

2023/2024 Energy Innovation Days

In the 2023-2024 school year, Inside Education's Energy Innovation Days program gave 646 Alberta junior and senior high school students the opportunity to see energy innovations in their communities first hand and learn about topics such as clean fuels, renewable energy, energy efficiency and careers in the energy sector. These engaging programs were held throughout the school year in the following locations:

September 13, 2023 | Edmonton (Carbon Capture Convention)

September 20, 2023 | Calgary (Energy Works Career Expo)

November 7, 2023 | Fort McMurray

November 22, 2023 | Grande Prairie

December 6, 2023 | Calgary

December 12, 2023 | Red Deer

January 17, 2024 | Edmonton

February 6, 2024 | Medicine Hat

April 9, 2024 | Lac La Biche

April 11, 2024 | Bonnyville

April 24, 2024 | Edmonton (Canadian Hydrogen Convention)

June 13, 2024 | Calgary (Global Energy Show)





Introduction

In the 2023/2024 school year, Inside Education ran 12 Energy Innovation Days in eight different communities across Alberta - Calgary, Edmonton, Grande Prairie, Fort McMurray, Red Deer, Medicine Hat, Lac La Biche and Bonnyville.

Each Energy Innovation Day consisted of a full day of experiential learning through speakers, tours and hands-on workshops, all with the goal of educating students about innovations in Alberta's energy landscape. The programs branched throughout the respective communities, examining what is being done locally to increase energy efficiency and lower greenhouse gas emissions across the energy sector. The program also provided tools and resources to empower students and teachers to get involved and take action at their schools and in their communities.

The Energy Innovation Days program was open to teams of junior and senior high school students from Grades 7 - 12. In total, **646 students** and **42 teachers** from **21 schools** participated in **12 unique Energy Innovation Days** throughout the 2023/2024 school year.



PROGRAM GOALS

SHOWCASE local energy innovations and research

INSPIRE and provide opportunities for energy efficiency initiatives for schools, communities, and homes

FACILITATE a broader understanding of the connection between energy, sustainability, and climate change





Carbon Capture Convention (Edmonton)

PROGRAM AT A GLANCE

Program Welcome and Introduction

CARBON CAPTURE CONVENTION

Edmonton Convention Center

Panel

Billy Morin - Axxcelus Capital

Beth Valiaho - International CCS Knowledge Centre

Breanne Fox - Capital Power

Grace Meikle - Emissions Reduction Alberta

Exhibition Hall Tour

Program End

Participating School:

Strathcona Christian Academy |

Elk Island Public Schools

September 13, 2023

30 students from Strathcona Christian Academy attended the Carbon Capture Convention. At the convention, four panelists with a range of experience in carbon capture spoke to the students about what carbon capture is, where carbon is stored and how carbon capture is helping to decarbonize the energy industry. Following the panel, the students toured the Exhibition Hall, where they interacted with more carbon capture experts and learned about innovative technologies and careers in the energy sector.





Career Works Energy Expo (Calgary)

September 20, 2023

24 students from Notre Dame High School participated in the Career Works Energy Expo. At the Expo, the students engaged with energy industry experts and learned about employment trends and innovations within the energy sector.

Participating School:

Notre Dame High School | Calgary Board of Education



Special thanks to DMG Events for the opportunity to access the conventions!









Fort McMurray Energy Innovation Day

PROGRAM AT A GLANCE

Program Welcome and Introduction

Energy & Environment in Alberta

(Inside Education)

Tour #1: Acden

Sustainability, solar energy, careers, indigenous plants

Lunch and Learn

Oil Sands Discovery Center

CNRL - Reclamation

Diversified Transportation - Hydrogen dual fuel

Solar Alberta - Solar energy

Tour #2: Syncrude

Oil sands reclamation

Wrap Up & Take Action

Program End

Participating Schools:

Fort McMurray Composite High School |
Fort McMurray Public School Division
Westwood Community High School | Fort
McMurray Public School Division
Fort McMurray Christian School | Fort
McMurray Public School Division



November 7, 2023

81 students from **3 schools** participated in the **Fort McMurray Energy Innovation Day**. The day began with an engaging 'Energy & Environment in Alberta' presentation to give the students an overview of Alberta's energy landscape and set the stage for the rest of the day.

