Important Concepts Energy 3-5 Level	Alaska Science Content Standard **B2** Students develop an understanding that energy appears in different forms, can be transformed from one form to another, can be transferred or moved from one place or system to another, may be unavailable for use, and is ultimately conserved. Alaska Science Content Standard **B3** Students develop an understanding of the interactions between matter and energy, including physical, chemical, and nuclear changes, and the effects of these interactions on physical systems. (partially addressed)

Grade Level Expectations:

The student demonstrates an understanding of how energy can be transformed, transferred, and conserved by:
[3] SB2.1 classifying materials as insulators or conductors (i.e., fur, metal, wood, plastic) and identifying their applications
[4] SB2.1 investigating the effectiveness of different insulating and conducting materials with respect to heat flow and record the results (**L**)
[5] SB2.1 classifying the changes (i.e., heat, light, sound, and motion) that electrical energy undergoes in common household appliances (i.e., toaster, blender, radio, light bulb, heater)

The student demonstrates an understanding of the interactions between matter and energy and the effects of these interactions on systems by:
[5] SB3.1 identifying physical and chemical changes based on observable characteristics (e.g., tearing paper vs. burning paper)

The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by:
[4] SD3.2 observing that heat flows from one object to another (**L**)

According to AAAS's Benchmarks for Science Literacy* some of the things that students should know and understand by the end of the fifth grade are:

When two objects are rubbed against each other, they both get warmer. In addition, many mechanical and electrical devices get warmer when they are used.
When warmer things are put with cooler ones, the warmer things get cooler and the cooler things get warmer until they all are the same temperature.
When warmer things are put with cooler ones, heat is transferred from the warmer ones to the cooler ones. A warmer object can warm a cooler one by contact or at a distance.

*Project 2061, American Association for the Advancement of Science, Benchmarks for Science Literacy. New York: Oxford University Press, 1993.

Heating and cooling can cause changes in the properties of materials, but not all materials respond the same way to being heated and cooled.
Many kinds of changes occur faster under hotter conditions.

*Project 2061, American Association for the Advancement of Science, Benchmarks for Science Literacy. New York: Oxford University Press, 1993.