

Exploring Electric Vehicle Charging Stations

Re-Energy
Take Action Activity
Grade Level 7-12



Main Objective

Learners will demonstrate their understanding of the benefits of charging stations available in the school (grades 7-9) and community (grades 10-12) and present their proposal to their class.

Learning Outcomes

By the end of this activity, learners will:

- Understand the benefits of installing charging stations at school or in their community through research.
- Create a map of their proposed space.
- Present their research findings.

Curriculum Connections

Alberta

Grade 7: Structures and Forces
Grade 8: Mechanical Systems
Science 10: Energy Flow in Global Systems
Science 10: Stewardship
Social Studies 10: Living in a Globalizing World (10-2)

Length of Activity: 7-10 hours

Grades 7-9:

Step 1+2: Introduce activity, EV research

Step 3+4: Plan the best locations for EV charging station

Step 5+6: Identify the benefits and present findings

Grades 10-12:

Step 1: EV charging station research (3 Hours)

Step 2+3+4: Plan the best locations for EV charging station, challenges, and purposed area

Step 5+6+7: Create presentation and present to a mock town council

Step 8: Make changes based on mock town council feedback

Step 9: Present findings to town council.

Materials Required

- Internet-enabled device
- Pen and paper

Activity for Grades 7-9

Step 1: Introduction

Tell your learners that they will be tasked with researching a potential charging station location and the benefits of installing a charging station at their school.

Step 2: Background Research on EV Charging Stations

Research municipal, provincial, and federal regulations to be considered when installing a charging station.

Tip: Here good Alberta resource to get started:

 https://www.alberta.ca/system/files/custom_downloaded_images/tr-dtseries09elecveh2018.pdf

Step 3: Decide the Sites for EV Charging Station

Decide on the best area to put the charging station on their school grounds. Make sure learners take into consideration any infrastructure changes that would be needed and the flow of traffic at their school.

Step 4: Map Creation

Create a map outlining where the charging station would be.

Step 5: Find the Benefits of EV Charging Station

Create a list of benefits to the school as well as budget to have it installed. As an extension idea, learners could also come up with a way to fundraise for the money to have one installed.

Step 6: Present Research Findings

Have the learners present their findings to student council.

Activity for Grades 10-12

Step 1: Background Research on EV Charging Stations

Have learners work in small groups (2-3 learners) and give them time to research:

- What to look for when considering where charging stations should be (consider location, etc.)
- Municipal, provincial, and federal regulations that need to be considered, if any.
- Research where those elements are in their community (where in the community do those parameters exist).
 - *Tip:* Again, you can use this Alberta resource below as a starting point:

 https://www.alberta.ca/system/files/custom_downloaded_images/tr-dtseries09elecveh2018.pdf

- Types of charging stations to consider. (Are there different types?)
- Locate any current charging stations in their community, or current plans to install charging stations.

Step 2: Decide the Sites for EV Charging Station

Have learners decide where the best place in their community would be to put a charging station. Have learners do some analysis to see how many stations would be suitable for that area considering electric vehicle purchasing trends and population trends.

Step 3: Consider Infrastructure Changes

Consider any infrastructure changes that may have to occur. E.g., changes in roadways to access the charging stations.

Step 4: Map Creation

Create a map outlining the proposed place to be the charging station(s) as well as a budget and do a cost/benefit analysis to outline the benefits to the community.

Step 5: Research Presentation Requirement and Audience

Research how long a typical presentation to Town Council is in your local community and have learners create that length of a presentation. Also research any restrictions to the type of presentation they are allowed to have (consider PowerPoint presentation, poster board, etc.)

Step 6: Conduct a Mock Presentation

Work with student council (or gather a group of other learners/educators/administrators) that can act as a mock council. Have each group of learners present their findings to them. Ask the mock town council to select the best presentation.

Step 7: Prepare Final Class Presentation

Have the top group incorporate other group's best findings where appropriate. Have the class work together to refine the best presentation.

Step 8: Present Findings to Town Council

Have the best presentation present their findings to town council.

Extension Idea

- Students can contact their local municipal representative (E.g., a Sustainability Specialist or Climate Change specialist) to see if their community has a Community Energy Plan, Conservation Demand Management Plan and/or a Climate Action Strategy.

