

2022/2023 Energy Innovation Days

Throughout the 2022-23 school year, Inside Education’s Energy Innovation Days program gave Alberta junior and senior high school students the opportunity to explore local energy innovations and see real world, practical examples of clean fuels, energy efficiency, sustainability, careers in energy and the energy transition. These engaging programs were held province-wide throughout the school year:

- September 21, 2022 | Edmonton (*Carbon Capture Convention*)**
- November 16, 2022 | Calgary**
- November 23, 2022 | Fort McMurray**
- December 7, 2022 | Rocky Mountain House**
- December 14, 2022 | Grande Prairie**
- January 18, 2023 | Lethbridge**
- February 8, 2023 | Bonnyville**
- March 13, 2023 | Leduc (*Girls in STEM Day*)**
- April 19, 2023 | Dawson Creek**
- April 26, 2023 | Capital Region (*Canadian Hydrogen Convention*)**
- June 15, 2023 | Calgary (*Global Energy Show*)**



Introduction

Inside Education’s Energy Innovation Days consisted of 11 day-long field experiences held in nine different communities across Alberta (and one in BC) in the 2022/2023 school year - **Edmonton, Calgary, Fort McMurray, Rocky Mountain House, Lethbridge, Bonnyville, Beaumont, Dawson Creek/Tumbler Ridge and Sherwood Park.**

Each Energy Innovation Day was a day of experiential learning, speakers, tours and hands-on workshops, all with the goal of educating youth about Alberta’s energy landscape. The programs branched throughout the respective communities, examining what is being done to increase energy efficiency and address climate change 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, **564 students** and **72 teachers** from **44 schools** participated in **11 unique Energy Innovation Days** throughout the 2022/2023 school year.



Energy Innovation Days

PROGRAM GOALS

SHOWCASE local energy initiatives 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



Edmonton Energy Innovation Day

September 21, 2022

PROGRAM AT A GLANCE

Program Welcome and Introduction

Energy & Environment in Alberta
(presentation)

Carbon Capture Convention

Panel Discussion

Enhance Energy (Chris Kupchenko)
Carbon Management Canada (Franki Race)
University of Alberta (Alireza Nouri)

Exhibition Hall Tour

Wrap Up & Take Action

Program End

49 students from **4 schools** 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 majority of the day was spent at the **Carbon Capture Convention**, where the students heard from a panel of carbon capture industry experts and then explored the exhibition hall. The day wrapped up with a sharing session and discussion about how the students could bring what they learned back to their schools.

“It was an amazing day, my students learned a lot, they were engaged and had fun. It was great for the students to see job opportunities in energy, learn about energy sustainability and how they might fit into the energy world.”
- Katharine Mah, Teacher, Academy at King Edward



Panel at the Carbon Capture Convention

Participating Schools:

- Academy at King Edward** | Edmonton Public School Board
- Headway School** | Independent School
- Jasper Place High School** | Edmonton Public School Board
- Paul Kane High School** | St. Albert Public School Board



Thanks for the support of our Program Partners:

Calgary Energy Innovation Day

November 16, 2022

The **Calgary Energy Innovation Day** was attended by **78 students** from **4 schools**. The day began at Ralph Klein Park Environmental Education Center with an engaging panel with representatives from a cross-section of Alberta’s energy sector. The organizations represented were Alberta Innovates, Cenovus, Pathways Alliance, and Solas Energy. Following the panel, the students got onto buses to experience energy innovations first hand through site tours. The site tours included Clean O2 (carbon capture), Bonnybrook Wastewater Treatment Plant (biogas), Jayman Net Zero Homes (energy efficiency), ENMAX (grid innovation), Calgary Composting (solar array), and Carbon Upcycling (carbon capture). The day wrapped up with a workshop during which the students reflected on their day and discussed how they could be involved in Alberta’s energy landscape.

