Energy Efficiency Curriculum Alignment with Ohio's New Learning Standards

Ohio Energy Project manages programs with utility sponsors to offer this free energy saving efficiency education program for teachers, students and families. Your students will become wise consumers of energy, while at the same time helping their families save money by reducing energy waste at home. And, they will advance their science and math skills in an interesting, hands-on environment and meet state teaching requirements. The program aligns to Ohio's New Learning Standards in science and math. For ease of review, we have matched each teaching module in the program to its corresponding standard. A one-day teacher training session will provide grade appropriate curriculum content and lesson plans. If you have any questions, please contact: Debby Yerkes, Executive Director, Ohio Energy Project, 513-688-1717, dyerkes@ohioenergy.org

ENERGY EFFICIENCY EDUCATION OHIO NEW LEARNING STANDARDS SCIENCE / MATH Grades 4 - 12	LESSON 1: INTRO TO ENERGY	LESSON 2: LIGHT BULB OR HEAT BULB	LESSON 3: INSULATION AND AIR LEAKS	LESSON 4: HEATING AND COOLING	LESSON 5: WATER HEATING AND CONSERVATION	LESSON 6: APPLIANCES AND ENERGY	LESSON 7: ENERGY SYNOPSIS	SOURCE PICS & DEFINITIONS	ENERGY ROUND-UP	ENERGY RELAY	SOURCE TEAM MATCH-UP	COAL SEQUENCE	HYDRO SEQUENCE	SMART HOUSE	PLAY IT SMART	TIC TAC ENERGY	ENERGY FACT OR FAKE	TRANSFORMATION EQUATIONS	WHAT AM i?	SAFETY SORT	GAS SEQUENCE
4th Grade																					
Physical Science *Electricity, Heat and Matter*																					
The total amount of matter is conserved when it undergoes a change												X	X								
Energy can be transformed from one form to another or can be transferred from one location to another.		X	X			X						X	X					X			X
Science Inquiry																					
Observe and ask questions about the natural environment																					
Plan and conduct simple investigations	X	X	X	X	X	X	X														
Employ simple equipment and tools to gather data and extend the senses		X	X	X	X	X															
Use appropriate mathematics with data to construct reasonable explanations		X	X	X	X	X															
Communicate about observations, investigations and explanations	X	X	X	X	X	X	X	X	X		X	X	X					X		X	
Review and ask questions about the observations and explanation of others.	X		X		X	X		X	X		X	X	X					X		X	
Math - Operations and Algebraic Thinking																					
Use the four operations with whole numbers to solve problems		X		X	X	X															
Gain familiarity with factors and multiples		X			X	X															
Generate and analyze patterns		X			X	X															
Math - Measurement and Data																					
Solve problems involving measurement and conversion of measurements from larger unit to a smaller unit		X			X	X															
Represent and interpret data		X			X	X															
Math -Mathematical Practices																					
Make sense of problems and persevere in solving them		X			X	X															
Reason abstractly and quantitatively		X			X	X															
Use appropriate tools strategically		X			X	X															
Look for and express regularity in repeated reasoning		X			X	X															

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5th Grade																					
Physical Science *Light, Sound and Motion*																					
Light and sound are forms of energy that behave in predictable ways		X														X		X			
Science Inquiry																					
Identify questions that can be answered through scientific investigations	X	X	X	X	X	X															
Design and conduct simple investigations		X	X	X	X	X															
Use appropriate mathematics, tools and techniques to gather data and information		X	X	X	X	X															
Analyze and interpret data		X	X	X	X	X															
Develop descriptions, models, explanations and predictions		X	X	X	X	X		X													
Think critically and logically to connect evidence and explanations		X	X	X	X	X															
Recognize and analyze alternative explanations and predictions		X	X	X	X	X															
Communicate scientific procedures and explanations		X	X	X	X	X			X	X	X	X	X					X		X	
Math - Numbers and Operations in Base Ten																					
Understand the place value system		X			X	X															
Perform operations with multi-digit whole numbers and with decimals to hundredths		X			X	X															
Math - Measurement and Data																					
Convert like measurement units within a given measurement system		X				X															
Represent and interpret data		X			X	X															
Math -Mathematical Practices																					
Make sense of problems and persevere in solving them		X			X	X															
Use appropriate tools strategically		X			X	X															
Look for and express regularity in repeated reasoning		X			X	X															
6th Grade																					
Physical Science *Matter and Motion*																					
All matter is made up of small particles called atoms			X					X													
Changes of state are explained by a model of matter composed of atoms and/or molecules that are in motion												X									
There are two categories of energy: kinetic and potential	X	X	X	X		X											X	X			

