ranges for Temperature Data • Weather and Climate 3.2.4: Evaluating Island Weather Evidence • Weather and Climate 3.3.1: Analyzing a year of Data • Weather and Climate 3.3.2: Discovering Climate Through Data • Weather and Climate 3.3.3: Seasons and Climate • Weather and Climate 3.3.4: What's Going on with the Weather • Weather and Climate 3.3.5: Comparing Climates • Weather and Climate 3.3.6: Evaluating Evidence About Climate • Weather and Climate 3.4.1: Regional Climate Patterns • Weather and Climate 3.2.4: Dangerous Weather Ahead • Weather and Climate 3.4.3: Preparing for Natural Hazards
4	• Becoming Greenhouse Gases • Calculating Our Ecological Footprint • Educating Others about Climate Change • Navigating New York City's Wastewater System	• 4-ESS3-1: Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment	• Energy Conversions 4.1.5: Forms of Energy • Energy Conversions 4.1.6: Writing and Argument About the Blackout • Energy Conversions 4.2.1: Energy Converters • Energy Conversions 4.2.2: Energy Past and Present • Energy Conversions 4.3.1: Investigating Energy Sources • Energy Conversions 4.3.2: Converting Energy from Sources • Energy Conversions 4.3.3: Sunlight and Showers • Energy Conversions 4.3.3: Designing a Wind Turbine • Energy Conversions 4.3.5: Redesigning Wind Turbines • Energy Conversions 4.3.6: Design Arguments About Converters • Wave, Energy, and Information 4.1.3: Warning Tsunami
4	• Accepting the Anthropocene • Modeling the Earth's Atmosphere • Analyzing the Urban Heat Island Effect • Educating Others about Climate Change • Building Resiliency in New York City	• 4-ESS2-2: Analyze and interpret data from maps to describe patterns of Earth's features. • 4-ESS3-2: Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans	• Energy Conversions 4.4.4: System Improvement • Energy Conversions 4.4.5: Arguments for System Improvements
5	• Creating the Systems Thinking Web • Understanding Objects with Systems Thinking • Connecting Climate Change to the Water Cycle • Navigating New York City's Wastewater System • Discovering New York City's Water Supply System	• 5-PS3-1: Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. • 5-LS1-1: Support an argument that plants get the materials they need for growth chiefly from air and water. • 5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	• The Earth System 5.1.2: Water Shortages, Water Solutions • The Earth System 5.1.3: Explaining the East Ferris Water Shortage • The Earth System 5.2.1: Investigating Water Drop Formation • The Earth System 5.2.2: From Water Vapor to Liquid Water • The Earth System 5.2.2: Drinking Cleopatra's Tears • The Earth System 5.2.6: Explaining How Raindrops Form • The Earth System 5.4.1: Investigating the Movement of Water • The Earth System 5.4.2: Investigating Rainfall Distribution • The Earth System 5.5.1: Investigating Wastewater Treatment • The Earth System 5.5.6: Reflecting on Water Availability

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			• Ecosystem Restoration 5.1.3: Matter Makes It All Up • Ecosystem Restoration 5.3.5: Decomposers, Nutrients, and Ecosystems
5	• Modeling the Earth's Atmosphere • Connecting Climate Change to the Water Cycle • Exploring Resiliency with the NPCC • Approaching the School Climate Solutions Challenge • Discovering New York City's Water Supply System	• 5-ESS2-1: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact • 5-ESS2-2: Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth • 5-ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment	• Ecosystem Restoration 5.1.2: Introducing Ecosystems • Ecosystem Restoration 5.1.3: Matter Makes it All Up • Ecosystem Restoration 5.1.5: Modeling How Animals Use Food Matter • Ecosystem Restoration 5.1.6: The Role of Food in an Ecosystem • Ecosystem Restoration 5.1.7: Modeling Food Webs • Ecosystem Restoration 5.1.8: Arguments About Animals in the Ecosystem • Ecosystem Restoration 5.2.1: Even Plants Need Food • Ecosystem Restoration 5.2.2: Energy Makes It All Go • Ecosystem Restoration 5.2.3: How Plants Make Food • Ecosystem Restoration 5.2.4: Claims and Evidence About Energy • Ecosystem Restoration 5.2.5: Energy in Ecosystem • Ecosystem Restoration 5.2.7: Argument About Plants in the Ecosystem
6-8	• Creating the Systems Thinking Web • Understanding Objects with Systems Thinking • Connecting Climate Change to the Water Cycle	• MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem • MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem • MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect population	• Matter and Energy in Ecosystems 6.1.2: Investigating a Biodome • Matter and Energy in Ecosystems 6.1.3: Sunlight and Life • Matter and Energy in Ecosystems 6.1.4: How Energy Storage Molecules Are Made • Matter and Energy in Ecosystems 6.1.5: Photosynthesis in Ecosystems • Matter and Energy in Ecosystems 6.1.6: Examining Data from the Biodome • Earth's Changing Climate 6.2.1: Introduction to Energy Entering and Leaving
6-8	• Creating the Systems Thinking Web • Understanding Objects with Systems Thinking • Navigating New York City's Wastewater System • Discovering New York City's Water Supply System	• MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems • MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services	• Matter and Energy in Ecosystems 6.1.2: Investigating a Biodome • Matter and Energy in Ecosystems 6.1.3: Sunlight and Life • Matter and Energy in Ecosystems 6.1.4: How Energy Storage Molecules Are Made • Matter and Energy in Ecosystems 6.1.5: Photosynthesis in Ecosystems • Matter and Energy in Ecosystems 6.1.6: Examining Data from the Biodome • Matter and Energy in Ecosystems 6.3.4: Explaining What Happened in the Biodome • Matter and Energy in Ecosystems 6.4.1: Analyzing Claims and Evidence • Matter and Energy in Ecosystems 6.4.2: Science Seminar • Matter and Energy in Ecosystems 6.4.3: Writing a Scientific Argument
6-8	• Accepting the Anthropocene	• MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organism	• Populations and Resources 6.1.2: Mysterious Moon Jelly Increase • Populations and Resources 6.1.3: Births and Deaths in Populations • Natural Selection 8.1.3: Exploring Variation and Distribution in Populations • Natural Selection 8.1.4: Investigating Changes in Trait Distribution • Natural Selection 8.1.5: Adaptive Traits • Natural Selection 8.1.6: Changes in Trait Distribution

