

Course Code **SNC1W**Duration **75 min**

Date:

CURRICULUM EXPECTATIONS

Learning Goal

Students will:

- relate science to our changing world by assessing the social, environmental and economic impacts of electrical energy production and consumption, and describe ways to achieve sustainable practices.

Specific Expectations

Students will:

- A2.4** apply scientific literacy skills when investigating social and environmental issues that have personal, local, and/or global impacts.
- D1.1** assess social, environmental, and economic benefits and challenges resulting from the production of electrical energy from various sources.
- D1.3** develop a plan of action to address a local or global electrical energy production or consumption issue, including strategies for energy conservation.

PRE-PLANNING REFLECTION

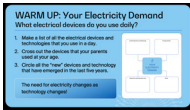
Prior Learning Connections	Reason for Lesson	Relevance to Student (why do they need to know this)
- Students understand principles of energy conversion and electricity generation. - Students recognize some costs and benefits of renewable and non-renewable energy sources. - Students can identify the need for electricity in their lives.	☐ introduce ☐ reteach ☒ extend	- Decisions about Ontario's future energy production are being made now and will affect the sustainability to meet students' future needs. - Students will recognize their role as consumers of electrical energy and the need for conservation to maintain sustainability.
Anticipated Learning Gaps and Barriers	Modifications and Student Variability	
- Some students may struggle with reading comprehension or the ability to transfer information to a worksheet. - Some students may have challenges with the mathematics required to generate precise pie chart infographics. - Some students may have difficulty collaborating and reaching a group consensus.	- Consider heterogenous groupings of students. - Consider reducing the number of scenarios. - Allow for options in completing the energy mix activity: - approximations on pie charts (no math required) - use of spreadsheet software to generate pie charts - Explicit teaching of math skills required for pie chart or allow for approximating the proportions. - Consider alternatives to class discussion to debrief (record and submit individually or as a group).	
Resources and Materials		Assessment
Accessibility/Media (as applicable) ☐ Whiteboard ☒ LCD projector ☐ Web cam ☐ Digital camera ☒ Document camera ☒ Computer ☐ FM system Other:	Equipment/Materials - Energy Mix cards (1 set per group) OR WattNext.ca Energy Source Characteristics	☒ FORMATIVE ☐ SUMMATIVE ☐ Observation ☒ Conversation ☒ Product Energy Mix Activity (options): - As a group activity followed by a class discussion - Worksheet completed and submitted for formative assessment Gamification Option: Check out WattNext.ca Teacher Resources for POWER UP! Energy Card Game.



LESSON SEQUENCE

Minds On

[slides 3-5]
10 min



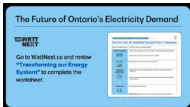
Warm Up: Your Electricity Demand [slide 4] with **handout 2.3 Warm Up Brainstorm**

- Students brainstorm their electricity demand in the categories of transportation, food preparation and storage, education and entertainment, and other.
 - Cross off any items that were used by their parents at their age.
 - Circle any technology that is new to them in the last 5 years (e.g. ChatGPT, e-scooters, smart devices, Internet of Things). Add to the list as discussions ensue.

Conclusion: The need for electricity changes as technology changes!

Action

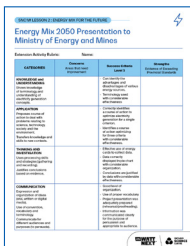
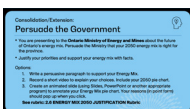
[slides 6-16]
45 min



- The Future of Ontario's Energy Demand [slide 7-9]
 - Use WattNext.ca to complete **handout 2.4 Future of Ontario's Energy**. (Answers are summarized [slide 9].)
 - Conservation is part of the solution [slide 10]. Ask students for actions that they can take to conserve electricity (e.g.: turn off lights, unplug charging blocks, dry clothes on a clothes line, etc.).
- Ontario's Energy Mix Activity: Background information [slide 11-12].
 - What is Ontario's largest source of electricity? To view the actual, hourly numbers go to Gridwatch (<https://live.gridwatch.ca/home-page.html>). These numbers reflect grid flexibility, demand and weather dependency.
 - Introduce the energy mix activity by showing the mix of electricity sources (2024 data) [slide 11].
 - Students work on **2.5 Energy Mix Activity** (handout). Allow time for students to compare various mixes and complete Part 1. (Instructions and sample calculations for the pie charts are provided on Slide 16).
 - Move students into small groups to complete Part 2. Encourage discussion and consensus forming.

Consolidation and Extension

[slides 17-19]
15 min +



- Complete the discussion questions on the Energy Mix Activity [slide 19].
- Extension: Energy Mix 2050 [slide 20]. Persuade the Ministry of Energy and Mines to adopt your 2050 Energy Mix, justifying your choices.

(See **2.6 Energy Mix 2050 Justification Rubric** for evaluation criteria.)

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POST PLANNING REFLECTION

Teacher notes

Areas of the lesson
that went well

Areas of the lesson
to be improved

Considerations for
how to deliver the
lesson next time