

## Energy Efficiency Education Resources Compiled March 2017, Updated February 2018

### CANADA

#### **Natural Resources Canada, Office of Energy Efficiency**

The Office of Energy Efficiency (OEE) is Canada's centre of excellence for energy, efficiency and alternative fuels information. The OEE also offers grants and incentives and other resources, including workshops for professionals, statistics and analysis, and hundreds of free publications.

See: <http://www.nrcan.gc.ca/energy/offices-labs/office-energy-efficiency>

- **Kids Club, Energy & the Environment:**
  - This education section of NRCan's website offers downloadable education resources. These resources feature characters (NRCat, Inspector Joules and Simon) teaching about energy efficiency/energy conservation (with a bit of renewable energy thrown into the mix). Resources include: videos, games and teachers' tools.
- **Student Activity Books and Teacher Guides:** Topics covered in the activity books include: energy conservation vs. energy efficiency; How Green is your Kitchen (a green kitchen energy audit); Energy Use (direct vs. indirect); Water and Energy (shows how much water we use inside our homes by activity); Brainstorming Energy Efficiency Tips for our Home; Home Energy Audit; and Classroom Audit. Audits are very basic and more behaviour-based; non-technical.
- **Videos:** Short clips (less than two minutes) of cartoon animated scenes: "Stand By Power" (shows kids shutting off computer switches; "Ecological Footprint": describes what an ecological footprint is).
- **Games:**
  - Jumble words: un-jumble letters to reveal a word related to energy.
  - Home Energy Pie: place the description of the home activity in the piece of pie that it matches (the bigger the piece of pie, the more energy the activity uses).
  - Find the Energy Wasters: Within an illustration (a cross-section of a house), circle where there is energy being wasted.
  - True or False: Must choose T or F for each statement (e.g., taking a bath is more energy efficient than taking a shower).

#### **The Alberta Government**

- **One Simple Act School Toolkit:** This Toolkit provides Grades 1-6 teachers with the tools and resources to have students personally commit to one of ten simple acts that protect the environment. This toolkit is flexible, offering a collection of tools that teachers can draw on based on students' needs (e.g., energy and water conservation; energy efficiency). There is also an "Impact Calculator" that pairs with

this toolkit to “measure” the savings of carbon, water, and waste; and school “commitment” posters, etc. See: <http://www.onesimpleact.alberta.ca/get-involved/school-toolkit.asp>

### **Alberta Council for Environmental Education (ACEE)**

See: <http://www.abcee.org>

#### ➤ **Alberta Green Schools**

- Alberta Green Schools helps school divisions and schools deepen their environmental, energy and climate change education. ACEE started Green Schools 2013/14 with a pilot with Rocky View Schools and expanded in March 2016 to six other school divisions, thanks to industry sponsors.

#### ➤ **Resource Database**

- With 479 items for K-12 students on a variety of environmental education topics, including energy (86 items listed). These resources include: lesson plans, downloadable resources, presentations, YouTube videos, service learning, and presentations.

#### ➤ **Curriculum for a Sustainable Future**

- The Curriculum for a Sustainable Future continues to support curriculum development to infuse more environment, energy and climate change education across all grades and subjects.

#### ➤ **Climate Leadership in Schools** (*not a EE resource, but related!*)

- In 2016, ACEE contracted the Centre for Global Education and engaged over 3000 Alberta students to answer the question – and they have some great ideas! Students outline their recommendations in **Supporting Climate Leadership in Alberta Schools: Recommendations by students for Alberta's Educational leaders** which they presented to government leaders in June 2016.

### **GreenLearning**

See: <http://www.greenlearning.ca/about-us>

#### ➤ **EnerAction**

- Everyone can have an impact on energy conservation through the choices we make in our daily lives. The EnerAction program teaches students about this connection by using our kid-friendly carbon calculator to assess the amount of energy used by the lights in their classroom, and then formulate a plan to reduce their consumption and track success. Best of all, it's easy, fun and a way for kids of all ages to see the impact that behaviours can have on energy use.

#### ➤ **Electricity All Around Us**

- This program teaches the electricity unit in the elementary Science curriculum with an interactive module designed to engage young learners. Guided by the character Electra, students explore things that make, use, and carry electricity and electromagnetism. A mixture of online and printable activities to support a diversity of learning styles.

#### ➤ **Real World Energy**

- This program teaches the electricity unit in the elementary Science curriculum with an interactive module designed to engage young learners. Guided by the character Electra, students explore things that make, use, and carry electricity and electromagnetism. Uses a mixture of online and printable activities.