PROGRAM AT A GLANCE
Program Welcome and Introduction
Energy Innovations Panel <i>Alberta Innovates, Cenovus, Pathways Alliance, Solas Energy</i>
Energy Innovations In Action - Tours <i>Clean O2 (carbon capture)</i> <i>Bonnybrook Wastewater Treatment Plant (biogas)</i> <i>Jayman Net Zero Homes (energy efficiency)</i> <i>ENMAX (grid innovation)</i> <i>Calgary Composting (solar array)</i> <i>Carbon Upcycling (carbon capture)</i>
Wrap Up & Take Action
Program End



Energy Innovations Panel

Participating Schools:

- Centennial High School** | Calgary Board of Education
- Central Memorial High School (CTC)** | Calgary Board of Education
- Foothills Academy** | Independent School
- Jack James High School** | Calgary Board of Education

“Fantastic day of talks and tours of energy innovations in Calgary. What a great opportunity to see innovative solutions to climate change like Clean O2. We saw that the transition to net zero can occur at the level of big industry and small startups alike.”
- Sean Green, Teacher, Central Memorial High School (CTC)



Carbon Upcycling

Student responses to the question: **“Where do you see a place for yourself in Alberta’s energy landscape?”**

- “Future careers!”
- “Volunteering”
- “I’d like to design clean energy buildings”
- “Advocating for more sustainable energy sources”
- “Teaching!”



Jayman Net Zero Homes



Bonnybrook Wastewater Treatment Center (biogas)

Thanks for the support of our Program Partners:



Fort McMurray Energy Innovation Day

PROGRAM AT A GLANCE

Program Welcome and Introduction

Energy & Environment in Alberta
(presentation)

Tour #1
Reclamation, water, wildlife
Syncrude

Lunch and Learn
Innovations, makerspace
Startup YMM

Tour #2
Sustainability, renewable energy, careers
Acden

Wrap Up & Take Action

Program End

November 23, 2022

41 students from **2 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.

The first tour was at Syncrude where participants learned about wildlife, water and reclamation in the oil sands region. Students then visited the Startup YMM Makerspace to learn about entrepreneurship and how innovators in the area develop new projects. Finally, the group visited Acden to learn about their LEED certified building and sustainability practices and played Vertex’s Bird Seep Environmental Monitoring game. The day wrapped up with a debrief activity on how students can engage in sustainability and energy conservation in their own lives.

Participating Schools:

Father Patrick Mercredi High School |
Fort McMurray Catholic School Division
Westwood Community High School |
Fort McMurray Public School Division

“It was a great way to learn something new and they can help us unlock new passions and hobbies that we never thought we had before!”

- Tanishka, Student, Westwood Community High School

Responses when students were asked **What personal actions can you take to be part of energy innovation and stewardship in Alberta?**

- “Educate myself and avoid wasting energy”
- “Saving energy - not wasting heat and electricity”
- “Summer internships for energy innovation”



Thanks for the support of our Program Partners:

Rocky Mountain House Energy Innovation Day

December 7, 2022

The **Rocky Mountain House Energy Innovation Day** was attended by **36 students** from **2 schools**. The day began at each of the schools, where Inside Education facilitators led an engaging “Energy & Environment in Alberta” presentation to kick off the program. The first tour was at Keyera’s Strachan Natural Gas Plant, where students saw first hand how natural gas is transported and processed. Then the students went to Eavor Geothermal, where they saw a geothermal well and learned about the potential for geothermal energy in Alberta. Finally, the students headed to Point Pork Farm, where they toured the land owner’s solar array and heard about his experience with solar panels over the last decade. The day wrapped up with a workshop during which the students reflected on their day and discussed how they could be involved in Alberta’s energy landscape.

