

ENERGY ENGINEERS

LEARNING PACKAGE



THE GAIA PROJECT PRESENTS:

Energy literacy activities for your grade 3-5 classroom including play, inquiry, experience and assessment.

This package includes:

- **SIX ACTIVITIES**
- **KEY TERMS**
- **VIDEOS**
- **BOOKS**



Land Acknowledgment

This document has been written and produced on the traditional and current unsundered land of the Wabanaki peoples, as covered by the Peace and Friendship treaties. This land belongs to their ancestors, their current members, and their future descendants. We are grateful for the opportunity to become allies of truth and reconciliation, sharers of knowledge, and to do our best to uplift Indigenous peoples in our work as we listen and learn about how we can contribute to decolonizing education.



The Gaia Project works in New Brunswick schools to empower students to take action on climate change through education.

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<https://thegaiaproject.ca/en/>



Énergie NB Power

the power of possibility
débordant d'énergie

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Acknowledgements

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ACTIVITY 1 :

GAIA TOWN

GOAL :

Join the people of Gaia Town as they explore the energy resources of their community. Learn about the basics of electricity generation and find energy solutions!

MATERIALS :

Videos, Pencils, Paper

CURRICULUM :

- Science - How do people interact with the environment?
- Social Studies - How do communities come together and make decisions.
- Language - Add words from the video to your word wall.



WATCH

THE ENERGY ENGINEERS VIDEO WITH YOUR STUDENTS!



WATCH

THE GAIA PROJECT'S VIDEO ON ENERGY ASSETS IN NEW BRUNSWICK!



DISCUSS

THE ENERGY ASSETS IN YOUR COMMUNITY! (Ex: Types, location, availability/reliability, transportation methods, etc.)



DRAW

RENEWABLE ENERGY SOURCES IN YOUR COMMUNITY!





ACTIVITY 2 :

ENERGY GENERATION

GOAL :

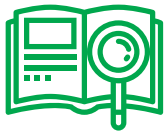
Investigate the pros and cons of renewable and non-renewable energy. Learn about solar, wind, hydro, nuclear and fossil fuel energy generation.

MATERIALS :

Worksheets, books, computer

CURRICULUM :

- Science - How electricity is generated. What are the different forms of energy?
- Social Studies - How does my community generate and use energy?
- Language - Add words from the worksheet to your word wall.



RESEARCH

MORE ABOUT RENEWABLE AND NON-RENEWABLE ENERGY SOURCES!



RECORD

YOUR FINDINGS ON THE ENERGY GENERATION WORKSHEET!



REFLECT

ON THE IMPACT ENERGY GENERATION HAS ON YOUR COMMUNITY!



ACTIVITY 3 :

CIRCUIT SCIENCE



GOAL :

Electricity is distributed and shared in circuits. There are many excellent hands-on tools to safely explore electric circuits. Learn more about the Snap Circuit Green Alternative Energy Kit.

MATERIALS :

The Snap Circuit Review video, paper, markers, tablets or laptops

CURRICULUM :

- Science - The components of a circuit.
- Math - Creating shapes, perimeter, patterns and measurement.
- Language - Add words from the video to your word wall.
- Art - Drawing scientific models.



WATCH

OUR SNAP CIRCUIT REVIEW VIDEO!



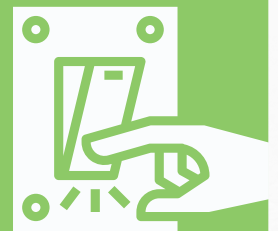
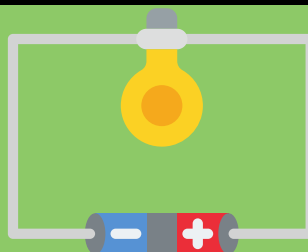
EXPLORE

THESE ONLINE CIRCUIT SCIENCE SIMULATIONS!



