

Energy Education Toolkit & Professional Development Program

Introduction

The successful launch of the Energy Education Toolkit program in January 2021 and continuation of the program in 2022 led Inside Education to build another 100 toolkits to release to schools in the 2023/2024 school year. From February-June of 2024, **66 schools** across Alberta received an Energy Education Toolkit and **74 teachers** from **31 communities** participated in Energy Education Toolkit professional development programs.

Each Energy Education Toolkit contains materials and activities for students from grades 4-12 to learn about energy in a interactive and engaging way. The toolkit was initially designed to meet a growing demand for support during the pandemic when outside guests were not allowed to visit schools, but feedback from teachers has made it clear that even in a post-pandemic world, these types of hands-on learning resources are extremely useful. Schools applied to receive a kit and attend one of five teacher professional development program - located in Lethbridge, Calgary, Edmonton, Grande Prairie, and Fort McMurray - to ensure a strong foundation of energy and workshop the kit contents.



The Toolkits

Each Energy Education Toolkit includes tools, models and materials to allow students to explore energy education in a hands-on way, as well as learning resources and activities to guide teachers and students through the various topics and activities. Each Toolkit also included a Teacher’s Guide that provided a general overview of the Toolkit and its materials. The newest version of the Toolkit was updated with current statistics and small changes in materials based on the teachers’ feedback from the previous version.



The Energy Education Toolkit can be used on an ongoing basis for multiple classes within each school, which will extend its impact for years to come. To receive a kit, teachers submitted an application form that asked why they wanted the kit, how it would be used at their school, and which professional development program they wanted to attend across the province. Many applications were received, indicating that this type of learning resource is in high demand. Applicants covering a variety of grade levels, subjects, and geography were selected.



The Toolkits were designed to lead teachers and students through nine key energy education topics:

- 1 | Natural Resources for Energy
- 2 | Canada’s Energy Landscape
- 3 | Electricity Generation
- 4 | Renewable & Alternative Energy
- 5 | Experience Fossil Fuels
- 6 | Energy Efficiency vs. Conservation
- 7 | Energy Storage
- 8 | Stewardship
- 9 | Energy Innovation

The content and activities were developed for a grade 4-12 audience, with many opportunities for adaptation depending on each class’s abilities, knowledge level, and set up. The Energy Education Toolkit content linked primarily to the Science and Social Studies curriculum, with extensions into Math, CTS, Outdoor Education, and more.

Professional Development

Teachers that received an Energy Education Toolkit were invited to attend a Professional Development workshop to learn more about Alberta’s energy landscape and learn about the tools and activities in their Toolkit from Inside Education staff. A total of **74 teachers** from across Alberta attended the Professional Development workshop sessions from February-June 2024.

Each Professional Development program consisted of a variety of expert guest speakers, industry tours, and in-depth workshop for teachers to use the Energy Education Toolkit in their own classrooms.



The professional development workshops were held in the following communities:

- **Lethbridge** - Friday, February 23rd
- **Calgary** - Friday, March 22nd
- **Edmonton** - Tuesday, April 23rd
- **Grande Prairie** - Thursday, May 16th
- **Fort McMurray** - Friday, June 7th



Lethbridge - February 23, 2024 Southwestern Alberta Teachers’ Convention

***Participants: 4 teachers from Carmangay, Raymond, and Stirling**

4 Teachers, representing **4 Schools** from **3 Communities**, participated in the **Lethbridge Energy Education Toolkit Professional Development Workshop**. As part of the Southwestern Alberta Teachers’ Convention, teachers participated in a 1-hour workshop lead by Inside Education. The workshop started with an overview of Alberta’s Energy Landscape and the Energy Transition to Net-Zero by 2050. The remainder of the workshop consisted of an intentional orientation into the Energy Education Toolkit to prepare teachers to use the resource in their classrooms.

“Inside Education presented a great workshop and I really enjoyed the information and resources. The Energy Education Toolkit is relevant to various science curricula. I look forward to using this toolkit in the classroom!” - Teacher, Stirling School

Calgary - March 22, 2024

PROGRAM AT A GLANCE

Program Welcome and Introduction

Ralph Klein Park

Speakers

- Amos Benzvi, *Cenovus (Strategic Innovation)*
- Lewis Percy, *City of Calgary (Climate Planning)*
- Michael Edwards, *TC Energy (Saddlebrook Solar)*

Tour #1 - Energy Education Project Showcase

Notre Dame High School

Tour #2 - Carbon Capture Utilization

Alberta Carbon Conversion Technology Centre

Energy Education Toolkit Workshop

Program End

26 Teachers, representing **20 Schools** from **8 Communities**, participated in the **Calgary Energy Education Toolkit Professional Development Workshop**.