PROGRAM AT A GLANCE
Program Welcome and Introduction
Tour #1 Keyera Strachan Natural Gas Plant
Tour #2 Eavor Geothermal
Tour #3 Point Pork Farm (solar array)
Wrap Up & Take Action
Program End

Participating Schools:

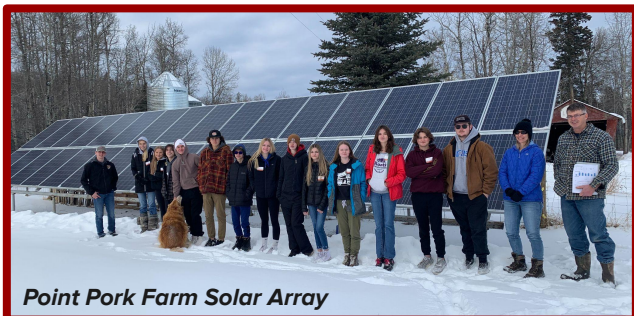
- David Thompson High School** | Wild Rose School District
- Rocky Christian School** | Wild Rose School District



Keyera Strachan Natural Gas Plant



Eavor Geothermal



Point Pork Farm Solar Array



Eavor Geothermal

“The next day the social teacher introduced the topic of sustainability and she was blown away with what these students had to connect to the lesson based on this trip. The cross-curricular connections are so valuable!”

-Janine Morrish, Teacher, David Thompson High School

“An ample variety of the types of energy resources in central AB and how they are being used as well...from production to actual implementation!”

-Mark Van Der Laan, Teacher, Rocky Christian School

Thanks for the support of our Program Partners:



Grande Prairie Energy Innovation Day

PROGRAM AT A GLANCE

December 14, 2022

PROGRAM AT A GLANCE

Program Welcome and Introduction

Renewables in the Peace Region

Don Pettit - Peace Energy Cooperative

Energy Innovations in Action (Tours)

City of GP Electric Bus and Solar Array

Canfor Cogeneration Facility

NWP Energy Innovations in Agriculture

Careers in Energy Experience the Energy VR Tour

Wrap Up & Take Action

Program End

51 students from **2 schools** had the chance to participate in the Grande Prairie Energy Innovation Day. The day was jam packed, starting off with an introduction to the Albertan energy landscape and an opening talk from Don Pettit with the Peace Energy Cooperative. The students then boarded the buses and had the chance to check out the City of Grande Prairie’s electric bus fleet and learn about battery storage that goes along with solar energy. Then they headed to North Western Polytechnic, where an instructor (Nate Parlee) presented to the students about how oil and gas technology is used for agriculture. After lunch, students went to Canfor to tour their cogeneration facility, and did the Experience the Energy Virtual Reality Tour from Careers in Energy. The day wrapped up with a debrief activity on how students can engage in energy conservation in their daily lives.



NWP Energy Innovations in Agriculture

Participating Schools:

Charles Spencer High School | Grande Prairie Public School Division

Peace Wapiti Academy | Peace Wapiti School Division

Responses when students were asked **What did you learn today?**

- “How different forms and types of energy are stored”
- “12 000 homes are powered by Canfor biomass!”
- “Grande Prairie’s electric buses are charged from batteries, which are charged from solar energy”
- “We should be mindful of the energy we use”
- “We should invest more in energy efficiency and research”



Canfor Cogeneration Facility

Thanks for the support of our Program Partners:



Lethbridge Energy Innovation Day

January 18, 2023

PROGRAM AT A GLANCE

Program Welcome and Introduction

Tour #1
Wind Turbine Technician Program
Lethbridge College

Tour #2
Stirling Net Zero
Village of Stirling

Lunch & Learn
Kim Welby (SouthGrow)

Tour #3
EV Charging Station
Peaks to Prairies EV Project

Program End

36 students from **2 schools** participated in the Lethbridge Energy Innovation Day. The day started with an engaging ‘Energy & Environment in Alberta’ presentation. The first tour was of the Lethbridge College Wind Turbine Technician Program, where the students got to explore the inside of a wind turbine nacelle and experience climbing a wind turbine through the VR simulator and ladder climbing machine. Then the students headed to the Village of Stirling, where the Mayor (Trevor Lewington) led a tour of the solar arrays and pool heating systems that make Stirling Canada’s first net zero village. The final tour of the day was at an EV Charging Station, where the City of Lethbridge’s Transportation Manager (Darwin Juell) spoke about the Peaks to Prairies Electric Vehicle Project.