DRAW

A CLOSED CIRCUIT WITH A GENERATOR, SWITCH AND LOAD!





ACTIVITY 4 :

SCAVENGER HUNT

GOAL :

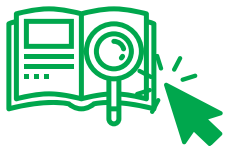
Apply the knowledge and energy awareness you've gained to a local scavenger hunt. Safely find all of the energy related items in a fun place-based activity!

MATERIALS :

Scavenger hunt item list, pencil

CURRICULUM :

- Social Studies - What assets are available in your community?
- Art - Sketch your observations in the community.
- Science - Locate the signs of invisible forces such as electricity.



SEARCH

FOR ITEMS LISTED ON THE SCAVENGER HUNT SHEET!



DRAW

THE ITEMS THAT YOU LOCATE IN YOUR COMMUNITY!



REFLECT

ON THE INVISIBLE FORCE OF ELECTRICITY AND WHERE WE NEED TO LOOK TO FIND IT!



ACTIVITY 5 :

WORD SEARCH



G	E	N	E	R	A	T	I	O	N	J	F	Q	A	J	Q	S	C
G	I	P	B	I	T	X	Y	M	V	Z	Y	O	W	X	K	F	R
Q	E	F	G	C	G	Z	M	T	U	R	B	I	N	E	E	V	E
N	O	N	R	E	N	E	W	A	B	L	E	E	A	J	P	Z	N
K	K	B	U	K	F	Q	T	C	N	L	C	A	G	I	D	G	E
A	L	T	E	R	N	A	T	I	V	E	E	N	E	R	G	Y	W
J	V	Z	U	T	R	A	N	S	M	I	T	K	C	Q	K	X	A
C	L	Z	N	U	C	L	E	A	R	E	N	E	R	G	Y	Z	B
V	E	T	H	Y	D	R	O	E	L	E	C	T	R	I	C	D	L
P	D	R	A	O	W	B	C	C	I	R	C	U	I	T	E	G	E
G	R	E	E	N	H	O	U	S	E	E	F	F	E	C	T	K	X
N	A	T	V	H	N	Q	H	Z	M	V	N	X	R	Z	O	T	U

Words to find:

- Hydroelectric
- Transmit
- Greenhouse Effect
- Circuit
- Turbine
- Renewable
- Non-renewable
- Generation
- Nuclear Energy
- Fossil Fuel
- Alternative Energy
- LED



KEY TERMS

GOAL : Check out the key terms that you've seen throughout the Energy Engineers activities and learn what they mean!

Alternative Energy

Energy sources other than fossil fuels, including renewable energy and nuclear power.

Circuit

The complete path that an electric current travels along.

Electricity

Energy caused by the movement of electrons through matter.

Energy

The ability to do work or make a change.

Fossil Fuel

An energy source made from the remains of organisms (plants, animals and other living things) that lived long ago. These include coal, oil and natural gas.

Generation

The act or process of making or producing something.

Greenhouse Effect

The warming of the Earth's atmosphere that is caused by air pollution ; the greenhouse effect occurs when warmth from the sun is trapped in the Earth's atmosphere by a layer of gases such as carbon dioxide and water vapour.

Hydroelectric

Relating to the production of electricity by using machines that are powered by water.

L. E. D.

Light Emitting Diode. LED lighting produces light approximately 90% more productively than incandescent (old school) light bulbs.

Non-Renewable

Not able to grow again or be made again ; not able to be replaced by nature.

Renewable

Restored or replaced by natural processes ; able to be replaced by nature.

Transmit

To send (information, sound, etc) in the form of electrical signals to a radio, television, computer.

Turbine

An engine that has a part with blades that are caused to spin by pressure from water, steam, or air.