Then, the students embarked on a day of tours to learn more about energy and sustainability in Fort McMurray. One tour was to Acden, where the students learned about their LEED certified sustainable building, heard about the Fort Chipewyan solar project, and learned about indigenous plants. The students also went to Syncrude's Giants of Mining display as well as the Bison Paddock and Mildred Lake, where they learned about about and saw reclamation in action. Over lunch, the students were at The Oil Sands Discovery Center where they heard about reclamation from CNRL, hydrogen from Diversified Transportation, and solar energy from Solar Alberta. The day wrapped up with a discussion during which the students reflected on their day and brainstormed how they could be involved in Alberta's energy landscape.

"It was a fun experience that described amazing innovations and resources that are located around Alberta, all contributing towards an energy efficient future. One of the most interesting things I learned about was the first nation ancestry and their background survival techniques"

Iqra, Student, Westwood Community High School

"My highlight was seeing the bisons and reclamation at Mildred Lake - we could hear the birds being flown away by the sound cannons!"

- Siddhi, Student, Westwood Community High School





Grande Prairie Energy Innovation Day

PROGRAM AT A GLANCE

Program Welcome and Introduction

Strathcona Resources - Pneumatics and Emission Reductions

Tour #1

Landfill Gas to Energy Project **Aquatera**

Lunch and Learn

North Western Polytechnic

BioEnergy Solutions - Energy Junction Innovations **City of Grande Prairie** - Electric Bus Fleet

Tour #2

Cogeneration

TC Energy Bear Creek Facility

Wrap Up & Take Action

Program End

Participating School:

St. John Paul II Catholic School | Grande Prairie Catholic School Division

November 22, 2023

67 grade 9 students participated in the Grande Prairie Energy Innovation Day. The day began with an engaging 'Energy & Environment in Alberta' presentation to give the students an overview of Alberta's energy landscape and set the stage for the rest of the day. Strathcona Resources then gave a brief presentation on their work reducing greenhouse gas emissions (GHG's) through pneumatic controller modifications. The students then embarked on a day of tours and presentations to learn more about emerging energy technologies and sustainability in Grande Prairie. One tour was to Aquatera, where the students learned about the landfill gas to energy project. The students also toured TC Energy's Cogeneration Facility in Bear Creek, where biomass derived steam along with natural gas is used to power the mill, while reducing waste and supplying electricity to Alberta's power pool. Over lunch, the students were at North Western Polytechnic where they heard about carbon neutral & negative technologies at BioEnergy Solution's Energy Junction facilities, as well as the City of Grande Prairie's electric bus fleet. The day wrapped up with a discussion during which the students reflected on their day and discussed how they could be involved in Alberta's energy landscape, as well as what changes can made as a society in regards to energy usage.





"I had no clue there were wells in our Landfill, and that we are one of the few places in Canada with a bioreactor!"

- Anonymous Student, St John Paul II Catholic School



Calgary Energy Innovation Day

PROGRAM AT A GLANCE

Program Welcome and Introduction

Careers in Energy Breakout Sessions

- Canadian Natural Resources Limited (CNRL)
 - Society of Petroleum Engineers
 - Inside Education

Energy Tours

- ENMAX's District Energy Centre
 - ATCO Barlow Solar Farm
 - CleanO2

University of Calgary Energy Research Tours

- Energy Tour of Schulich Engineering Buildings
 - Solar Heat Pump Demonstration
 - Student Engineering Clubs

Wrap Up & Take Action

Program End

Participating Schools:

Ahmadiyya Muslim School I

Independent School

Calgary French & International School I

Independent School

Springbank Middle School |

Rocky View School Division

"I realized today that there is a lot more to energy than just oil, gas, and pipelines."

- Anonymous Student, Springbank Middle School

December 6, 2023

74 students from **3 schools** in grades 7 and 9 participated in the **Calgary Energy Innovation Day**. The day began with an engaging 'Energy & Environment in Alberta' presentation to give the students context and an overview of Alberta's energy landscape.