### **Inside Education**

See: [www.insideeducation.ca](http://www.insideeducation.ca)

- **Electricity digital poster and teacher's guide** (Gr. 5, 9): Examines Canada's most common sources of electricity, its generation, transmission and distribution.
- **Energy Dialogues** (Gr. 7-12): Interactive website which includes a video series, student questions, and extension activities. Topics: hydraulic fracturing; wind power; energy and wildlife ([www.energydialogues.ca](http://www.energydialogues.ca))
- **Petroleum** (Gr. 4, 5, 7-12): Digital poster education kit examines formation, location, production of petroleum and issues related to our use of this natural resource.
- **Stewardship: Energy, Climate and You** (Gr. 4-7): Digital poster education kit with teacher's guide that focuses on how our energy use relates to climate change; also contains activities that encourage personal action/stewardship related to energy.
- **CARE PACKAGE - A Stewardship Education Kit** (HS): 15 items that will help students explore ways to conserve energy, water, and reduce waste.
- **Electricity Challenge – A Solar Lantern Building Project** (JH): 1.5 hour program that evaluates sources of energy and investigates electrical technology.
- **Edmonton – Energy – Efficiency (E3) Education Program** Examines how local energy efficiency and conservation actions connect to the larger climate conversation and discuss the role that students play in the future of energy.
- **Renewable Energy and Electricity Education Program** (May 11-13, 2017 – a professional development program for teachers).

### **Destination Conservation (DC)**

See: <http://www.dcplanet.ca/index.html>

- DC is a multi-year, student-driven, activity-based program that brings environmental education alive in schools. DC increases sustainability by developing leadership teams in schools that conserve energy and water, reduce waste and protect the environment while tracking their impact and measuring the financial benefits. These teams are comprised of students, teachers, principals, custodians and parents who work together with community partners to implement school-wide campaigns.
- A multi-year program of up to six years. The first three years focus on learning about energy and water conservation and waste reduction. The advanced program takes conservation lessons out of the classroom and into the home and the community. Themes include food and sustainability, our community, transportation, the global village and the future of energy.

### **ATCO Electric**

See: <http://www.atcoenergysense.com/In-Your-Community/Energy-Education-Mobile>

- **ATCO Energy Education Mobile**

- The Energy Education Mobile is a 40-foot classroom on wheels that travels throughout Alberta. Since 2010, this free, one-of-a-kind learning experience has visited over 380 schools in 200 communities. The Energy Education Mobile is designed for Grade 4 students to educate about Alberta’s energy resources and energy efficiency and complement the AB Grade 4 curriculum in Science and Social Studies.
- **ATCO Energy Sense**
  - **Power Safe** (Grade 5, Teaching Power). This resource (lesson plan, student worksheet) includes relevant topics, such as: The Flow of Electricity and Electricity Distribution.
  - **Power Wise** (Grade 5, Teaching Power). This resource covers the following topics: Why save electricity? (the environmental/economic benefits); Measuring Electricity (voltage, wattage, amperage); Reading the Electricity Meter; and Power Wise at Home and School (an electricity audit activity which includes worksheets).

### **Student Energy**

See: <https://www.studentenergy.org>

- Student Energy is a global, not-for-profit, that is creating a movement of young leaders committed to transitioning the world to a sustainable energy future. They have Chapters all over the globe with two in Alberta: The University of Alberta and Mount Royal University.
- International Student Energy Summit
- Research
- Energy Voices – a monthly radio show
- Energy Systems Map which shows energy in its various types and forms and processes and the interconnections from sources to consumption.

### **Ontario EcoSchools (started by Toronto District School Board EcoSchools)**

See: <http://www.ontarioecoschools.org>

- **Resource Library** has educational resources as well as resources that support the EcoSchools program (certification guides, resources, etc.)
- **Get Inspired Energy Conservation Workbook**
- **How to Conduct an Energy Conservation EcoReview (video)**

### **SEEDS Connections**

See: <http://seedsconnections.org>

- **Green Schools**: This program supports students’ environmental activities and projects at schools. Schools can achieve a special green “status” based on number of green projects or achievements. The Green Schools Kit helps schools get set up for the challenge. The Kit includes: a program resource manual; an idea book; a green handbook and project log; action certificates; earth stickers; environmental trophy, etc.
- **Energy Literacy Series**: A web-based teaching program for Grades 6 to 12. There is an “Intro to Energy Module” and modules on different forms of energy (coal, geothermal, solar, etc.). There are also worksheets, question sets, and assignments available for download and a free Teacher CD.

- Teachers can also order a **“Teaching Activities for Climate Change”** (TACC) kit from website. This Kit includes: energy saving action cards; a CD with PowerPoint presentations; and a teachers’ guide. The Kit fits with secondary science, social studies, geography, and environmental studies and takes 1-3 class periods.

### **Toronto Renewable Energy Coop (province-wide) (TREC)**

See: <http://www.trec.on.ca/#TREC-Education>

- TREC has education programs for elementary and secondary levels, and Indigenous communities (workshops in RE, skill-building RE projects). School workshops/programs are available in the Toronto area, Ottawa and London.
- **Grade 5 workshop: “Concentrate on Conservation”** uses a hands-on activity to teach: energy conservation, how energy transfers & best practices for conserving energy at home.

