

# Re-Energy Curriculum Connections

## Activity: Introduction to Wind Energy

### Alberta

- ❖ Science 7: Heat and Temperature
- ❖ Science 9: Electrical Principles and Technologies
- ❖ Science 10: Energy Flow in Technological Systems
- ❖ Science 24: Understanding Common Energy Conversion Systems
- ❖ Science 20-4: Understanding Common Energy Conversion Systems
- ❖ Science 30: Energy and the Environment (D1.4, D1.5k, D1.3s, D2.3k, D2.4k, D2.1sts, D2.3s, D2.4s)

### Ontario

- ❖ Science & Technology 6: Electricity and Electrical Devices (1.1)
- ❖ Science & Technology 7: Heat in the Environment (1.2)
- ❖ Science 9: The Characteristics of Electricity (Academic) (E1.2)
  - Electrical Applications (Applied) (E1.1)
- ❖ Environmental Science 11: Scientific Solutions to Contemporary Environmental Changes (U/C Preparation) (B1.2)
  - Conversion of Energy (U/C Preparation) (F1.1)
  - Energy Conservation (Workplace Preparation) (D1.2)
- ❖ Physics 11: Electricity and Magnetism (F1.2)
- ❖ Physics 12: Energy Transformation (E1.1, E1.2)
- ❖ Chemistry 12: Energy Changes and Rates of Reactions (D1.1)

## Activity: Build a Wind Turbine

### Alberta

- ❖ Science 7: Heat and Temperature
- ❖ Science 9: Electrical Principles and Technologies
- ❖ Science 10: Energy Flow in Technological Systems
- ❖ Science 24: Understanding Common Energy Conversion Systems
- ❖ Science 20-4: Understanding Common Energy Conversion Systems
- ❖ Science 30: Energy and the Environment (D1.4, D1.5k, D1.3s, D2.3k, D2.4k, D2.1sts, D2.3s, D2.4s)

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  - Conversion of Energy (U/C Preparation) (F1.1)
  - Energy Conservation (Workplace Preparation) (D1.2)
- ❖ Physics 11: Electricity and Magnetism (F1.2)
- ❖ Physics 12: Energy Transformation (E1.1, E1.2)
- ❖ Chemistry 12: Energy Changes and Rates of Reactions (D1.1)

## Activity: Wind Turbine Simulator

### Alberta

- ❖ Science 7: Heat and Temperature
- ❖ Science 9: Electrical Principles and Technologies
- ❖ Science 10: Energy Flow in Technological Systems
- ❖ Science 24: Understanding Common Energy Conversion Systems
- ❖ Science 20-4: Understanding Common Energy Conversion Systems
- ❖ Science 30: Energy and the Environment (D1.4, D1.5k, D1.3s, D2.3k, D2.4k, D2.1sts, D2.3s, D2.4s)

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  - Conversion of Energy (U/C Preparation) (F1.1)
  - Energy Conservation (Workplace Preparation) (D1.2)
- ❖ Physics 11: Electricity and Magnetism (F1.2)
- ❖ Physics 12: Energy Transformation (E1.1, E1.2)
- ❖ Chemistry 12: Energy Changes and Rates of Reactions (D1.1)

## Activity: Introduction to Solar Electricity

### Alberta

- ❖ Science 7: Heat and Temperature
- ❖ Science 9: Electrical Principles and Technologies
- ❖ Science 10: Energy Flow in Technological Systems
- ❖ Science 14: Understanding Energy Transfer Technologies
- ❖ Science 24: Understanding Common Energy Conversion Systems
- ❖ Science 30: Energy and the Environment (D1.4, D1.5k, D1.3s, D2.3k, D2.4k, D2.1sts, D2.3s, D2.4s)

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  - Conversion of Energy (U/C Preparation) (F1.1)
  - Energy Conservation (Workplace Preparation) (D1.2)
- ❖ Physics 11: Electricity and Magnetism (F1.2)
- ❖ Physics 12: Energy Transformation (E1.1, E1.2)
- ❖ Chemistry 12: Energy Changes and Rates of Reactions (D1.1)

## Activity: Introduction to Solar Heat Energy

### Alberta

- ❖ Science 7: Heat and Temperature
- ❖ Science 9: Electrical Principles and Technologies
- ❖ Science 10: Energy Flow in Technological Systems
- ❖ Science 14: Understanding Energy Transfer Technologies
- ❖ Science 24: Understanding Common Energy Conversion Systems
- ❖ Science 30: Energy and the Environment (D1.4, D1.5k, D1.3s, D2.3k, D2.4k, D2.1sts, D2.3s, D2.4s)