Following the introduction presentation, all students rotated through three hands-on breakout sessions, each focusing on different careers and innovations. CNRL outlined how virtual reality, holograms, and video game technology can keep people safe and enhance environmental performances. The Society of Petroleum Engineers presented an interactive oil extraction demonstration with honey and coke. Inside Education hosted a breakout session where students constructed solar lanterns and discussed electricity generation. After the breakout sessions, students separated by school to visit three unique energy and innovation tours. In these tours, students learned more about district heating; solar and renewable energy sources; along with reducing carbon emissions by re-utilizing it into valuable products like soap. Following the individual tours, all students came back together at the University of Calgary to learn more about energy research in innovations and technologies.

The day wrapped up with a discussion at each school. Students reflected on their day and discussed how they could be involved as a steward in Alberta's energy landscape.









Red Deer Energy Innovation Day

PROGRAM AT A GLANCE

Program Welcome and Introduction

Energy & Environment in Alberta (Inside Education)

Tour #1: Energy Innovation Center (Red Deer Polytechnic)

Solar energy, electricity, energy efficiency

Tour #2: HawkTail Energy Star House

Net zero homes, energy efficient building design

Tour #3: PureLife Carbon
Carbon innovations

Wrap Up & Take Action

Program End

Participating Schools:

St. Francis of Assisi School | Red Deer Catholic Regional Schools St. Matthew School | Red Deer Catholic Regional Schools

December 12, 2023

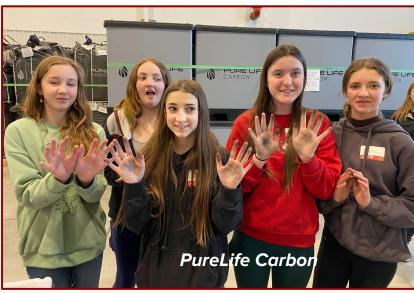
72 students from **2 schools** participated in the **Red Deer Energy Innovation Day**. The day kicked off with Inside Education's engaging 'Energy & Environment in Alberta' presentation to provide an overview of Alberta's energy landscape and get the students excited for the day.

The students then loaded the buses to begin a day of tours of local energy innovations. They started at Red Deer Polytechnic's Energy Innovations Center, where they saw solar panels and experimented with the electrical board. Then they headed to the HawkTail Energy Star House, where they learned about energy efficient building design. Finally they visited PureLife Carbon, where they learned about the innovative way carbon can be used as a growing medium for plants.

The day ended with a wrap up workshop where students were challenged to think about what actions they could take to become involved in environmental action and energy innovations in their communities.



"The experience was very interesting and well worthwhile for students to experience."
- Jessica, Teacher, St. Matthew School





Edmonton Energy Innovation Day

PROGRAM AT A GLANCE

Program Welcome and Introduction

Tour #1

Electric Bus Fleet

Kathleen Andrews Transit Garage

Lunch and Learn

City of Edmonton Presentation - Climate Adaptation and Resilience

Inside Education Workshop - Solar Lantern Building

Tour #2

Natural Gas Processing Innovations

Keyera Fractionation and Storage Complex (KFS)

Wrap Up & Take Action

Program End

Participating Schools:

Christ the King Elementary/Junior High | Edmonton Catholic School District Four Winds School |

Sturgeon Public Schools

"The impact of Edmonton Energy Innovation Day extends far beyond our initial experience. The knowledge gained from the insightful tours and engaging activities has inspired our students to become ambassadors of energy innovation within our school community."

 Grazyna Makarewicz, Teacher, Christ the King School January 17, 2024

51 grade 8 and 9 students participated in the Edmonton Energy Innovation Day. The day began with an engaging 'Energy & Environment in Alberta' presentation to give the students an overview of Alberta's energy landscape and set the stage for the rest of the day. The students then embarked on a day of tours and presentations to learn more about the The City of Edmonton's Energy Transition Strategy, as well as midstream natural gas processing technologies. One tour was to the Kathleen Andrews Transit Garage, where the students got to ride Electric busses while viewing the LEED silver certified building and its energy saving technologies. The students also toured the Keyera Fort Saskatchewan Fractionation and Storage Complex (KFS), where they learned about Natural gas processing and storage, emissions reductions, and technology innovations in the midst of the energy transition. Over lunch, the students discussed community climate change mitigation, adaptation, and resilience strategies with the City of Edmonton's Environment & Climate Resilience team, then completed a hands on solar lantern building workshop. The day wrapped up with a discussion during which the students reflected on their day and discussed how they could become more involved in Alberta's energy landscape, and what changes can made as a individually and as a society in regards to energy conservation and climate change mitigation.