Participating Schools:

Piikani Nation Secondary School | Piikani Nation
St. Joseph School (Coaldale) | Holy Spirit School Division

“Very informative and excellent experience for students to see beyond their community.”

- Brett Weighill, Teacher, Piikani Nation Secondary School



Lethbridge College Wind Turbine Tech Program



Lethbridge College Wind Turbine Tech Program



Stirling Net Zero Village



Hydrogen Car Building

Thanks for the support of our Program Partners:

Bonnyville Energy Innovation Day

PROGRAM AT A GLANCE

Program Welcome and Introduction

Field Tour

Canadian Natural Resources - Bonnyville

Lunch

Speaker Session - Greg Sawchuk

Muriel Creek - Near-Zero Ranch house

Wrap-Up and Take Action

Program End

February 8, 2023

45 students from 2 schools participated in the Bonnyville Energy Innovation Day. Both schools received an ‘Energy & Environment in Alberta’ presentation in the days leading up to the program. On February 8th, Inside Education met the program participants out at CNRL field operations sites north of Bonnyville, Alberta. Canadian Natural toured students to their zero emissions well pad, through operations at their Manatokan plant and discussed the long-term goals of their role in the energy industry. After arriving back in Bonnyville, the students participated in a lunch-and-learn with Greg Sawchuk, owner of Muriel Creek Ranch House, a *near-zero* ranch house just outside of Bonnyville. Greg discussed the opportunities and challenges of net-zero in a cold, northern climate. The day was wrapped up with a debrief and take action session to send students off with ideas on how they can participate in energy innovations personally.

Participating Schools:

Elizabeth School | Northland School Division

New Myrnam School | St. Paul Education Regional Division No. 1

“It was great to see how the industry is making great strides to be more clean and ethical. We were surprised to see beautiful scenery all around us and to hear about all the reclamation efforts.”

- Hollie, Student, New Myrnam School



Canadian Natural Resources Operations Tour



Students examining an oil sample

Thanks for the support of our Program Partners:



Girls in STEM Day (Leduc)

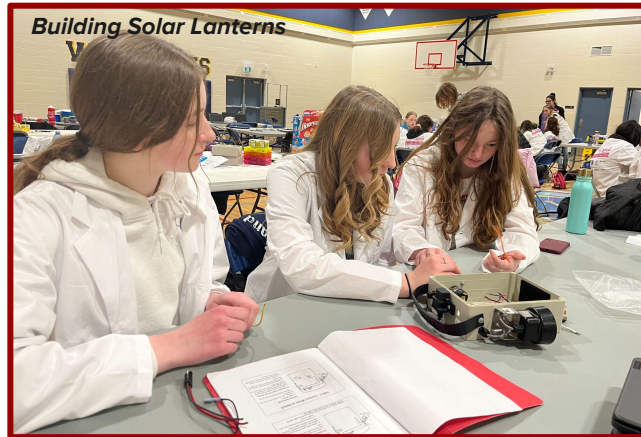
March 13, 2023

PROGRAM AT A GLANCE
Kickoff for Girls in STEM
Keynote Speaker <i>Natalie Panek</i>
Session 1: WISEST Pneumatics Challenge <i>University of Alberta - WISEST</i>
Lunch
Session 2: Exploring Alberta's Natural Resources <i>Inside Education</i>
Session 3: Code for Climate <i>Amanda Green, Nicole Cote & Kristen Frost</i>
Program End

