

Electrifying the EV Future Educator Kit

Charging Ahead with Learning Pathways for Teachers



Introduction

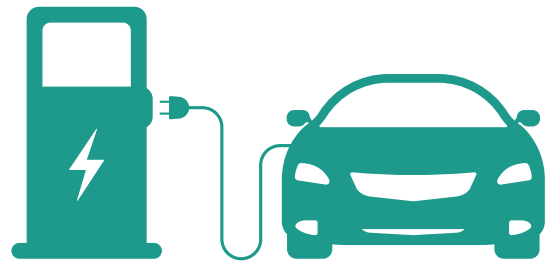
Charging Ahead with Learning Pathways helps school boards, educators, and students integrate electric vehicle education through workshops, feedback, and discussions.

What's Inside?

This Educator Package is intended to serve as a quick, reliable teaching tool that will allow you to connect your learners with a deeper understanding about the electrification of transportation.

Inside you'll find all our resources related to Electric Vehicles including:

- About our Electrifying the Future Pilot Project
 - Blog Post
 - Impact Video
 - Educator Workshop Video and Questionnaire
 - A Guide to Electrifying the Future
 - Motor Controller Simulator
 - SAIT Capstone Projects
- Re-Energy EV Program Activities
- Electric Vehicle Charging Stations with Six Nations of the Grand River
- Re-Energy Challenge
 - Challenge submission showcase
- More GreenLearning Resources



About GreenLearning

We create free online education programs about energy, climate change and green economy.

Our programs and resources are developed with educators and connect to curricular outcomes across Canada. These programs are geared towards engaging and empowering students to create a positive change for our evolving world.

Check us out! GreenLearning's free programs are available online at <https://greenlearning.ca/>

A special thank you to our funders:



Foundation



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Re-Energy: Electrifying the Future

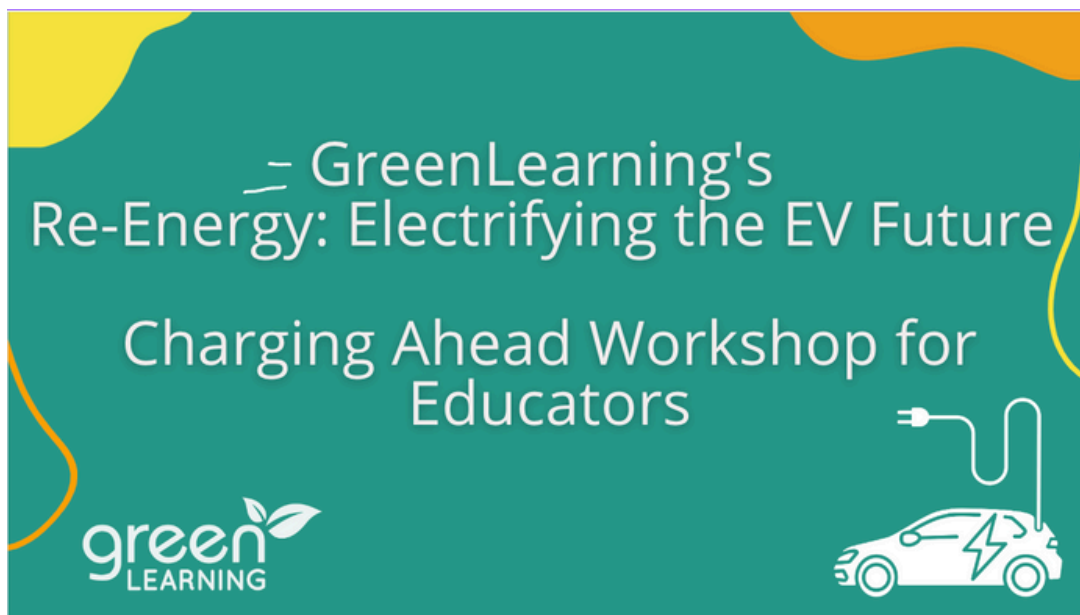
This pilot project offered high school students and educators in Calgary, Alberta, the opportunity to convert two internal combustion engine (ICE) vehicles to electric vehicles (EV) and install an electric vehicle charging station. We also worked with post-secondary institutions to determine opportunities for expanding learning at this level and ways to connect high school and post-secondary learning for the needs of future careers to support the EV transition.

