

New Brunswick Power Builds business case for fleet migration to electric vehicles

Shift Your Ride program minimizes fuel consumption, emissions and cost.

"We want to help make electric vehicles a smart clean choice for New Brunswickers. More EVs on the road ultimately translate to lower costs for NB Power and stable rates for customers in the long run."

— Gaetan Thomas, President and CEO of NB Power

The challenge:

New Brunswick Power (NB Power) generates power at 13 facilities throughout New Brunswick, delivering it via power lines, substations and terminals to more than 350,000 New Brunswick homes, businesses, hospitals and schools. They also export some of the electricity they generate to New England, Quebec, Nova Scotia, and PEI.

NB Power believes electric vehicles (EVs) will play an important role as they change the way power is generated and delivered by leveraging their smart grid infrastructure. However, building a business case and a strategy for fleet migration to EVs for a large utility like NB Power doesn't happen overnight. This is especially true when the scope of the initiative includes several municipal government entities (Cities of Fredericton, Moncton, Bathurst, Quispamsis and Rothesay) as well as a strategic partner (The New Brunswick Department of Transportation and Infrastructure).

The initiative, dubbed Shift Your Ride, evaluated the suitability of EVs and undertook a fleet review service to enable the different municipalities to determine a business case for the suitability of integrating EVs into their fleets.



Énergie NB Power



New Brunswick Power

www.nbpower.com

Industry:

Utilities

Based in:

New Brunswick (multiple locations)

Types of vehicles:

Light duty vehicles across municipalities were analyzed for EV suitability

Fleet size:

Small fleet

Defining the environmental and economic value of EVs in New Brunswick

New Brunswick is a small province relative to other provinces in Canada, both in terms of geography and population (around 770,000 and growing). For the Shift Your Ride program to be successful, NB Power needed buy-in, investment, and partnership support from companies, institutions, and government entities at the federal, provincial, and municipal levels.

To garner these partnerships and to champion EVs plus the related charging infrastructure, NB Power needed to understand the benefits of potential cost savings on a per-vehicle basis and get realistic fleet-wide estimates on fuel consumption and greenhouse gas emissions reduction.

NB Power also needed to be assured that the proposed replacement electric vehicles would be able to perform at similar services levels compared to cars and light trucks powered by fossil fuels. It was important for NB Power to be able to communicate the environmental and cost savings benefits of adopting EVs to their customers effectively, as well as instill confidence in New Brunswick businesses and consumers that plug-in and battery-powered vehicles would work for them.

The Solution:

Building the business case for electric vehicle adoption

A series of Electric Vehicle Suitability Assessments (EVSAs) were performed for NB Power and its municipal partners across New Brunswick. These assessments helped define the value of the fleet migrations to a Battery Electric Vehicle (BEV) or a Plug in Hybrid Vehicle (PHEV). They also accelerated shifts in understanding the viability of EVs to meet the demands of a municipal government and public utilities in Atlantic Canada.

How the EVSA helped NB Power

The EVSA was critical to the success of the program through providing:

- + A detailed account of vehicle usage on a day-to-day basis via remote data collection
- + The capability of various electric vehicle models to service existing driving cycles
- + The efficiency and operational cost savings of various EV models for the observed duty cycles
- + The best assignment of available vehicle models to duty cycle requirements
- + An accounting of the total cost, cost savings, and ROI per vehicle and for total fleet
- + A calculation of total reduction in fuel consumption and greenhouse gas emissions

The EVSA delivered reliable data analysis for operational decision making while minimizing the effort and involvement required from key stakeholders such as fleet managers, sustainability professionals, and senior executives.

About the EVSA process

The process involved the use of a telematics device that records and transmits vehicle driving behavior to sample vehicle fleet duty cycles accurately. The collected data was fed into a patented physics-based electric vehicle modeling software which made it possible to evaluate the feasibility of electric vehicle adoption based on real world driving data. This is the most accurate method of evaluating multiple electric vehicle models to understand economic and environmental impact of replacing existing Internal Combustion Engine (ICE) vehicles for fleets or individuals.

Since New Brunswick often experiences harsh winters with significant snowfall, NB Power performed an Electric Vehicle Suitability Assessment (EVSA) over the winter period to evaluate the year-round benefits of integrating electric vehicles into the NB Power fleet. The results of this review were positive, demonstrating a strong business case for the integration of electric vehicles into the fleet.



The Results:

The data collected and analyzed revealed the potential for a 94% reduction of greenhouse gas emissions, a fleet-wide savings of over \$1 million CAD.


Other result highlights were as follows:

- + 94% of the vehicle duty-cycles could be met by the charging time spans of best-matched EVs
- + 91% of the vehicle range requirements could be met by best-matched EVs
- + A potential reduction in fuel consumption of 95%*
- + A reduction in greenhouse gas emissions of 94% (2,123,710 kg of CO₂)*
- + Per vehicle savings estimate of \$11,735 CAD*
- + Potential fleet-wide savings estimate of \$1,091,298 CAD*

* over a vehicle's typical seven year service life

"The EVSA provided us with details on a key sample of our fleet, revealing new information that can help shape future decision-making about vehicle renewal options. If we are to be sustainable, we must constantly look for new and better ways to do things."

— Brad Woodside, Former Fredericton Mayor



Proof that EVs reduce costs, improve ROI and provide green benefits

NB Power, along with public/private partners, were able to prove the financial and environmental benefits of electric vehicle adoption with the help of the EVSA findings. EVs continue to become increasingly viable choices for fleets and consumers alike. Advances in technology, government incentives, and building of public charging infrastructure have contributed to an increase of adoption and sales of electric cars.

Geotab supports fleets in the adoption of EVs by providing the technology and services required to evaluate the feasibility, plan for the adoption, and support EV operations.

Visit geotab.com/ev to discuss ways to achieve your municipal, fleet, and utility-related vehicle and EV goals.