"My highlight was riding the electric bus! I've never been on a public bus before and it was so quiet. I hope that smaller communities can one day have access to hydrogen and electric transit."

- Adyson, Student, Four Winds Public School







Medicine Hat Energy Innovation Day

PROGRAM AT A GLANCE

Program Welcome and Introduction

Energy & Environment in Alberta (Inside Education)

Tour #1: ATCO Forty Mile Wind Farm

Tour #2: Big Box Springs Wind Farm

Lunch & Learn

Medicine Hat College Energy Program

Tour #3: Suffield Solar Farm

Wrap Up & Take Action

Program End

Participating Schools:

Senator Gershaw School | Prairie Rose Public Schools

Irvine School | Prairie Rose Public Schools

February 6, 2024

80 students from **2 schools** participated in the **Medicine Hat Energy Innovation Day**. The day kicked off with Inside Education's engaging 'Energy & Environment in Alberta' presentation to provide an overview of Alberta's energy landscape and get the students excited for the day.

The students embarked on tours of 3 renewable energy sites around Medicine Hat - ATCO's Forty Mile Wind Farm, the Box Springs Wind Farm, and BluEarth Renewables' Suffield Solar Farm. Over lunch hour, the students heard about the work Medicine Hat College is doing in energy research and innovations.

The day ended with a wrap up activity that challenged the students to think about what aspects of energy innovations they wanted to learn more about and how they could take action in their communities.











Lac La Biche Innovation Day

PROGRAM AT A GLANCE

École Plamondon School | Northern
Lights Public School

J.A Williams High School | Northern Lights Public School

Program Welcome & Introduction

Portage College

Tour: Environmental
Studies
Tour: Power Engineering

Forest Fuels: Bioenergy
Tour: Alberta Pacific Forest

Industries
Hydrogen Fuel: An

Alternative Inside Education

Energy Innovations: Policies and Pathways

Pathways Alliance

Conventional Reclamation in an Unconventional Manner

360 Engineering and Environmental

Hydrogen Fuel: An Alternative

Inside Education

Portage College *Tour: Power Engineering*

Wrap Up & Take Action

Program End

The experience overall was quite fun and informative. I would definitely recommend attending!
-Eomen, student at École Plamondon School

April 19, 2024

45 students from **2** schools participated in the Lac La Biche Energy Innovation Day. Running two concurrent programs, each school started their day separately. Inside Education led an introduction to 'Energy & Environment in Alberta' presentation to give the students an overview of Alberta's energy landscape and set the stage for the rest of the day.

The Grade 11 and 12 students from J.A Williams headed to tour Al-Pac, where they learned about pulp production, toured the leading edge bio-methanol refinery, and discovered how sustainable forestry is also producing renewable electricity. Students then heard from Inside Education as we presented a hands-on workshop on how hydrogen fuel is revving up to be a viable alternative fuel in Alberta. Students built hydrogen-powered cars to bring their classroom science to life.

The Grade 10 students from École Plamondon started at Portage College, highlighting two fairly specific career paths that support the energy sector in very different ways: Environmental Studies and Power Engineering. Students also toured the boiler room as they learned about the practicalities of power generation.

Joining together over lunch, the two schools were treated to a virtual presentation from the Pathways Alliance to introduce them to the depth and breadth of the collaborative work involved in the energy transition and 'pathway to net zero' in the region and across the province.

360 Engineering and Environmental provided a photo-filled presentation on the mini machines they use for year-round reclamation, reminding students that energy development project starts and ends with environmental monitoring.

Finally, each school seperated for their own sessions on hydrogen fuel cars and power engineering with Portage College





Bonnyville Energy Innovation Day

PROGRAM AT A GLANCE

Program Welcome and Introduction

Tour #1

Strathcona Resources - Lindbergh Steam Assisted Gravity Drainage (SAGD) Facility

Lunch and Learn Presentations

City of Cold Lake - Clean Energy Improvement Program Emissions Reductions Alberta - The Future of the Oilsands

Inside Education Energy Workshop

Solar Lantern Building **Energy Jeopardy Energy Innovation Poster Scavenger Hunt**

Wrap Up & Take Action

Program End

Participating School:

Bonnyville Centralized High School

Northern Lights Public Schools

It was really interesting seeing all the amazing things happening at Strathcona's site. All the speakers were amazing as well!

