



Research case study > electric vehicles

Impacts on grid: electric vehicles

Version 1 (updated May 31, 2017)

Context: The increasing uptake of electric vehicles (EV) and transportation has many jurisdictions working to develop the best approach for introducing and developing the necessary infrastructure to support their proliferation.

Problem: Newer EVs with on-board chargers rated at 6 kW or greater can overload the system, depending on the time of charge and ambient temperature. As the size of on-board chargers and the number of vehicles increase, effect on the distribution system needs to be assessed. This constitutes the challenge being addressed.

Solution: Developing a business model specific to EVs, building an effective policy framework that supports this model and a successful consumer engagement campaign are part of a three-point strategy for addressing the barriers and opportunities for EV deployment.

Impact: In addition to providing insight into the challenges and opportunities facing cities this project lends itself to use a process template, constituting the basis of an analytical and empirical tool capable of informing the ongoing development of EV system strategies.

CUE's role: CUE researchers undertook scenario development and simulations as a mean of investigating the best-case and worst-case impacts of EVs on the distribution system.

✓ Completed

Partners:

Hydro One, Ontario Research Fund

Timeline:

January 2011-April 2014

Research Team:

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Key stats

9,179	Electric vehicles in Ontario
5%	Market share target by 2020
406,119	Capacity for EVs in Toronto