Inside Education was excited to participate in the Black Gold School Division Girls in STEM Day 2023. This event, which occurs biennially, was held at West Haven Public School in Leduc. The event opened up with a kickoff speech from organizer Tarynne Cable and Trustee Angie Charpentier. This was followed by keynote speaker Natalie Panek. The day then consisted of three separate sessions of which Inside Education hosted one. Inside Education rotated students through three separate 30 minute workshops. The first, which focused on energy, had students explore Alberta's renewable energy sector through the construction of solar lanterns. The second, which focused on air quality, had students measure air quality using Airbeam Air Quality Monitors. The third, which focused on wildlife, had students playing an experiential game demonstrating population dynamics within an ecosystem. There were **120 participants** who attended this event.

Participating Schools (all from Black Gold School Division):

- Black Gold Home Based School**
- Black Gold Outreach School Leduc**
- Black Gold Outreach School Beaumont**
- Caledonia Park School**
- Calmar Secondary School**
- Covenant Christian School**
- Ecole Champs Vallee School**
- Ecole Dansereau Meadows School**
- Ecole J.E. Lapointe School**
- Ecole Leduc Junior High School**
- Ecole Secondaire Beaumont Composite High School**
- John Maland High School**
- Leduc Composite High School**
- New Sarepta Community School**
- Riverview Middle School**
- Thorsby Junior/Senior High School**
- Warburg School**
- West Haven Public School**



Thanks for the support of our Program Partners:



Dawson Creek Energy Innovation Day

PROGRAM AT A GLANCE

Program Welcome and Introduction

Tour #1
Conuma Coal Mine

Tour #2
Bear Mountain Wind Park

Lunch

Tour #3
Ovintiv Sunrise Plant

Program End

April 19, 2023

32 students from Tumbler Ridge Secondary School participated in the Dawson Creek Energy Innovation Day. This program kicked off with an introductory presentation at the school, followed by three tours. The first tour, to Conuma Resources Wolverine Coal Mine, gave participants the opportunity to see the mining of steelmaking coal in their own community. The steel made using the coal from this mine supports the building of renewable energy projects. Tour 2 to Bear Mountain Wind Park, BC's first ever wind park, explored wind energy in the north. The wind park is owned by the Peace Energy Cooperative, which allows for local citizens to share in the renewable energy opportunities in the region. The final tour to Ovintiv looked at sustainability in oil and gas extraction. Specifically, Ovintiv has an effective water recycling system to reduce freshwater usage and they also vertically stack their facilities to reduce landscape footprint.

Participating School:

Tumbler Ridge Secondary School |
BC School District #59



Students exploring renewable energy during an energy expo



Students at Conuma Resources coal mine

Thanks for the support of our Program Partners:



Capital Region Energy Innovation Day

PROGRAM AT A GLANCE

Program Welcome and Introduction

Tour #1

Canadian Hydrogen Convention - panel and exhibit hall
Edmonton Convention Centre

Tour #2

Natural gas innovations and carbon capture
ATCO

Tour #3

Future Energy Systems lab tour
University of Alberta

Wrap-Up and Take Action

Program End

April 26, 2023

72 students from **3 schools** participated in the Capital Region Energy Innovation Day. All students spent half their day at the Canadian Hydrogen Convention. At the convention, students heard from a panel of experts discussing the future of hydrogen in Alberta and globally and then had a chance to tour the exhibit hall.

The second half of the day consisted of a tour to either the Future Energy Systems labs at the University of Alberta or to ATCO. At the University of Alberta, participants heard about research being conducted on alternative energy technologies. Participants at ATCO learned about innovations in natural gas utilities and the future possibilities in the Fort Saskatchewan/Edmonton area. Students also saw and learned about the carbon capture system installed at ATCO and how this technology plays into energy sustainability.

