

Grade 9 Resource (SNC1W) – Physics: Principles and Application of Electricity

Overview

This lesson can be completed over two days.

Students will use their [Student Handout](#) to:

Part A: Review vocabulary and the definition of hydroelectricity (10 minutes)

Part B: Watch **welcome video of Hydro-Québec**, considering the benefits of hydroelectricity, as well as the intention and target audience of the video. Students reflect on what was *missing* from the video. (10-15 minutes)

Part C: Read the [CBC article](#) on Naskapi Nation protecting land from hydro development on their traditional territory. Students answer corresponding questions for homework or with an elbow partner in class. (~ 20 minutes)

Part D: Consolidate by watching the environmental organization SNAP Quebec's [video](#) (also found at the bottom of the CBC article). Students can reflect in small groups possible sustainable practices. (10-15 minutes)

(teacher solutions provided [here](#) in red)

Optional (if time permits):

a) Students can read and watch about western Canada's first Indigenous-owned and operated community solar energy company, [Green Arrow](#).

b) Students may summarize their learning in a 2 minute presentation in the format of their choice to the class.

Learning Goals

We are learning to

- Assess social, environmental and economic benefits and challenges of hydroelectricity.
- Evaluate and analyze the social, environmental and economic impacts of emerging technologies related to hydroelectricity on the Naskapi Nation.
- Describe ways to achieve sustainable practices.

Success Criteria

I can ...

- Describe what hydroelectricity is.
- Describe three **benefits** (social, environmental and economic) of hydroelectricity.
- Describe three **challenges** (social, environmental and economic) of hydroelectricity
- Explain how hydroelectricity **impacts** the society, environment and economy of the Naskapi Nation.
- Describe potential solutions that are more sustainable.

Curriculum Expectation(s)

Overall Expectations:

D1. Relating Science to Our Changing World

Assess social, environmental, and economic impacts of electrical energy production and consumption and describe ways to achieve sustainable practices.

Specific Expectations:

D1.1 assess social, environmental, and economic benefits and challenges resulting from the production of electrical energy from various sources.

D1.2 evaluate how electrical energy production and consumption impact various communities locally or globally, and describe ways to achieve sustainable practices

D1.4 analyse social, environmental, and economic impacts of emerging technologies related to electrical energy production, consumption, storage, and conservation

Student Prior Learning

Students will have already learned about:

- Electricity and electrical energy
- Production of electrical energy from renewable (e.g., wind, solar, hydro) and non-renewable (e.g., coal, oil) sources.

Lesson Descriptor

Students will use their [Student Handout](#) throughout this lesson (teacher solutions provided [here](#) in red)

Part A: Review. Students review vocabulary (e.g., renewable energy, turbine, generator) and define hydroelectricity by using a word bank. This will ensure students have the necessary background to understand the context and enter the learning.

Part B: Benefits of Hydroelectricity. Students watch the **welcome [video](#) of Hydro-Québec**, and consider the benefits of hydroelectricity, as well as the intention and target audience of the video. Students reflect on what and who was *missing* from the video.

Part C: Impacts of Hydroelectricity. Students read the [CBC article](#) on Naskapi Nation protecting land from hydro development on their traditional territory. Students answer questions.

Part D: Consolidate Students watch the environmental organization SNAP Quebec's [video](#) (at the bottom of the article) and compare it to the video in Part B. Students can reflect in small groups possible sustainable practices, and share with the class.

Optional (*if time permits to extend the learning*)

a) Students can read and watch about western Canada's first Indigenous-owned and operated community solar energy company, [Green Arrow](#). This is an example of how sustainable energy production also creates economic benefits to the Indigenous community by employing and generating revenue for Indigenous people, and creating savings in electricity.

b) Share and Present:

- In small groups, students may present a 2-minute presentation that summarizes their learning.
- Students can choose any format to share with the class, such as:
 - Present and perform a TV news report in class.
 - Create a brief video
 - Present a Spoken word/rap/song

(Option to alternatively present to small groups in a Grade 9 Geography class for cross-curricular connections).

Resources

Hydro-Québec. (2016, July 7). *Welcome to Hydro-Québec : Discover our generating stations and interpretation centres*. YouTube. Retrieved October 28, 2022, from <https://www.youtube.com/watch?v=bc3J-fbEpyA>

Jung, D. (2022, July 7). Naskapi Nation vows to protect its paradise in northern Quebec. *CBC*. <https://www.cbc.ca/news/canada/montreal/naskapi-nation-traditional-land-hydro-quebec-1.6510678>

Natural Resources of Canada. (n.d.). *5 THINGS YOU NEED TO KNOW ABOUT HYDROPOWER CANADA'S NUMBER ONE ELECTRICITY SOURCE*. Natural Resources Canada. Retrieved October 28, 2022, from https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/energy-resources/5_things_you_need_to_know_about_hydropower.pdf

Ontario Power Generation. (n.d.). *Hydroelectric power: Hydroelectricity: How it works*. OPG. Retrieved October 28, 2022, from <https://www.opg.com/powering-ontario/our-generation/hydro/how-it-works>

SNAP Quebec. (2022, June 29). *Together for the conservation of the Cambrien and Nachicapau lakes region!* YouTube. Retrieved October 28, 2022, from <https://www.youtube.com/watch?v=MViyIPb6LOE>

Images

Images from www.canva.com

Ontario Power Generation. (2007). *Adam Beck Complex* [Photograph]. Wikimedia Commons. https://commons.wikimedia.org/wiki/File:Adam_Beck_Complex.jpg