

ECCE App Challenge 2026

Sustainable Transportation: EV Infrastructure in Vancouver, B.C.

APPLICATION

Link to Experience Builder

<https://arcg.is/5Lre40>

Link to StoryMap

<https://arcg.is/0TTOGn0>

TEAM NAME

ChargeFinder Vancouver

TEAM BIOGRAPHIES

Nicholas Chen

Hi, my name is Nicholas Chen and I am a 4th year pursuing a Specialization Bachelor's in Commercial Aviation Management and a GIS Certificate at the University of Western Ontario. My unique undergraduate experience has allowed me to combine my love of aviation and transportation with geospatial analysis. I have worked as a Research Assistant to Dr. Christopher Hewitt to map the sociodemographic characteristics of London Airshow Attendees (2025) as well as completing an Undergraduate Student Research Internship on publicly accessible transit-options in Vancouver under Dr. Jinhyung Lee (2025). I am currently completing my thesis on transit in Vancouver, so I was super excited to put my research skills to the test in this year's app challenge using Esri technology!

Samantha Sharp

Hi, my name is Samantha Sharp and I am a 4th year Honours Specialization Bachelor's GIS student in the Department of Geography and Environment at the University of Western Ontario. Throughout my undergrad, I have focused on experiences that concern spatial accessibility, specifically concerning transportation and healthcare services. All of my educational and professional experiences have included the use of Esri technology! I have worked as GIS analyst for Ottawa Public Health (2025) and continue to work as a Data Manager for the Somerset West Community Health Centre in Ottawa (2026)! My academic work has also included an Undergraduate Student Research Internship and thesis on wildfire mapping under Dr. Natasha MacBean. For this year's app challenge that concerns sustainable transportation, I was super excited to put my skills I've developed in the last 4 years to the test and learn more about user-interface design!

Angelica Simone

Hi, my name is Angelica Simone and I am a 4th year pursuing a double major in GIS and Psychology at the University of Western Ontario. On top of my degree program education, I have gained invaluable research experience in GIS analysis, having completed an Undergraduate Student Research Internship under the supervision of Dr. Jinhyung Lee (2025). My work during this internship and for my senior thesis has been on mapping the heat-exposure of transit-users in Vancouver. Next year, I plan to attend Teacher's College and hope to carry forward the integration of spatial science into the Geography curriculum! I can't wait to participate in this app and keep learning!

TEAM PHOTO



L-R: Nicholas Chen, Samantha Sharp, Angelica Simone

MISSION STATEMENT

The three of us partnered together as ChargeFinder Vancouver to present our 2026 app challenge for the Esri Canada Centre for Excellence (ECCE). Their higher education research institute put out a one week challenge in February and March to develop an ArcGIS app product in one week on the topic of **sustainable transportation**. In response, we created an Experience Builder application that examines Metro Vancouver regional district Electric Vehicle Charging and Accessibility.

Our app seeks to answer the question, “**How spatially accessible is it to charge your EV in Metro Vancouver, B.C.?**” This question comes in direct response to the growth and incentivized use of **EVs as a sustainable transportation alternative** to gas in Canada, where the transportation sector is a major source of greenhouse gas emissions. EVs play a key role in the shift towards sustainable transportation, supported by financial incentives, regulatory targets, and continued investment in **public charging infrastructure**.

In Vancouver, EV adoption has grown rapidly in recent years, reflecting the city’s broader commitment to climate action and sustainability as articulated in the *Climate Emergency Action Plan*. Municipal efforts to expand charging infrastructure are closely aligned with provincial objectives under British Columbia’s *CleanBC* framework and with BC Hydro’s long-term electrification planning initiatives. A growing body of research shows that access to charging infrastructure is a critical factor shaping EV adoption, influencing both perceived convenience and the practical feasibility of long-term ownership. The location of charging infrastructure and who can access it have become more crucial issues for urban planning as EV ownership grows beyond early adopters. With these strategies for sustainability in mind, our group believes that by measuring the spatial access of charging stations, we can positively contribute to our understanding of which areas may need further development in EV infrastructure. Through both the **identification of gaps in EV infrastructure and by promoting its current charging availability**, we can **work towards ongoing sustainable transportation for the entire City of Vancouver!**

APP CHARACTERISTICS

ChargeFinder Vancouver is a highly user-friendly application with app characteristics that make it appealing, interesting and useful, seeking to support the end user in accessing EV charging stations across Vancouver, B.C. Below are our app highlights that we believe make this app a standout product in geospatial products for supporting sustainable transportation:

App Utility

Here we answer: “*How is this app useful to the end-users?*”

1. **EV Charging Station Identification:** Our accessibility-based approaches provide a robust framework for evaluating and identifying EV charging infrastructure (e.g., closest EV location) by explicitly accounting for travel time and network constraints. Simply click on the map or types in your address to calculate the fastest route to the nearest EV station.
2. **Time-of-day Considerations:** Our network-based service area analysis incorporates real-world traffic conditions that have been shown to capture temporal fluctuations in accessibility that static distance measures fail to represent, particularly during peak travel periods. Using our time bar, select the time of day you intend to travel, or watch as access changes throughout the day on our time-lapsed access map.
3. **Charge-Level Differentiation:** As seen in Figure 1 below, our app enables users to select the charger type that they would like. Note, level 1 chargers are not pictured as they are for home-use, rather than public use. Level 2 chargers are shown in yellow, level 3 in red, and stations with both are shown in blue. The higher the charger level, the quicker your vehicle is able to charge, making this important information based on the time-use and necessities of EV users.