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6-8	• Creating the Systems Thinking Web • Understanding Objects with Systems Thinking • Connecting Climate Change to the Water Cycle • Navigating New York City's Wastewater System • Placing Climate Change in New York City • Discovering New York City's Water Supply System	• MS-ESS2-1: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process • MS-ESS2-4: Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity • MS-ESS3-1: Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes	• Populations and Resources 6.2.2: Energy Storage Molecules • Matter and Energy in Ecosystems 6.2.1: Carbon Dioxide in Ecosystems • Matter and Energy in Ecosystems 6.2.2: How Carbon Dioxide Enters the Air • Matter and Energy in Ecosystems 6.3.1: Carbon in the Global Ecosystem • Matter and Energy in Ecosystems 6.3.2: Total Carbon in an Ecosystem • Matter and Energy in Ecosystems 6.3.3: Looking for the Missing Carbon • Matter and Energy in Ecosystems 6.3.4: Explaining What Happened in the Biodome • Light Waves 8.2.2: Harvesting Sunlight • Light Waves 8.3.3: Reflection, Transmission, and Energy • Light Waves 8.3.5: Light and the Atmosphere
6-8	• Distinguishing Between Weather and Climate • Recording Weather and Climate • Modeling the Earth's Atmosphere • Analyzing the Urban Heat Island Effect	• MS-ESS2-5: Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions • MS-ESS2-6: Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climate • MS-ESS3-5: Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century	• Weather Patterns 6.1.2: Welcome to the Weather Pattern Unit • Weather Patterns 6.2.6 Reviewing Key Ideas About Weather • Ocean, Atmosphere, Climate: 6.1.3: Energy Transferred to Air • Ocean, Atmosphere, Climate 6.4.1: Comparing Air Temperature • Ocean, Atmosphere, Climate 6.4.2: Science Seminar • Ocean, Atmosphere, Climate 6.4.3: Writing a Scientific Argument • Earth's Changing Climate Engineering Internship 7.1.5: Considering Feedback and Redesign • Earth's Changing Climate Engineering Internship 7.1.6: Choosing an Optimal Design • Earth's Changing Climate Engineering Internship 7.1.7: Composing Proposal Outlines • Earth's Changing Climate Engineering Internship 7.1.8: Writing Design Decisions • Earth's Changing Climate Engineering Internship 7.1.9: Completing the Proposal • Earth's Changing Climate Engineering Internship 7.1.10: Applying Engineering Skills
6-8	• Becoming Greenhouse Gases • Accepting the Anthropocene • Educating Others about Climate Change • Exploring Resiliency with the NPCC • Calculating Our Ecological Footprint • Building Resiliency in New York City	• MS-ESS3-2: Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects • MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment • MS-ESS3-4: Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems	• Earth's Changing Climate 6.1.2: Introducing to Climate Change • Earth's Changing Climate 6.1.3: Exploring Energy in the Earth System • Earth's Changing Climate 6.1.4: Testing Changes to the Atmosphere • Earth's Changing Climate 6.1.5: Evidence About Gases in the Atmosphere • Earth's Changing Climate 6.2.1: Introduction to Energy Entering and Leaving • Earth's Changing Climate 6.2.2: Reading "Past Climate Changes on Earth" • Earth's Changing Climate 6.2.3: Learning More About Past Climate Changes • Earth's Changing Climate 6.2.4: Critical Juncture Assessment • Earth's Changing Climate 6.2.5: Reviewing Key Ideas in Climate Change • Earth's Changing Climate 6.2.6: Investigating Paths of Energy • Earth's Changing Climate 6.2.7: Explaining Climate Change • Earth's Changing Climate 6.3.1: Investigating Human Activity and the Atmosphere