### Ontario

- ❖ Science & Technology 6: Electricity and Electrical Devices (1.1)
- ❖ Science & Technology 7: Heat in the Environment (1.2)
- ❖ Science 9: The Characteristics of Electricity (Academic) (E1.2)
  - Electrical Applications (Applied) (E1.1)
- ❖ Environmental Science 11: Scientific Solutions to Contemporary Environmental Changes (U/C Preparation) (B1.2)
  - Conversion of Energy (U/C Preparation) (F1.1)
  - Energy Conservation (Workplace Preparation) (D1.2)
- ❖ Physics 11: Electricity and Magnetism (F1.2)
- ❖ Physics 12: Energy Transformation (E1.1, E1.2)
- ❖ Chemistry 12: Energy Changes and Rates of Reactions (D1.1)

## Activity: Build a Solar Oven

### Alberta

- ❖ Science 7: Heat and Temperature
- ❖ Science 9: Electrical Principles and Technologies
- ❖ Science 10: Energy Flow in Technological Systems
- ❖ Science 14: Understanding Energy Transfer Technologies
- ❖ Science 24: Understanding Common Energy Conversion Systems
- ❖ Science 30: Energy and the Environment (D1.4, D1.5k, D1.3s, D2.3k, D2.4k, D2.1sts, D2.3s, D2.4s)

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  - Conversion of Energy (U/C Preparation) (F1.1)
  - Energy Conservation (Workplace Preparation) (D1.2)
- ❖ Physics 11: Electricity and Magnetism (F1.2)
- ❖ Physics 12: Energy Transformation (E1.1, E1.2)
- ❖ Chemistry 12: Energy Changes and Rates of Reactions (D1.1)

### Activity: Introduction to Hydro Energy

#### Alberta

- ❖ Science 24: Understanding Common Energy Conversion Systems
- ❖ Science 20-4: Understanding Common Energy Conversion Systems
- ❖ Science 30: Energy and the Environment (D1.4, D1.5k, D1.3s, D2.3k, D2.4k, D2.1sts, D2.3s, D2.4s)

#### Ontario

- ❖ Science & Technology 6: Electricity and Electrical Devices (1.1)
- ❖ Science 9: The Characteristics of Electricity (Academic) (E1.2)
  - Electrical Applications (Applied) (E1.1)
- ❖ Chemistry 12: Energy Changes and Rates of Reactions (D1.1)

### Activity: Build a Hydroelectric Generator

#### Alberta

- ❖ Science 24: Understanding Common Energy Conversion Systems
- ❖ Science 20-4: Understanding Common Energy Conversion Systems
- ❖ Science 30: Energy and the Environment (D1.4, D1.5k, D1.3s, D2.3k, D2.4k, D2.1sts, D2.3s, D2.4s)

#### Ontario

- ❖ Science & Technology 6: Electricity and Electrical Devices (1.1)
- ❖ Science 9: The Characteristics of Electricity (Academic) (E1.2)
  - Electrical Applications (Applied) (E1.1)
- ❖ Chemistry 12: Energy Changes and Rates of Reactions (D1.1)

### Activity: Introduction to Biomass Energy

#### Alberta

- ❖ Science 9: Electrical Principles and Technologies
- ❖ Science 30: Energy and the Environment (D1.4, D1.5k, D1.3s, D2.3k, D2.4k, D2.1sts, D2.3s, D2.4s)

#### Ontario

- ❖ Science & Technology 7: Heat in the Environment (1.2)
- ❖ Environmental Science 11: Scientific Solutions to Contemporary Environmental Changes (U/C Preparation) (B1.2)
  - Conversion of Energy (U/C Preparation) (F1.2)
  - Energy Conservation (Workplace Preparation) (D1.2)

### Activity: Build a Biogas Generator

#### Alberta

- ❖ Science 9: Electrical Principles and Technologies
- ❖ Science 30: Energy and the Environment (D1.4, D1.5k, D1.3s, D2.3k, D2.4k, D2.1sts, D2.3s, D2.4s)

#### Ontario

- ❖ Science & Technology 7: Heat in the Environment (1.2)
- ❖ Environmental Science 11: Scientific Solutions to Contemporary Environmental Changes (U/C Preparation) (B1.2)
  - Conversion of Energy (U/C Preparation) (F1.2)
  - Energy Conservation (Workplace Preparation) (D1.2)



## Activity: What is Renewable Energy?

### Alberta

- ❖ Science 7: Heat and Temperature
- ❖ Science 9: Electrical Principles and Technologies
- ❖ Science 30: Energy and the Environment (D1.4, D1.5k, D1.3s, D2.3k, D2.4k, D2.1sts, D2.3s, D2.4s)

### Ontario

- ❖ Science & Technology 7: Heat in the Environment (1.2)
- ❖ Science 9: The Characteristics of Electricity (Academic) (E1.2)
  - Science 9: Electrical Applications (Applied) (E1.1)
- ❖ Environmental Science 11: Scientific Solutions to Contemporary Environmental Changes (U/C Preparation) (B1.2)
  - Conversion of Energy (U/C Preparation) (F1.1)
  - Energy Conservation (Workplace Preparation) (D1.2)
- ❖ Chemistry 12: Energy Changes and Rates of Reaction (University Preparation) (D1.1)