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Science Inquiry																					
Identify questions that can be answered through scientific investigations	X	X	X	X	X	X															
Design and conduct simple investigations	X	X	X	X	X	X															
Use appropriate mathematics, tools and techniques to gather data and information		X	X	X	X	X															
Analyze and interpret data		X	X	X	X	X															
Develop descriptions, models, explanations and predictions		X	X	X	X	X															
Think critically and logically to connect evidence and explanations		X	X	X	X	X					X										
Recognize and analyze alternative explanations and predictions		X	X	X	X	X															
Communicate scientific procedures and explanations		X	X	X	X	X												X			
Math - The Number System																					
Compute fluently with multi-digit numbers and find common factors and multiples		X	X	X	X	X															
Represent and interpret data					X	X															
Math -Mathematical Practices																					
Make sense of problems and persevere in solving them		X			X	X															
Use appropriate tools strategically		X			X	X															
Look for and express regularity in repeated reasoning		X			X	X															
Math -Statistics and Probability																					
Develop understanding of statistical variability					X																
7th Grade																					
Earth and Space Science ***Cycles and Patterns of Earth and the Moon***																					
This topic focuses on Earth's hydrologic cycle, patterns that exist in atmospheric and oceanic currents, the relationship between thermal energy and the currents, and the relative position and movement of the Earth, sun and moon.													X	X							
Physical Science ***Conservation of Mass and Energy***																					
This topic focuses on the empirical evidence for the arrangement of atoms on the Periodic Table of Elements, conservation of mass and energy, transformation and transfer of energy												X	X					X			
Science Inquiry																					
Identify questions that can be answered through scientific investigations	X	X	X	X	X	X															
Design and conduct simple investigations	X	X	X	X	X	X															
Use appropriate mathematics, tools and techniques to gather data and information		X	X	X	X	X															
Analyze and interpret data		X	X	X	X	X															
Develop descriptions, models, explanations and predictions		X	X	X	X	X															
Think critically and logically to connect evidence and explanations		X	X	X	X	X				X											
Recognize and analyze alternative explanations and predictions		X	X	X	X	X															
Communicate scientific procedures and explanations		X	X	X	X	X															

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Math -Mathematical Practices																					
Make sense of problems and persevere in solving them		X			X	X															
Use appropriate tools strategically		X			X	X															
Look for and express regularity in repeated reasoning		X			X	X															
8th Grade																					
Physical Science *Forces and Motion*																					
There are different types of potential energy												X	X					X			X
Science Inquiry																					
Identify questions that can be answered through scientific investigations	X	X																			
Design and conduct simple investigations	X	X																			
Use appropriate mathematics, tools and techniques to gather data and information		X																			
Analyze and interpret data		X																			
Develop descriptions, models, explanations and predictions		X																			
Think critically and logically to connect evidence and explanations		X									X										
Recognize and analyze alternative explanations and predictions		X																			
Communicate scientific procedures and explanations		X																X			
Math -Mathematical Practices																					
Make sense of problems and persevere in solving them		X			X	X															
Use appropriate tools strategically		X			X	X															
Look for and express regularity in repeated reasoning		X			X	X															
High School																					
Physical Science																					
Energy and Waves: conservation, transfer and transformation, waves, thermal energy, electricity	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	
Forces and Motion: motion, forces, dynamics												X	X								
Chemistry																					
Structure and properties of matter: atomic structure, phases of matter												X	X								
Environmental Science																					
Earth Systems: hydrosphere, movement of matter and energy	X		X					X	X	X	X	X	X					X			
Earth's Resources: energy resources, air pollution, land use and management, wildlife	X							X	X	X	X	X	X	X	X						X
Global Environmental Problems and Issues: climate change, sustainability, air quality	X	X	X	X	X		X				X			X	X				X		

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Physics																					
Forces, momentum and motion: gravitational force and fields, elastic forces, friction force, momentum, impulse and conservation of momentum												X									
Energy: gravitational potential energy, energy in springs, nuclear energy, work and power, conservation of energy												X	X					X			
Waves: wave properties, light phenomena		X														X					
Electricity and magnetism: charging objects, electric fields and electric potential energy, DC circuits, magnetic fields and energy, electromagnetic interactions		X										X	X							X	
Science Inquiry																					
Identify questions and concepts that guide scientific investigations	X	X	X	X	X	X															
Design and conduct simple investigations	X	X	X	X	X	X															
Use technology and mathematics to improve investigations and communications		X	X	X	X	X								X		X					
Formulate and revise explanations and models using logic and evidence (critical thinking)		X	X	X	X	X					X							X		X	
Recognize and analyze explanations and models		X	X	X	X	X		X			X							X			
Communicate and support a scientific argument		X	X	X	X	X					X										