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			• Earth's Changing Climate 6.3.2: Reading "Climate Change Solutions" • Earth's Changing Climate 6.3.3: Explaining Possible Solutions
6-8	• Placing Climate Change in New York City • Approaching the School Climate Solutions Challenge • Breaking Down OneNYC • Exploring Resiliency with the NPCC • Educating Others about Climate Change • Building Resiliency in New York City	• MS-ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions • MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem • MS-ETS1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. • MS-ETS1-4: Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved	• Matter and Energy in Ecosystems 6.4.1: Analyzing Claims and Evidence • Matter and Energy in Ecosystems 6.4.2: Science Seminar • Matter and Energy in Ecosystems 6.4.3: Writing a Scientific Argument • Earth's Changing Climate Engineering Internship: 7.1.1: Introducing the Engineering Internship • Earth's Changing Climate Engineering Internship: 7.1.2: Becoming a Roof Specialist • Earth's Changing Climate Engineering Internship 7.1.3: Testing Roof Modifications • Earth's Changing Climate Engineering Internship 7.1.4: Roof Modification Designs • Earth's Changing Climate Engineering Internship 7.1.5: Considering Feedback and Redesign • Earth's Changing Climate Engineering Internship 7.1.6: Choosing an Optimal Design • Earth's Changing Climate Engineering Internship 7.1.7: Composing Proposal Outlines • Earth's Changing Climate Engineering Internship 7.1.8: Writing Design Decisions • Earth's Changing Climate Engineering Internship 7.1.9: Completing the Proposal • Earth's Changing Climate Engineering Internship 7.1.10: Applying Engineering Skills
9-12	• Creating the Systems Thinking Web • Calculating Our Ecological Footprint • Modeling the Earth's Atmosphere • Analyzing the Urban Heat Island Effect	• 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 • HS-PS3-2: Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects) • HS-PS3-3: Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy	
9-12	• Understanding Objects with Systems Thinking • Creating the Systems Thinking Web	• HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis	
9-12	• Understanding Objects with Systems Thinking • Creating the Systems Thinking Web	• HS-LS2-1: Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales	

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	• Connecting Climate Change to the Water Cycle • Accepting the Anthropocene • Educating Others about Climate Change • Breaking Down OneNYC • Exploring Resiliency with the NPCC	• HS-LS2-2: Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales • HS-LS2-6: Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem • HS-LS2-7: Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity • HS-LS4-6: Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity	
9-12	• Distinguishing Between Weather and Climate • Recording Weather and Climate	• HS-ESS1-1: Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation	
9-12	• Creating the Systems Thinking Web • Modeling the Earth's Atmosphere • Connecting Climate Change to the Water Cycle • Exploring Resiliency with the NPCC • Navigating New York City's Wastewater System • Discovering New York City's Water Supply System	• HS-ESS2-2: Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems • HS-ESS2-5: Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes • HS-ESS2-6: Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere • HS-ESS2-7: Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth	
9-12	• Understanding Objects with Systems Thinking • Becoming Greenhouse Gases • Connecting Climate Change to the Water Cycle • Analyzing the Urban Heat Island Effect • Educating Others about Climate Change	• HS-ESS2-4: Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate • HS-ESS3-5: Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems	
9-12	• Calculating Our Ecological Footprint • Placing Climate Change in New York City	• HS-ESS3-1: Construct an explanation based on evidence for how the availability of natural resources, occurrence	

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	• Accepting the Anthropocene • Exploring Resiliency with the NPCC • Building Resiliency in New York City	of natural hazards, and changes in climate have influenced human activity • HS-ESS3-2: Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios • HS-ESS3-3: Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity • HS-ESS3-4: Evaluate or refine a technological solution that reduces impacts of human activities on natural systems • 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	
9-12	• Calculating Our Ecological Footprint • Navigating New York City's Wastewater System • Approaching the School Climate Solutions Challenge • Breaking Down OneNYC • Discovering New York City's Water Supply System	• 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 • HS-ETS1-2: Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering • 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 • HS-ETS1-4: Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem	

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