Participating Schools:

- Calmar Secondary School** | Black Gold School Division
- Strathcona Christian Academy** | Elk Island Public Schools
- W.P. Wagner High School** | Edmonton Public School Board

“The Energy Innovation Day provides a unique opportunity for students to learn about the most recent and relevant technologies being applied in industry today. Students are able to engage with people and information that affect their lives today and perhaps in their future careers.”

- Matthias Cheung, Teacher, Strathcona Christian Academy



ATCO Tour



Planning activity with Future Energy Systems



Panel at the Canadian Hydrogen Convention

Thanks for the support of our Program Partners:

Global Energy Show (Calgary)

June 15, 2023

PROGRAM AT A GLANCE

Program Welcome and Introduction

GLOBAL ENERGY SHOW
BMO Center, Stampede Park

Panel #1 - Not Your Parents Energy Sector
Energy Ecosystem
Ten Peaks Innovation Alliance
Ballad Group

Careers in the Energy Sector
Careers in Energy

Exhibition Hall Tour

Panel #2 - Build The Future You Want
Southern Alberta Institute for Technology (SAIT)
Northern Alberta Institute for Technology (NAIT)
Lakeland College
Indian Resource Council

Program End

41 students from **2 schools** 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 day of panels and activities in the NextGen Theater. During the panel sessions, 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 exhibition hall, where they learned about topics such as carbon capture, nuclear energy and hydrogen, and were exposed to many careers in the energy industry.

"This kind of opportunity exposes us at a young age to what the future holds and what we can do to make an impact in our world"
-Grade 12 Student, Notre Dame High School

"Before the energy show I really didn't get how important our generation will be in the field of energy, but after listening to the speakers they explained thoroughly how we can make an impact."
-Grade 9 Student, Rundle College

"I used to think we needed to get rid of non renewable energy but now I know that we must use all the types of energy sources to make sustainable energy."
-Grade 9 Student, Rundle College

Participating Schools:

Notre Dame High School | Calgary Board of Education
Rundle College | Independent



U of C's Methane Detecting Robot



Canadian Nuclear Association on the Expo Floor



Global Energy Show (NextGen Theater)

Thanks for the support of our Program Partners:

Program Impact

11 Programs
564 Students
72 Teachers
44 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 11 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 = 3.7
- After attending the Energy Innovation Day, I have a stronger understanding of innovations related to energy and climate in Alberta ((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

"I loved every second of Energy Innovation Day. It was very informational and I will carry the knowledge I received from this experience for the rest of my life."

-Student, Westwood Community High School (Fort McMurray)

"I think that the most interesting part of the day was at the EV charger and learning about hybrid and electric cars, but my highlight was being able to go inside a wing of a wind turbine! The day was very informative and it was a really enjoyable experience."

-Student, St Joseph School (Coaldale)

"One of the most interesting things I learned was the difference between net zero and near zero. I loved the presentation on the net zero house! I learned a lot and it was well worth it."

-Student, New Myrnam School (Myrnam)

TEACHER FEEDBACK

"This trip was definitely worthwhile - it has given them a real foundation and as they learn more about energy and science, they will be able to link their future learning to this experience."

-Janine Morrish, Teacher, David Thompson High School (Condor)

"Wonderful to have this opportunity. The career angle alone makes it worthwhile!"

-Mark Van Der Laan, Teacher, Rocky Christian School (Rocky Mountain House)

"The Energy Innovation Day was diverse in its presentation methods, it was engaging, and I highly encourage anyone to take their students! I'd love to bring another group again next year!"

-Jacquelyn Narsing, Teacher, Calmar Secondary School (Calmar)

Summary and Futures

The Energy Innovation Days program was a great success in the 2022/2023 school year. Between the 11 programs in 9 different communities across Alberta, a total of **564 students** and **72 teachers** from **44 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.

Inside Education looks forward to continuing this format of program and plans to host 12 Energy Innovation Days across Alberta in the 2023/2024 school year.

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A special thanks again to all of our Program Partners for making the Energy Innovations Days possible:

