Program: Energy Revealed

Grade 9 - Alberta Science Curriculum Connections

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Activity Name	Organizing Idea	Learning Outcome
Activity: Knowing Energy: Stair Climb	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
Activity: Knowing Energy: Tea at Home	Matter and Chemical Change	Investigate materials, and describe them in terms of their physical and chemical properties
		Describe and interpret patterns in chemical reactions
	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
Activity: Knowing Energy: Race to a kWh	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
Activity: Knowing Energy: How Intense is Your Electricity Usage?	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions

Activity: Knowing Energy: The Electricity Grid	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
Activity: Knowing Energy: Renewables	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
		Describe and discuss the societal and environmental implications of the use of electrical energy
Activity: Knowing Energy: The Big Picture	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
Activity: All About the Baseline	Electrical Principles and Technologies	Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
		Describe and discuss the societal and environmental implications of the use of electrical energy
Activity: Can You Observe How You Conserve?	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
Activity: Energy Hogs	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions

Activity: Electronic Overload	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
Activity: Extra Energy Investigation	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
Activity: How Smart is Your Smart Board?	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
Activity: Imagination Station	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
Activity: Small Appliance Energy Reliance	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
		Describe and discuss the societal and environmental implications of the use of electrical energy
Activity: Start Me Up!	Electrical Principles and Technologies	Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
		Describe and discuss the societal and environmental implications of the use of electrical energy

Activity: Total Energy vs. Total Cost	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
		Describe and discuss the societal and environmental implications of the use of electrical energy
Activity: Understanding Energy Efficiency in Your School	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
Activity: Community Walk	Electrical Principles and Technologies	Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
		Describe and discuss the societal and environmental implications of the use of electrical energy
Activity: School Energy Audit	Electrical Principles and Technologies	Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
		Describe and discuss the societal and environmental implications of the use of electrical energy
Activity: Find the Phantom Load	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
Activity: Home Energy Audit	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
		Describe and discuss the societal and environmental implications of the use of electrical energy

Activity: Watchers and Seekers	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
Activity: Science Slam	Electrical Principles and Technologies	Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
		Describe and discuss the societal and environmental implications of the use of electrical energy
Activity: Speak for the Trees	Biological Diversity	Identify impacts of human action on species survival and variation within species, and analyze related issues for personal and public decision making
	Electrical Principles and Technologies	Investigate and interpret the use of devices to convert various forms of energy to electrical energy and electrical energy to other forms of energy
		Describe technologies for transfer and control of electrical energy
		Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
		Describe and discuss the societal and environmental implications of the use of electrical energy

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Activity Name	Organizing Idea	Learning Outcome
Activity: Knowing Energy: Stair Climb	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Knowing Energy: Tea at Home	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
	14 - Unit B: Understanding Energy Transfer Technologies	Describe how natural and technological cooling and heating systems are based upon the transfer of thermal energy (heat) from hot to cold objects
		Explain the functioning of common methods and devices designed to control the transfer of thermal energy
Activity: Knowing Energy: Race to a kWh	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Knowing Energy: How Intense is Your Electricity Usage?	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems

Activity: Knowing Energy: The Electricity Grid	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Knowing Energy: Renewables	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
	10 - Unit D: Energy Flow in Global Systems	Describe how the relationships among input solar energy, output terrestrial energy and energy flow within the biosphere affect the lives of humans and other species
		Investigate and interpret the role of environmental factors on global energy transfer and climate change
Activity: Knowing Energy: The Big Picture	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: All About the Baseline	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Can You Observe How You Conserve?	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems

Activity: Energy Hogs	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Electronic Overload	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Extra Energy Investigation	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: How Smart is Your Smart Board?	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Imagination Station	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems

Activity: Small Appliance Energy Reliance	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
	14 - Unit B: Understanding Energy Transfer Technologies	Describe how natural and technological cooling and heating systems are based upon the transfer of thermal energy (heat) from hot to cold objects
		Explain the functioning of common methods and devices designed to control the transfer of thermal energy
Activity: Start Me Up!	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Total Energy vs. Total Cost	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Understanding Energy Efficiency in Your School	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Community Walk	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems

Activity: School Energy Audit	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Find the Phantom Load	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Home Energy Audit	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Watchers and Seekers	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
Activity: Science Slam	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems

Activity: Speak for the Trees	10 - Unit B: Energy Flow in Technological Systems	Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
		Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
		Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems
	10 - Unit D: Energy Flow in Global Systems	Describe how the relationships among input solar energy, output terrestrial energy and energy flow within the biosphere affect the lives of humans and other species
		Investigate and interpret the role of environmental factors on global energy transfer and climate change