> Emma, Student, Bonnyville Centralized High School



April 11, 2024

56 Grade 9 students participated in the Bonnyville **Energy Innovation** Day. The day began with an engaging 'Energy & Environment in Alberta' presentation to give the students an overview of Alberta's energy landscape and set the stage for the rest of the day. The students then embarked on a day of tours and activities.

The students toured Strathcona Resources Steam Assisted Gravity Drainage (SAGD) Facility in Lindbergh, where they watched an engaging presentation regarding oil and gas extraction, cogeneration, and electricity generation. They then participated in a demonstration using new carbon capture materials, and viewed the facility's gas turbine and heat recovery steam generator. Over lunch, the students listened to presentations from Emissions Reductions Alberta regarding the future of work in the Oilsands, and the City of Cold Lake, who discussed their Clean Energy Improvement Program and electric vehicle charging infrastructure.

The students then took part in an Inside Education workshop involving the construction of solar powered lanterns as well as a jeopardy style game focused on Alberta's energy landscape. The students finished the workshop with a scavenger hunt activity using Inside Education's Energy Innovation Poster, during which the students applied their existing and new knowledge to look for items on the poster regarding renewable energy, environment, energy storage, and innovative technologies. The day wrapped up with the students reflecting on their day, and discussing ways they can continue to learn about Alberta's energy landscape, and take part in sustainable solutions for energy conservation.

The interactive activities were great! Like making lanterns and testing out the carbon capture material.

> Madison, Student, Bonnyville Centralized High School





Edmonton Energy Innovation Day

PROGRAM AT A GLANCE

Program Welcome and Introduction

Energy & Environment in Alberta

(Inside Education)

Canadian Hydrogen Convention

Panel

University of Alberta Hatch

Jacob Appleton

Expo Hall Tour

Pembina

Control Room Career Talk Pipeline Demo

Wrap Up & Take Action

Program End

Participating Schools:

St. Albert Catholic High School | Greater St.

Albert Catholic Schools

Headway School | Independent

Dr. Margaret Ann-Armour School

Edmonton Public Schools

April 24, 2024

53 students from **3 schools** participated in the **Edmonton Energy Innovation Day**. The day kicked off with Inside Education's engaging 'Energy & Environment in Alberta' presentation to provide an overview of Alberta's energy landscape and get the students excited for the day.

The students headed to the Canadian Hydrogen Convention at the Edmonton Convention Center, where they first heard from 3 representatives from the Hydrogen industry. The University of Alberta spoke about the research that goes into innovations like Hydrogen, Hatch spoke about the Hydrogen industry, and Jacob Appleton (a fellow High School student) talked about an innovative form of Hydrogen - purple Hydrogen - that he invented. Next, the students toured the Expo Hall at the Canadian Hydrogen Convention, where they had the opportunity to interact with more Hydrogen industry experts. Then, the students went to Pembina's office in Sherwood Park where they learned about careers in the oil and gas industry, viewed a pipeline model and toured the control center.

"I thought the Expo hall was AMAZING!"

> -Natalie, Student, Dr. Margaret Ann-Armour School

"I loved learning about the different 'colors' of hydrogen, and the different ways they work."

-Mustafa, Student, Dr. Margaret Ann-Armour School







Global Energy Show (Calgary)

PROGRAM AT A GLANCE

Program Welcome and Introduction

GLOBAL ENERGY SHOW BMO Center, Stampede Park

Presentation #1 - Energy Innovations
Ensol Systems

SAIT Experiential Zone

-Hydrogen Production
-Solar PV Demonstration Unit
-Sustainability Programs Virtual Reality
-SAG-D and Core Samples

Exhibition Hall Tour

Presentation #2 - Post Secondary

Southern Alberta Institute for Technology (SAIT)
University of Calgary

Program End

Participating School:

Notre Dame High School

Calgary Board of Education

June 13, 2024

38 students from Notre Dame High School participated in the Global Energy Show. The organizers of the Global Energy Show, DMG Events, gave Inside Education the opportunity to bring students to the world-class professional event and participate in a morning of presentations and activities in the NextGen Theater. During the presentations, many topics relevant to high school students were discussed, including where the energy industry is going and how they could get involved. Students also had the opportunity to tour the SAIT Experiential Zone and the Global Energy Show exhibition hall, where they learned about topics such as solar energy, carbon capture, nuclear energy and hydrogen, and were exposed to many careers in the energy industry.