## Activity: Renewable Energy Sources

### Alberta

- ❖ Science 7: Heat and Temperature
- ❖ Science 9: Electrical Principles and Technologies
- ❖ Science 30: Energy and the Environment (D1.4, D1.5k, D1.3s, D2.3k, D2.4k, D2.1sts, D2.3s, D2.4s)

### Ontario

- ❖ Science & Technology 7: Heat in the Environment (1.2)
- ❖ Science 9: The Characteristics of Electricity (Academic) (E1.2)
  - Science 9: Electrical Applications (Applied) (E1.1)
- ❖ Environmental Science 11: Scientific Solutions to Contemporary Environmental Changes (U/C Preparation) (B1.2)
  - Conversion of Energy (U/C Preparation) (F1.1)
  - Energy Conservation (Workplace Preparation) (D1.2)
- ❖ Chemistry 12: Energy Changes and Rates of Reaction (University Preparation) (D1.1)

## **Electric Vehicles:**

### **Backgrounder: History of Electric Vehicles**

#### **Alberta**

- ❖ Grade 7: Structures and Forces
- ❖ Grade 8: Mechanical Systems
- ❖ Science 10: Energy Flow in Global Systems
- ❖ Science 10: Stewardship
- ❖ Social Studies 10: Living in a Globalizing World (10-2)

### **Backgrounder: Types of Electric Vehicles**

#### **Alberta**

- ❖ Grade 7: Structures and Forces
- ❖ Grade 8: Mechanical Systems
- ❖ Science 10: Energy Flow in Global Systems
- ❖ Science 10: Stewardship
- ❖ Social Studies 10: Living in a Globalizing World (10-2)

## Backgrounder: Electric Vehicle Batteries

### Alberta

- ❖ Grade 8 Science: Mix and Flow of Matter
- ❖ Grade 9 Science: Matter and Chemical Change
- ❖ Grade 9 Science: Electrical Principles and Technologies
- ❖ Science 10: Energy Flow in Global Systems
- ❖ Science 10: Energy and Matter in Chemical Change
- ❖ Science 10: Energy Flow in Technological Systems
- ❖ Chemistry 30: Electrochemical Changes

## Backgrounder: Electric Vehicle Emissions

### Alberta

- ❖ Science 10: Stewardship
- ❖ Science 20: Science Technology and Society
- ❖ Science 30: Energy and the Environment
- ❖ Social Studies 10: To what extent should we embrace globalization? (10-1)
- ❖ Social Studies 10: Living in a Globalizing World (10-2)

## Backgrounder: How to Buy An Electric Vehicle

### Alberta

- ❖ Science 10: Stewardship
- ❖ Social Studies 10: To what extent should we embrace globalization? (10-1)
- ❖ Social Studies 10: Living in a Globalizing World (10-2)

## Energy Storage:

### Activity: Energy Storage Word Match

### Alberta

- ❖ Grade 7 Science: Interactions and Ecosystems
- ❖ Grade 8 Science: Mix and Flow of Matter
- ❖ Grade 9 Science: Matter and Chemical Change
- ❖ Grade 9 Science: Electrical Principles and Technologies
- ❖ Science 10: Energy and Matter in Chemical Change
- ❖ Science 10: Energy Flow in Technological Systems
- ❖ Science 10: Energy Flow in Global Systems
- ❖ Science 10: Stewardship
- ❖ Science 20: Science Technology and Society
- ❖ Science 30: Chemistry and the Environment
- ❖ Science 30: Energy and the Environment
- ❖ Social Studies 10: To what extent should we embrace globalization? (10-1)
- ❖ Social Studies 10: Living in a Globalizing World (10-2)

### Activity: Pumped Hydro Storage

#### Alberta

- ❖ Grade 9 Science: Matter and Chemical Change
- ❖ Science 10: Energy and Matter in Chemical Change
- ❖ Science 30: Chemistry and the Environment

### Activity: Electrostatic Effect

#### Alberta

- ❖ Grade 7 Science: Interactions and Ecosystems
- ❖ Grade 8 Science: Mix and Flow of Matter
- ❖ Grade 9 Science: Electrical Principles and Technologies
- ❖ Science 10: Energy Flow in Technological Systems
- ❖ Science 10: Energy Flow in Global Systems
- ❖ Science 30: Energy and the Environment

### Activity: Endothermic and Exothermic Reactions

#### Alberta

- ❖ Grade 9 Science: Matter and Chemical Change
- ❖ Science 10: Energy and Matter in Chemical Change
- ❖ Science 30: Chemistry and the Environment
- ❖ Science 30: Energy and the Environment

## Activity: Heat Transfer Lab

### Alberta

- ❖ Grade 9 Science: Matter and Chemical Change
- ❖ Science 10: Energy and Matter in Chemical Change
- ❖ Science 30: Chemistry and the Environment
- ❖ Science 30: Energy and the Environment