

Highlights

Field testing of 30 all-electric vehicles

Hydro-Québec's Boucherville pilot project was Canada's largest field test of all-electric vehicles. It was conducted in collaboration with the City of Boucherville and Mitsubishi Canada.

Facts and figures:

30 Mitsubishi i-MiEVs	30 months ((December 2010 to June 2013)
47 home and work charging stations	740,000 km driven
31 drivers	104 tons of GHG emissions avoided
27 companies and organizations	

Objectives:

- Understand the effects of ambient temperature on EV use and charging
- Understand EV drivers' behavior
- Obtain energy consumption profiles of EV users
- Establish EV charging patterns

Conclusions:

Range

- Strongly related to ambient temperature; can be 40% less in winter. Type of trip can also affect range.
- Affected more by heating than air-conditioning.
- Energy consumption also depends on ambient temperature (average between 13 and 24 kWh/100 km, depending on month).

Charging

- In most cases, home charging would have been sufficient (80% of trips were less than 60 km).
- The average daily charge was 8 kWh, that is, 50% of the battery capacity (participants used the i-MiEV as their primary vehicle).

240-V charging

- 240-V charging is effective and is not affected by ambient temperature.

400-V charging

- The quick-charging time depends on the battery's initial charge, the outdoor temperature and the temperature of the battery. In very cold temperatures, the time it takes to obtain 80% of a full charge can be significantly longer. Charging time is handled by the vehicle's battery management system (which optimizes charging time without damaging the battery), and is therefore independent of the plug-in station installed by Hydro-Québec.

Participant satisfaction

- At the end of the project, close to half of organizations and participants bought EVs.
- Seven others kept their home charging stations with the intention of buying EVs in the near future.
- Most said they were convinced EVs had a future.
- In their opinion, the public underestimates the advantages and benefits of EVs and overestimates the inconveniences and limitations.
- They believe an EV can very well meet the needs of a typical suburban family.
- They quickly got used to how EVs work.
- Many felt an EV can be a household's primary vehicle year round.