The intention behind this pilot was to explore the connection between current automotive education in Alberta with novel, in-demand automotive skills needed to support the growing trends in electric vehicles. With the results of this pilot and by sharing our findings and experience we intend to help other organizations keep pace with this transition toward the electrification of transportation.



Thank you for joining the conversation in leading this change!

Get started by reading this [blog post](#) about the project, and viewing our [impact video](#). Then, hear from the mechanics teacher in charge of the project by **clicking on the image below and watching the video!**



After the video, please complete the educator questionnaire [here](#):



https://www.canva.com/design/DAF8mJD1nml/A7Bk8LKye96wVpia9V2Fig/watch?utm_content=DAF8mJD1nml&utm_campaign=designshare&utm_medium=link2&utm_source=uniquelinks&utlId=GOUsmH917g

Electrifying the Future Pilot Project Activities:

• A Guide to Electrifying the Future

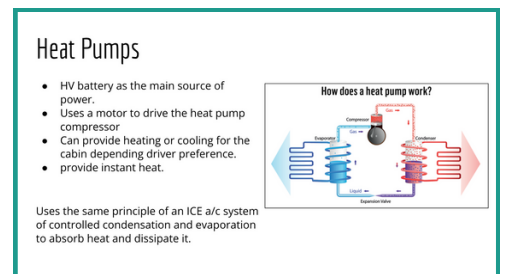
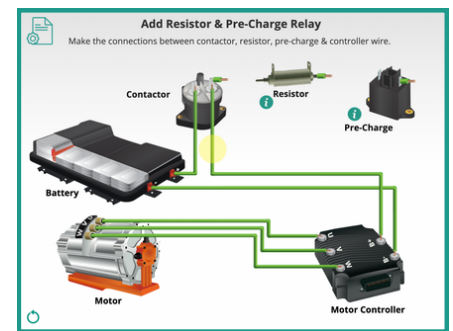
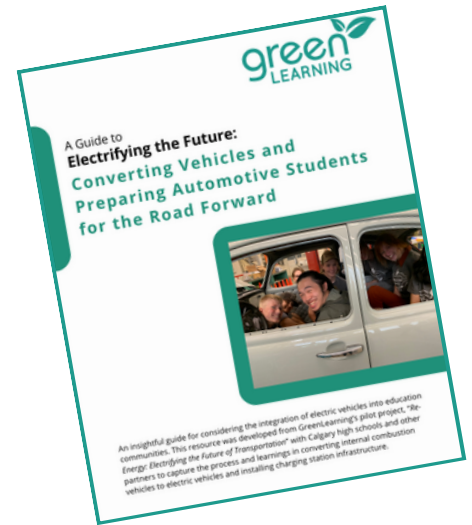
- The purpose of this guide is to help other organizations, schools and groups interested in electric vehicles, conversions, and EV infrastructure bring similar opportunities to their community. We've done our best to ensure this resource shares our experience and suggestions as you evaluate starting off on an electric project of your own.

• Motor Controller Simulator

- In this digital simulator, you will embark on an exciting journey to explore the inner workings of the electrical system in an EV. Throughout this process, you will be learning about the different components that power the vehicle and how they are connected. A big thank-you to our partners at UCalgary's Team Relectric for lending their expertise in the development of this simulator!

• SAIT Capstone Presentations

- Check out these informative EV presentations developed by students at the Southern Alberta Institute for Technology (SAIT)! Our partners at SAIT provided guidance and expertise throughout this pilot project, and this connection has shown us the potential for EV learning in the post-secondary field.
- Learners will heighten their understanding of electric vehicles in their community.



GreenLearnings Re-Energy Program:

In the Re-Energy Program, learners of all ages learn about renewable energy, the different sources of renewable energy and explore the co-benefits and trade-offs using comparable renewable energy sources. In this engaging STEAM program, learners become renewable energy engineers by using detailed construction plans to build their own working model of an electric vehicle.