Following a program welcome and introduction, teachers heard from three guest speakers, discussing topics including strategic energy innovation, climate planning initiatives, and solar energy generation and usage. Teachers then hopped on a bus for two tours around Calgary. The first tour was to Notre Dame High School to explore various energy student action projects in the school's Pre-Engineering lab. The second was a behind-the-scenes tour to the Alberta Carbon Conversion Technology Centre to learn more about Carbon Capture Utilization technologies. Following the tours, the program ended at Ralph Klein Park with an in-depth workshop of the Energy Education Toolkit.

***Participants: 26 teachers from Airdrie, Bentley, Calgary, Calmar, Chestermere, Cochrane, High River, and Okotoks**



Amos Benzvi, Cenovus (top); Lewis Percy, City of Calgary (bottom)



Alberta Carbon Conversion Technology Center

“This is one of the best professional learning opportunities teachers can do to help bring the curriculum objectives to life. I love the hands on components, the tours, the experts...it was very inspiring! I would highly recommend Inside Education programming to any teacher!”

- Amanda Klager, *RancheView School*

Edmonton - April 23, 2024

PROGRAM AT A GLANCE

Program Welcome and Introduction

Northern Alberta Institute of Technology (NAIT)

Tour #1 - Innovations Exhibition Hall Tour

Canadian Hydrogen Convention

Tour #2 - Petroleum & Pipeline Management

Pembina Pipeline Corporation

Energy Education Toolkit Workshop

Program End

***Participants: 26 teachers from Beaumont, Bonnyville, Devon, Drayton Valley, Edmonton, Edson, Lloydminster, Red Deer, St. Albert, St. Paul, Vegreville**

26 Teachers, representing 19 Schools from 11 Communities, participated in the Edmonton Energy Education Toolkit Professional Development Workshop.

Following a program welcome and introduction, teachers participated in two tours in the Edmonton area. In the first tour, teachers were free to roam around the Canadian Hydrogen Convention Exhibition Hall to learn from industry professionals about hydrogen's role in Alberta's Energy Landscape. In the afternoon, teachers then headed to Pembina Pipeline Corporation in Sherwood Park to learn more about careers in energy, tour Pembina's control room, and participate in an interactive pipeline and fractional distillation demonstration. Following the tours, the program ended at NAIT with an in-depth workshop of the Energy Education Toolkit.



Canadian Hydrogen Convention



Fractional Distillation Demonstration, Pembina Pipeline Corporation

“It was an amazing experience. I loved the access we had to industry and the corporate world that we wouldn't otherwise have had. I am very excited to use all the things in the Energy Education Toolkit in the Energy and Climate Change units of the new Grade 6 Curriculum!” - Evelyn Chan, G.H. Dawe School

Grande Prairie - May 16, 2024

PROGRAM AT A GLANCE

Program Welcome and Introduction
Grande Prairie Heritage Museum

Tour #1 - Horse Lake BioEnergy Junction
Horse Lake First Nation

Tour #2 - Sexsmith Solar Farm
Town of Sexsmith

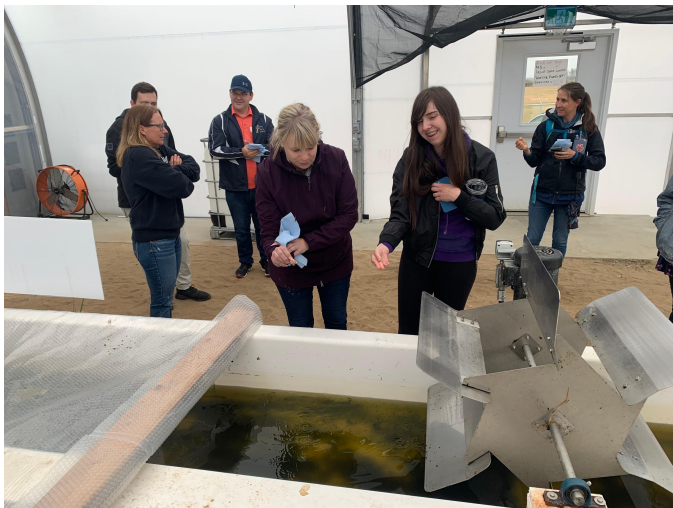
Energy Education Toolkit Workshop

Program End

9 Teachers, representing **9 Schools** from **7 Communities**, participated in the **Grande Prairie Energy Education Toolkit Professional Development Workshop**.

Following a program welcome and introduction, teachers participated in two tours. The group first travelled to the Horse Lake First Nation by bus, where the group received a behind-the-scenes tour of the Bioreactor and Greenhouse onsite at the BioEnergy Junction. The group then travelled to the Town of Sexsmith, where teachers learned from the Sexsmith Public Works Superintendent and Mayor about solar energy generation onsite at the Town's large solar farm. Following the tours, the program ended at the Grande Prairie Heritage Museum with an in-depth workshop of the Energy Education Toolkit.

