

TEKS in Focus highlights key concepts and student expectations to assist educators in implementing the science Texas Essential Knowledge and Skills (TEKS). The vertical progression of a concept within the science TEKS is provided along with a side-by-side view of the changes implemented in 2024.

**Focus: Vertical Alignment of Forms of Energy
Elementary School**

Level of Study	Prior Science TEKS	TEKS Implemented in 2024	Forms of Energy
Kindergarten	K.6.A use the senses to explore different forms of energy such as light, thermal, and sound;	K.8.A communicate the idea that objects can only be seen when a light source is present and compare the effects of different amounts of light on the appearance of objects; and K.8.B demonstrate and explain that light travels through some objects and is blocked by other objects, creating shadows.	Light
Grade 1	1.6.A identify and discuss how different forms of energy such as light, thermal, and sound are important to everyday life;	*1.8.A investigate and describe applications of heat in everyday life such as cooking food or using a clothes dryer; and	*Heat is the transfer of thermal energy, not a form of energy
Grade 2	2.6.A investigate the effects on objects by increasing or decreasing amounts of light, heat, and sound energy such as how the color of an object appears different in dimmer light or how heat melts butter;	2.8.A demonstrate and explain that sound is made by vibrating matter and that vibrations can be caused by a variety of means, including sound; 2.8.B explain how different levels of sound are used in everyday life such as a whisper in a classroom or a fire alarm; and 2.8.C design and build a device using tools and materials that uses sound to solve the problem of communicating over a distance.	Sound
Grade 3	3.6.A explore different forms of energy, including mechanical, light, sound, and thermal in everyday life;	3.8.A identify everyday examples of energy, including light, sound, thermal, and mechanical; and	Light Sound Thermal Mechanical
Grade 4	4.6.B differentiate between conductors and insulators of thermal and electrical energy; 4.6.C demonstrate that electricity travels in a closed path, creating an electrical circuit	4.8.B identify conductors and insulators of thermal and electrical energy; and 4.8.C demonstrate and describe how electrical energy travels in a closed path that can produce light and thermal energy.	Thermal Electrical Light
Grade 5	5.6.B demonstrate that the flow of electricity in closed circuits can produce light, heat, or sound; 5.6.C demonstrate that light travels in a straight line until it strikes an object and is reflected or travels through one medium to another and is refracted;	5.8.B demonstrate that electrical energy in complete circuits can be transformed into motion, light, sound, or thermal energy and identify the requirements for a functioning electrical circuit; and 5.8.C demonstrate and explain how light travels in a straight line and can be reflected, refracted, or absorbed.	Electrical Light Sound Thermal Mechanical

Key Changes in Forms of Energy: Elementary

- **Kindergarten–Grade 2:** Forms of energy have been split between grade levels. Kindergarten focuses on light energy, while Grade 1 introduces thermal energy through heat, and Grade 2 focuses on sound energy.
- **Grade 1:** *1.8.A is included for connection. Heat is the transfer of thermal energy, not a form of energy. Thermal energy is formally introduced in grade 3.

**Focus: Vertical Alignment of Forms of Energy
Middle School**

Level of Study	Prior Science TEKS	TEKS Implemented in 2024	Forms of Energy
Grade 6	<p>-----</p> <p>6.5.C identify the formation of a new substance by using the evidence of a possible chemical change such as production of a gas, change in temperature, production of a precipitate, or color change.</p> <p>6.8.A compare and contrast potential and kinetic energy;</p>	<p>6.6.A compare solids, liquids, and gases in terms of their structure, shape, volume, and kinetic energy of atoms and molecules;</p> <p>6.6.E identify the formation of a new substance by using the evidence of a possible chemical change, including production of a gas, change in thermal energy, production of a precipitate, and color change.</p> <p>6.8.A compare and contrast gravitational, elastic, and chemical potential energies with kinetic energy;</p>	<p>Kinetic</p> <p>Thermal</p> <p>Gravitational potential</p> <p>Elastic potential</p> <p>Chemical potential</p>
Grade 7	<p>-----</p>	<p>7.8.C explain the relationship between temperature and the kinetic energy of the particles within a substance.</p>	<p>Kinetic</p>
Grade 8	<p>-----</p>	<p>-----</p>	

Key Changes in Forms of Energy: Middle School

- **Grade 6:** Kinetic energy is formally introduced. The types of potential energy are differentiated.
- **Grade 7:** Kinetic energy is linked to temperature.

Focus: Vertical Alignment of Force Interactions
High School

Level of Study	Prior Science TEKS	TEKS Implemented in 2024	Forms of Energy
Physics	<p>Phys.5.F investigate and calculate current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations.</p> <p>Phys.6.B investigate examples of kinetic and potential energy and their transformations.</p> <p>Phys.6.A investigate and calculate quantities using the work-energy theorem in various situations;</p> <p style="text-align: center;">-----</p> <p>Phys.8.B compare and explain the emission spectra produced by various atoms;</p> <p>Phys.7.E describe and predict image formation as a consequence of reflection from a plane mirror and refraction through a thin convex lens.</p> <p>Phys.8.A describe the photoelectric effect and the dual nature of light</p> <p style="text-align: center;">-----</p>	<p>Phys.6.E calculate current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel circuits using Ohm's law.</p> <p>Phy.7.B investigate and calculate mechanical, kinetic, and potential energy of a system;</p> <p>Phy.7.C apply the concept of conservation of energy using the work-energy theorem, energy diagrams, and energy transformation equations, including transformations between kinetic, potential, and thermal energy;</p> <p>Phy.8.E compare the different applications of the electromagnetic spectrum, including radio telescopes, microwaves, and x-rays;</p> <p>Phys.8.F investigate the emission spectra produced by various atoms and explain the relationship to the electromagnetic spectrum; and</p> <p>Phys.8.G describe and predict image formation as a consequence of reflection from a plane mirror and refraction through a thin convex lens.</p> <p>Phys.9.A describe the photoelectric effect and emission spectra produced by various atoms and how both are explained by the photon model for light</p> <p>Phys.9.C compare and explain how superposition of quantum states is related to the wave-particle duality nature of light; and</p>	<p>Electrical</p> <p>Mechanical</p> <p>Kinetic</p> <p>Potential</p> <p>Thermal</p> <p>Light</p>
Integrated Physics and Chemistry (IPC)	<p>IPC.5.F evaluate the transfer of electrical energy in series and parallel circuits and conductive materials;</p> <p>IPC.5.C demonstrate that moving electric charges produce magnetic forces and moving magnets produce electric forces;</p> <p style="text-align: center;">-----</p>	<p>IPC.6.A design and construct series and parallel circuits that model real-world circuits such as in-home wiring, automobile wiring, and simple electrical devices to evaluate the transfer of electrical energy;</p> <p>IPC.6.B design, evaluate, and refine a device that generates electrical energy through the interaction of electric charges and magnetic fields;</p> <p>IPC.7.D explain how electrons can transition from a high energy level to a low energy state, emitting photons at different frequencies for different energy transitions;</p>	<p>Electrical</p> <p>Thermal</p> <p>Light</p>

Key Changes in Forms of Energy: High School

- **Physics:** Students now study light in more detail, including an exploration of quantum mechanics.
- **IPC:** There is a focus on practical and engineering applications of the scientific concepts studied. Students now study how light is produced.

TEKS in Focus spotlights concepts or student expectations monthly to bolster TEKS alignment, rigor, and collective understanding. It does not suggest an order or timing but helps with comprehension of TEKS changes, serving as a guide when relevant to classroom instruction.