Program Impact

12 Programs 646 Students 42 Teachers 21 Schools

Energy Innovation Days Post-Survey

Inside Education is proud of the many successes of the Energy Innovation Days program. In follow-up to each of the 12 programs held, teachers and students were asked to evaluate their experience at the Energy Innovation Days through an online survey. All respondents shared very positive and encouraging reflections about the tours, speakers, sessions and overall value of the day. We are pleased to share some of the survey results below.

- My students learned new content about energy and climate in Alberta (1 = not at all, 4 = very much so!)

 Average of teachers' response = 3.8
- I learned new information about energy and climate innovations that I will incorporate into my teaching. (1 = not at all, 4 = very much so!)
 Average of teachers' response = 3.5
- After attending the Energy Innovation Day, I feel like I know more about technology and innovations addressing energy and climate challenges in Alberta.
 Average of students' response = 3.2

Upon completion of each program, we surveyed students and teachers with respect to program impact:

STUDENT FEEDBACK

"Change is within our grasp."
-Alex, Student, Dr. Margaret Ann-Armour School

"Purple Hydrogen was quite resonant to me, as it demonstrated that one single person can make a genuine difference."

-Natalie, Student, Dr. Margaret Ann-Armour School

"That it was very informative and really opened your mind to the different ways energy is produced." -Brianna, Student, St. Albert Catholic High School

"I loved having a speaker our age. It was inspiring and nice to be able to understand what he was talking about in an engaged way." -Emily, Student, Dr. Margaret Ann-Armour School

TEACHER FEEDBACK

"The Energy Innovation Day program makes the theory and bookish learning come to life. It also counter balances the negative rhetoric about climate and energy. Students see that real work is happening at research as well as industrial scale. Youth walk away with positive outlook for their future and multiple career ideas at the end of the program."

-Deepali, Teacher, Headway School

"Hearing about the career paths was a good way for students to hear that they have different avenues they can follow."
-Kristine, Teacher, St. Albert Catholic High School

"Thank you and the sponsors for providing this valuable opportunity for students. Those who attended the session are already sharing their newfound knowledge with younger classes."

-Grazyna, Teacher, Christ the King School



Program Partners

A special thanks to our program partners who provide laudable support to make our Energy Innovation Days possible. The funding provided ensures that schools are able to participate in the program at no-cost including all program elements and busing. Inside Education strives to make programming opportunities equally accessible to schools in urban, rural and Indigenous communities, the contributions of our funding partners makes this possible.

These Inside Education programs were made possible through the support of our program partners:

































Summary and Futures

The Energy Innovation Days held in the 2023/2024 school year were a great success. From the 12 programs in 8 different communities across Alberta, a total of **646 students** and **42 teachers** from **21 schools** participated.

All participants were exposed first-hand to local energy innovations in their communities and learned about energy sources, climate change and careers along the way. The lasting impact of the Energy Innovation Days is evident through the feedback from teachers and students - the participants shared that the experience inspired them to continue learning about energy and gave them ideas for how to get involved through careers and action projects at their schools.

The Energy Innovation Day format proved to be successful largely due to its accessibility for teachers and students. It was a no-cost, one-day program that invited teachers to apply with either a small team or full class, ranging from grades 7-12. This format proved successful because it allowed teachers to use their discretion regarding how many of their students would benefit from the experience and which grade(s) it would be most suitable for, and in turn allowed Inside Education to tailor the program according to which participants were attending. A unique aspect of the Energy innovation Days program was having the opportunity to bring students to three large-scale professional conferences - the Carbon Capture Convention, Canadian Hydrogen Convention and Global Energy Show. Inside Education hopes to continue building its relationship with the organizers of these conferences (DMG Events) and other conference organizers to continue granting junior and senior high school students access to these valuable professional events.

Applications for Energy Innovation Days **increased by 42**% this school year, indicating a growing interest in the program. Inside Education looks forward to continuing this format of program and plans to host 10 Energy Innovation Days across Alberta in the 2024/2025 school year.

Contact

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