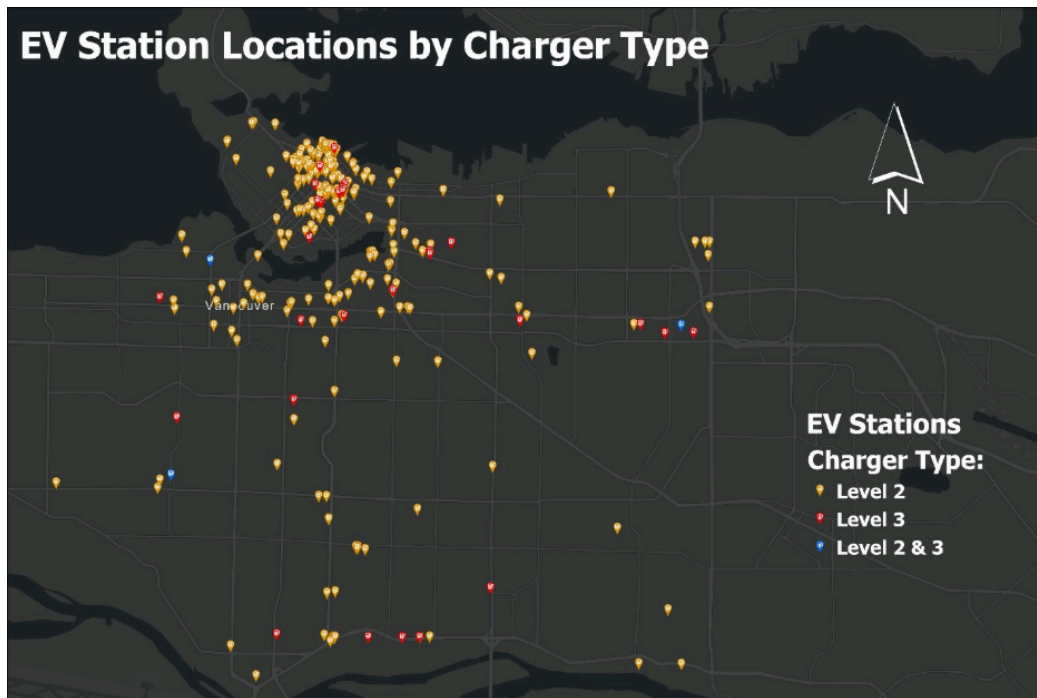


Figure 1. EV Chargers in Vancouver, B.C. by Charger Types

App Appeal

Here we answer: “*What are the appealing characteristics of this app to both users and potential investors?*”

1. **User-Accessible Interface:** Our app has a consistent color scheme that immediately draws users in. Once they've landed on the app page, the user-experience is nothing but intuitive. The left hand bar has the navigation directions that bring users from station-to-station, with the main EV charger map in the center of the screen. Our right-hand side has the EV charger pop-up information for users to quickly learn a little more about each station. Finally, at the bottom of the screen, users can select access by time of day, and watch as the accessibility scores change throughout the 24 hr period.
2. **Large (desktop), medium (tablet), and small (mobile) versions:** Compatible across all device sizes, ChargeFinder Vancouver can be used either at home or on-the-go so that EV charger users can always rely on the application to assist them in powering their vehicle. This means that you can charge anywhere in the City without worry of running out of power!

App Interest

Here we answer: *“What is the interest of creating this application?”*

1. **Improving Understanding of Spatial EV Access:** Despite the rapid growth of EV adoption and the continued investments in public charging infrastructure, there is still lots of uncertainty regarding how effective charging networks are serving urban populations. In many cities such as Vancouver, there has been an ongoing effort to increase the number of charging stations or improve the nominal spatial coverage. As these approaches address infrastructure supply, they don't capture whether residents can access charging facilities under everyday conditions. Studies of EV user behaviour and charging patterns consistently show that accessibility rather than simple proximity is a critical determinant of charging feasibility and user experience
2. **Supporting a Reduction in Personal Vehicle Emissions:** Transportation electrification serves as a strategy for emissions reduction. Electric vehicles (EVs) play a key role in this shift, supported by financial incentives, regulatory targets, and continued investment in public charging infrastructure. **Longevity of EV Infrastructure:** A growing body of research shows that access to charging infrastructure is a critical factor shaping EV adoption, influencing both perceived convenience and the practical feasibility of long-term ownership. The location of charging infrastructure and who can access it have become more crucial issues for urban planning as EV ownership grows beyond early adopters.

VIDEO

https://www.canva.com/design/DAHCufXIST8/AS_N9I6POKBaZYQT2a66BO/watch?utm_content=DAHCufXIST8&utm_campaign=designshare&utm_medium=link2&utm_source=uniquelinks&utlId=h3c07d09e66

Short Video Description

Welcome to ChargeFinder Vancouver; The app that does it all for EV owners in Vancouver, Canada! In this video, Angelica Simone, a new EV owner, consults EV car dealer, Samantha Sharp to learn more about EV access in Vancouver. Samantha and Nick walk us through the ChargeFinder app, and provide some context to the Vancouver charging scene as an emerging form of sustainable transportation.

Data Sources:

Insurance Corporation of British Columbia. (n.d.). ICBC data visualizations [Tableau Public]. <https://public.tableau.com/app/profile/icbc/vizzes>

Statistics Canada. (2021). 2021 census geography boundary files. <https://www12.statcan.gc.ca/census-recensement/2021/geo/sip-pis/boundary-limités/index2021-eng.cfm?year=21>

U.S. Department of Energy. (n.d.). Find electric vehicle charging stations. Alternative Fuels Data Center. <https://afdc.energy.gov/fuels/electricity-locations#/find/nearest?fuel=ELEC>