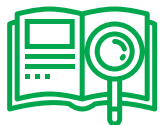
Definitions taken from: <http://www.learnersdictionary.com/> <https://www.studentenergy.org/>

ACTIVITY 6 :

FINAL QUIZ

GOAL :

What did you learn about energy and electricity? Take the final quiz and become a certified ENERGY ENGINEER!



REVIEW

PREVIOUS ACTIVITIES TO PREPARE FOR A QUIZ!



ASSESS

YOUR LEARNING WITH A SHORT QUIZ!



CELEBRATE

THE COMPLETION OF THIS PACKAGE AND APPLY YOUR LEARNING TO YOUR EVERYDAY LIFE!

TAKE THE QUIZ



VIDEOS



GOAL : Learn more about energy with these educational videos!

VIDEO LINK

DESCRIPTION

Renewable & Non-Renewable Sources of Energy



Learn what energy is, what its main properties are and what types of energy there are available. Energy is transformed, transferred, transported and stored. Look at the differences between renewable and non-renewable energy sources.

Solar Energy

More Solar Energy

This video gives a simple introduction to solar energy. Did you know that all of the energy we use comes from the sun? You probably know that's true for solar panels, but the sun is also the ultimate source for energy generated by wind, water, and fossil fuels. Watch this video to learn about renewable sources of energy and more!

Wind Energy

More Wind Energy

Did you know that we can create electricity using the wind? Caitie takes us to a Wind Farm where we get to see just how the wind turbines spin and why this renewable resource is so important for having clean air to breathe and clean land to live on.

Hydro Energy

The energy harnessed from moving water can be used to create electricity; the two most common technologies for this are - Hydropower and Tidal Power.

Fossil Fuels

More Fossil Fuels

Fossil fuels include petroleum (oil), coal, and natural gas. These materials are called fossil fuels because, like fossils, they are the remains of organisms that lived long ago.

Energy Storage

Energy Storage systems are the set of methods and technologies used to store electricity.

Electric Cars

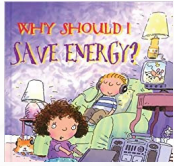
Gecko visits Tesla Motors and takes an electric car out for a spin and discovers some cool gadgets. He learns all about renewable energy and electricity and has a tour of this amazing Tesla Model X!

READ-ALONG BOOKS

ENERGY ISLAND

WHEN CHARLIE MCBUTTON LOST POWER

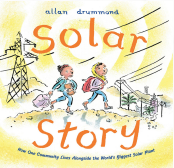
BOOKS



Why should I save energy?

Jen Green

Grade 3-5



**Solar Story:
How One Community Lives
Alongside the World's Biggest
Solar Plant**

Allan Drummond

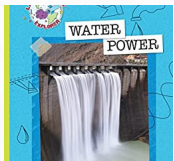
Grade 3-5



**Solar Power
Explorer library: Language Arts
explorer**

Julia Vogel

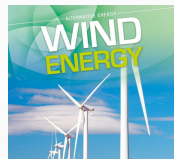
Grade 4-8



**Water Power
Explorer library: Language Arts
explorer**

Kris Woll

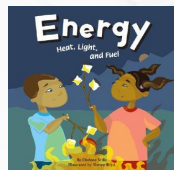
Grade 4-8



Wind Energy

Patricia Newman

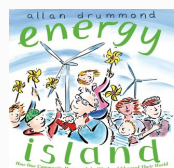
Grade 4-8



Energy: Heat, Light and Fuel

Darlene Stille

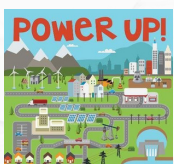
Grade 3-5



**Energy Island:
How One Community
Harnessed the Wind and
Changed Their World**

Allan Drummond

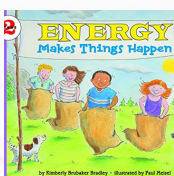
Grade 4-8



**Power up!
A visual exploration of energy**

Shaker Paleja

Grade 3-5



Energy: Make Things Happen

Kimberly Brubaker Bradley

Grade 3-5