***Participants: 9 teachers from Dawson Creek, BC; Donnelly; Grande Prairie; Hythe; Manning; Sexsmith; Sturgeon Lake Cree Nation**



Horse Lake BioEnergy Junction

“The Toolkit is such a useful tool, the tours and speakers were amazing, and saw facilities I didn't know existed right in our region. I would be letting teachers know how valuable this program is, the ability to use clear guides, content, student friendly, and fun programming.”

- Erin Oliver, *Dawson Creek, BC*



Sexsmith Solar Farm

Fort McMurray - June 7, 2024

PROGRAM AT A GLANCE

Program Welcome and Introduction

Oil Sands Discovery Centre

Hydrogen Fuel Motorcoach Showcase

Diversified Transportation

Oil Sands Reclamation & Bison Paddock Tour

Mildred Lake, Syncrude Energy

Speakers

- Len Savoy, *Pathways Alliance (Pathway to Net-Zero)*
- Mackenzie Velders, *Solar Alberta (Solar Energy & Usage)*
- Julie Carter, *WBEA (Environmental Monitoring & Assessment)*

Energy Education Toolkit Workshop

Program End



Environmental Assessment with WBEA

***Participants: 9 teachers from Fort McMurray and Timberlea**



Mildred Lake & Bison Paddock

9 Teachers, representing 6 Schools from 2 Communities, participated in the Fort McMurray Energy Education Toolkit Professional Development Workshop.

Following a program welcome and introduction, the Diversified Transportation Hydrogen Fuel Motorcoach was showcased, allowing teachers to learn more about the science behind hydrogen fuel technologies. The group then travelled by bus to Syncrude's Mildred Lake for an in-depth presentation about oilsands land and ecosystem reclamation, including a short visit to the nearby paddock of bison living on reclaimed land.

In the afternoon, the group travelled back to the Oil Sands Discovery Centre in Fort McMurray for an interactive set of three presentations from local energy experts; discussing topics including the Pathway to Net-Zero, Solar Energy and Usage, and Environmental Monitoring and Assessment. The program concluded with an in-depth workshop of the Energy Education Toolkit with teachers.

“This workshop provided great hands-on learning experiences that will substantively support instruction in the classroom! I plan to use the Energy Education Toolkit to support learning, to encourage environmental stewardship, and provide understanding of how energy is generated and used in Alberta.”

- Karrian Banton-Brown,
Our Lady of the Rivers Catholic School

Program Impact and Feedback

5 Workshops
74 Teachers
66 Schools
31 Communities

Inside Education is proud to report that feedback for the *Energy Education Toolkit and Professional Development Program* was overwhelmingly positive and will result in a meaningful impact in the classrooms and schools of participating educators.

Based on a post-survey following each program, **100%** of polled participants indicated that they would recommend Inside Education programs to a colleague, and strongly agreed that the program was both Educational and a High-Value Professional Development Opportunity.

When asked how comfortable teachers felt about about teaching energy topics in their classrooms following the program, the average response was **3.6** (on a scale of 1 to 4, where 1 was “not at all” and 4 was “very comfortable”).

It is estimated that the learning of **>2000 students** will be impacted by this Energy Education Toolkit resource and Professional Development program, calculated based on teacher responses in the post-survey.



“I would definitely participate in future events with Inside Education. This professional development program was an absolute delight and felt like a ‘field-trip’ for teachers!” - Robyn Allen, | *Sexsmith, AB*

“Inside Education offers one of the most valuable PD opportunities in Alberta. You are guaranteed to learn something new, and you will always leave with ideas to implement in the classroom tomorrow!”

- Makayla Widmer | *Airdrie, AB*

“Inside Education provides excellent Professional Development opportunities that are engaging and valuable, and something you can use in the classroom the next day!” - Debbie Harris | *Hythe, AB*

Summary and Futures

At Inside Education, we are pleased with the outcomes of the Energy Education Toolkit and Professional Development program, and the engagement of 74 highly dedicated teachers from across Alberta.

Positive feedback from participants, both during the programs and via the post-program survey, indicated that the Energy Education Toolkit continues to be a practical resource and the Professional Development workshops were high-quality and meaningful opportunities for teachers to enrich energy and climate education in their classrooms. Through these programs, teachers learned valuable information from expert presenters and industry tours, and gleaned various strategies to utilize the Energy Education Toolkit in their classrooms.

The Energy Education Toolkits were designed to be used across wide curricular areas, grades, and in multiple classes for years to come. From February - June 2024, 2000+ students and 66 schools have benefited from the Energy Education Toolkit and Professional Development Program, which only represents the beginning of the program's impact on future students and schools.

We extend our sincerest appreciation to all our program partners for their generous support in making this program possible. We recognize the importance of authentic hands-on energy education for students and teachers in a rapidly changing energy landscape. In the 2024-2025 school year, we look forward to the return of Energy Innovation Days across the province, the A+ for Energy Grant Program, along with energy-related classroom programs and energy education resources for teachers and students. With the importance of energy education ever-present in our rapidly-changing energy landscape, we remain committed to providing high-quality, hands-on opportunities for educators and students across our province.

Contact

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