Lawrence School Climate Change Curriculum
Life Science - Grade 7, Physical Science – Grade 8

Changes in Ecosystems Over Time
Learning Standard 17: Identify ways in which ecosystems have changed throughout geologic time in response to physical conditions, interactions among organisms, and actions of humans. Describe how changes may be catastrophes such as volcanic eruptions or ice storms.

- *Life science students will examine the historical record of global temperature change including Ice Ages and periods of warming.*
- *Life science students will examine the role of humans in changing ecosystems and climate.*
- *Life science students will examine graphs of the 10 hottest (average temperature) years on record.*

Energy and Living Things
Learning Standard 15: Explain how dead plants and animals are broken down by other living organisms and how this process contribute to the whole.

- *Life science students will research the origin of fossil fuels to determine where the energy came from and how it is stored.*
- *Physical science energy consumption rates in the United States (and world-wide if data is available) and the impact of burning fossil fuels.*
- *Physical science students will explore current technology for renewable energy sources.*

Forms of Energy
Learning Standard 13: Differentiate between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.

- *Physical science students will be able to define and contrast potential and kinetic energy*
- *Physical science students will be able to name and describe forms of energy including: mechanical, heat, chemical, electromagnetic, and nuclear energy.*
- *Physical science students will explore energy transfer from one form to another and apply those concepts to energy sources used by humans.*

Heat Energy

Learning Standard 14: Recognize that heat is a form of energy and that temperature change results from adding or taking away heat from a system.

- *Physical science students will learn about temperature scales, calibrate a thermometer using the Celsius scale, learn about the Fahrenheit and Kelvin scales and identify their reference points.*
- *Physical science students will research the science behind weather forecasting.*
- *Physical science students will relate standard 14 to heat energy balance in a planetary system.*

Learning Standard 16: Give examples of how heat moves in predictable ways, moving from warmer objects to cooler ones until they have reached equilibrium.

- *Physical science students will relate the concepts of standard 16 to weather, ocean currents, and global climate.*
- *Physical science students will examine maps of ocean currents to learn about their effect on climate and research predictions of how global temperature rise could change climate worldwide.*
- *Physical science students will be able to explain the effects of radiation and convection in weather.*
- *Physical science students will be able to describe the thermodynamics of the greenhouse effect.*

Elements, Compounds, and Mixtures

Learning Standard 5: Recognize that there are more than 100 elements that combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.

Learning Standard 6: Differentiate between an atom (the smallest unit of an element that maintains the characteristics of that element) and a molecule (the smallest unit of a compound that maintains the characteristics of that compound)

- *Physical science students will identify and learn about the chemistry of hydrocarbons, fossil fuels, and the products of burning fossil fuels.*
- *Physical science students will research and explore the behavior of atmospheric gases and their roles in the greenhouse effect.*