Additional Resource

Check out [Factcheck: 21 misleading myths about electric vehicles](#) by CarbonBrief

Electric Vehicle Activities:

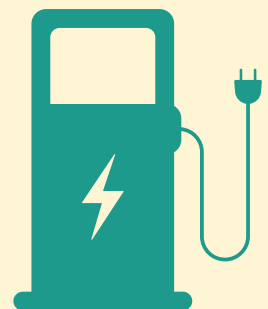
- **Build an Electric Vehicle Model**
 - Learners will enhance their STEM skills by designing and building a model of an electric vehicle.
- **Exploring Electric Vehicle Charging Stations**
 - Learners will demonstrate their understanding of the benefits of charging stations available in their school (grades 7-9) and community (grades 10-12) and present their proposal to their class.
- **History of the Electric Vehicle**
 - Learners will understand the process behind the changes in popularity of the electric vehicle and gain an understanding of the technological changes in electric vehicles. Be sure to check out our [Tesla 3 video tour!](#)
- **How is Your Community Adapting for Electric Vehicles?**
 - Learners will heighten their understanding of electric vehicles in their community.
- **Planning a Trip in Your Electric Vehicle**
 - Learner will plan a road trip with a given scenario while ensuring the car has enough power along the way.
- **What EV Should You Buy?**
 - Learners will work in groups to determine what electric vehicle is best suited for each type of person in the given scenarios.



We are excited to have partnered with Indigenous Clean Energy, Six Nations of the Grand River, and Plug 'N Drive to explore electric vehicles and the level three charging station being installed in the Six Nations of the Grand River Community.

Join Mary of Plug 'N Drive and Crystal of Six Nations Public Works as they discuss electric vehicles and charging stations while touring around the beautiful community.

[Watch Electric Vehicle Charging Stations with Six Nations of the Grand River here!](#)



GreenLearning Challenges:

Embark on an exciting journey of discovery in the ultimate learning experience! GreenLearning's FREE educational resources and lessons will guide you and your students through their chosen challenge's learning. Then, you can put that learning into action!

Students will invent solutions for a sustainable future as part of a quest to help the planet. In the process, they will build competencies such as critical-thinking, collaboration, communication, and decision-making. For details on applying, resources, and PRIZES, check out:

<https://greenlearning.ca/challenges>

Challenge Spotlight

2021 Re-Energy Challenge First Place Winner!

New Myrnam School, Grades 7-12

New Myrnam, Alberta



Watch this short [YouTube video](#) for more information on this project!

When a local community organization announced they were selling a fleet of golf carts in poor condition, the students of New Myrnam School saw an opportunity. They acquired the golf carts and with the support and resources of a variety of school and community members, such as the Career Trades Education Centre, they began retrofitting them with photovoltaic (PV) modules, also known as solar panels. Without the need for electrical charging, no greenhouse gases are being emitted through the charging and use of the newly retrofitted golf carts.

Likewise, by refurbishing existing carts, this project conserved the energy that would have been needed to recycle or re-manufacture them. Students of all grade levels were involved in learning about clean energy, such as the grade 5 class who discovered that a hamster can produce enough usable electricity to charge a cell phone. With almost half of their golf carts retrofitted, New Myrnam School will be busy retrofitting their remaining 6 golf carts throughout the 2021/2022 school year.



GreenLearning Resources & Activities:

Our programs offer a number of educational resources on each topic. They are carefully designed to meet the needs of a specific grade group and subject areas. Each program has various learning and take action activities to offer a thorough learning experience, while offering opportunities for students to take action in creating real world impact.

A great program to check out is our [Energy Revealed program](#). This program contains over 30 lessons and activities for learners to explore power, energy and sustainability. Check out the [Electrical Energy Calculator](#). The economic and environmental impact of our electricity use depends on a variety of interconnected factors, such as how your electricity is generated and your electricity. Just click on your province or territory to get started!

Check out www.greenlearning.ca to explore resources and activities for topics like the following (and many more!): Energy Fundamentals and Energy Transition, Adapting to a Changing Climate, Climate Change Fundamentals, Climate Justice and Indigenous Knowledge... the list goes on!



Any Questions?

We would love to connect!

Email GreenLearning's Project Manager at andreaana@greenlearning.ca