### **EcoSpark**

See: <http://www.ecospark.ca/wattwize>

- **WattWize**
  - Wattwize was an interactive electricity program that built a culture of conservation in schools across the Greater Toronto Area. From 2005 to 2013, we supported and coached over 13,500 elementary and high school students to understand and audit their energy consumption using wattmeters, and to reduce their electricity use in schools. We also facilitated the development and implementation of their conservation plans. These included posting stickers around light switches to remind teachers and students to turn off the lights when the room is not in use. One class even created a papier-mâché pig called the “energy hog” that was given to a teacher who was not following best practices in energy consumption at school.

### **Canadian Geographic/Shell**

See: <http://energydiet.canadiangeographic.ca/2017/main/energymatters>

- **The Classroom Energy Diet Challenge**
  - The Classroom Energy Diet Challenge is a competition among Canadian Kindergarten to Grade 12 classrooms that aims to increase energy awareness. Throughout the challenge period (January 30 - April 26, 2017), classrooms work together to complete 25 energy-themed challenges designed to teach students about different energy topics and increase their overall energy awareness. Each classroom can select the number of challenges to complete and the order to complete them in based on the needs of their classroom.

## **UNITED STATES**

### **CLEAN: Climate Literacy & Energy Awareness Network**

See: [www.cleannet.org](http://www.cleannet.org)

- **Great Energy Debate**. Students evaluate the advantages and disadvantages of the major energy sources in an innovative debate format. (NEED)  
<http://www.need.org//Files/curriculum/guides/GreatEnergyDebate.pdf>

- **Home Energy Quiz.** The Home Energy Quiz will get your students thinking about how and where energy is used in the home. The follow-up discusses energy saving activities that can be taken to reduce the cost of heating and cooling. (Connecticut Energy Education) <http://www.ctenergyeducation.com//lesson.htm?id=n5hhdyq>
- **Conducting a Classroom Energy Audit.** This helps students understand components of energy efficiency within their classrooms and schools. The unit is split into categories including classroom envelope, classroom energy use, heating and cooling, lighting and controls, and energy efficient classroom examples. (Connecticut Energy Education) <http://www.ctenergyeducation.com//lesson.htm?id=freu4vvm>
- **Energy Walkabout:** Students work in pairs to evaluate energy use in their school and make recommendations for improved efficiency. Students create and use an energy audit tool to collect data and present recommendations to their class. Further communication at the school and district level is encouraged (National Energy Department, US Dep't of Energy). <http://cleanet.org/resources/42684.html>

### **The Lifestyle Project.**

See: <http://serc.carleton.edu/introgeo/enviroprojects/lifestyle.html>

- This multi-week project begins with a measurement of baseline consumptive behavior followed by three weeks of working to reduce the use of water, energy, high-impact foods, and other materials. The assignment uses an Excel spreadsheet that calculates direct energy and water use as well as indirect CO2 and water use associated with food consumption. After completing the project, students understand that they do indeed play a role in the big picture. They also learn that making small changes to their lifestyles is not difficult and they can easily reduce their personal impact on the environment. (Starting Point)

### **Big Energy Gamble.**

See: [http://www.pbs.org/wgbh/nova/education/activities/3519\\_energy.html](http://www.pbs.org/wgbh/nova/education/activities/3519_energy.html)

- Students conduct an energy audit to determine how much carbon dioxide their family is releasing into the atmosphere and then make recommendations for minimizing their family's carbon footprint. Includes “Your Energy Audit” and “Carbon Dioxide Emission Inventory” handouts. (NOVA Teachers)

### **Alliance to Save Energy**

See: <https://www.ase.org>

- **PowerSave Schools program**
  - Students are empowered to grow as leaders, apply academic knowledge to solve the real-world challenge of increasing utility bills, and move their schools and communities toward a greener future with energy efficiency practices and measurable energy savings. A variety of lesson plans (K-12) on energy efficiency are available. <http://www.powersaveschools.org/lesson-plans.html>
- **BLOG TO SAVE ENERGY**
  - An interesting blog with EE tips (e.g., “Your 2016 EE Holiday Gift Guide).

### **Green Schools Alliance**

See: <http://www.greenschoolsalliance.org/home>

- **Measurement and Reporting Tools** (Protostar; EnergyStar Portfolio Manager; Dashboard Reporting): <http://www.greenschoolsalliance.org/measure-report>

### **NEED (National Energy Education Development Project)**

See: [www.need.org](http://www.need.org)

- **Over 100 curriculum resources** for energy efficiency and energy management (e.g., energy infobook activities for primary, elementary, intermediate and secondary levels are downloadable for free and energy activity learning kits are available for purchase). <http://www.need.org/curriculum>

### **Switch Energy Film & Education Project**

See: [www.switchenergyproject.com](http://www.switchenergyproject.com)

- “Switch” is a documentary (by Harry Lynch and Dr. Scott Tinker) about the energy transition. Over the three years of filming, the Switch documentary expanded into the Switch Energy Project. The project’s mission is to build a baseline understanding of energy, transform the energy conversation from polarized to practical and promote energy efficiency and conservation.
- Switch has an “educator portal” with free access to full documentary, Energy Lab and Energy 101 videos (featuring interviews with experts on why EE is critical), curriculum and study guide from need.org, and education screening materials (K-12) (e.g., electricity factsheets, energy efficiency factsheets).