



# Large Retail Food & Beverage Company

Zero-Emission Medium and Heavy Duty  
Vehicle Adoption Case Study

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 CLEAN ENERGY CANADA

### Tell us a little bit about the company's current fleet.

Currently, this multinational food and beverage company operating in Canada (hereby called “the company”) has two categories of vehicles. The first category is a heavy fleet that delivers its products to customers. Currently they have just over 600 of these vehicles. Out of these, **they have six class 8 electric Volvo VNRs**. The vehicles in this category vary significantly in their daily kilometres travelled. Some operate in urban areas like Montreal where the daily kilometres travelled might be lower, others operate in more rural areas like parts of Saskatchewan where those daily kilometres travelled would be higher. **Therefore they range anywhere from 100-200 km travelled per day all the way up to 500-600 km in a day.**

The company also has a light-duty commercial vehicle fleet. They travel to service vending machines, conduct parts servicing, etc. They typically travel to a specific customer for servicing. On average they will travel anywhere from 100 km per day in denser areas, up to 200-300 km a day on the higher end. The company has about 300 of these vehicles. The vehicles are a mix of gasoline-powered Chevy Expresses, two recently purchased Ford E-Transits, with the company planning to buy 10 more.

Currently, all of their heavy-duty zero-emission vehicles operate in Montreal. Their light-duty fleet is spread out between B.C., Ontario, and Quebec.

### When did the company start their fleet electrification journey and why did they choose to begin electrifying their fleet?

Currently, while the company is a multinational franchise, its Canadian operations are largely owned (51%) between two families. **The company set a goal to reduce their carbon emissions by 46%**. About two and a half years ago, the company board pushed the Canadian staff to look into zero-emission vehicle opportunities that could fit into their current fleet operations.

On the light heavy-duty side things were able to move more quickly. They had a successful pilot with three Ford E-Transits and have now ordered ten more—marking 13 in total and able to expand. At the time, they were waiting for more model availability with this class of cargo van that had extended ranges to meet their duty cycles.

On the heavy-duty side of things, this is their first pilot. The company placed a purchase order in late 2022 and had received the order in staggered amounts. They received all six Volvo VNRs by December 2023.

Currently, the company is in the process of commissioning electric vehicles where they are being deployed for pre-service, undergoing checks and inspections for safety and have begun putting them in-service with regular routes.

### What have been the best things about going electric?

**The company has identified that about 70% of their routes in Montreal can be met just as well with electric trucks.** These are heavy loads carrying heavy beverages and are travelling about 120-150 km every day. Since the company operates mainly in last- and middle-mile deliveries, the shorter-ranged routes were pretty common in their daily operations. Even when looking at colder temperatures in Montreal, they were seeing a maximum electric range of 190 km and would have about 30% battery life remaining at the end of the route. This fit into the daily operations of many of their routes.

In addition, driver feedback has been really positive. Without the diesel fumes and vibrations from the running diesel engine, this makes for an overall better driving experience. Some of the drivers really care about sustainability and have really embraced the new technology.

### What have been the challenges?

**1) Interconnection process: available electricity at the site and the length of time.** The pilot project testing the six Volvo VNRs was at the company's Montreal depot. There they did not have to do upgrades that would require additional power coming into the facility. The company knew that it would take time for the upgrades to happen, but it took longer than expected. For the Montreal depot it took a total of six months and cost about \$800,00-\$900,000 for the infrastructure and upgrade.

For the next phase of their project the company will be expanding into Quebec City. Here the company has begun the kick-off process for interconnections with the utility and will need a service upgrade including more power to that facility. Hydro Quebec has quoted about six months for service upgrades at the Quebec City facility. This is on the shorter end of upgrade timelines. While it would require a power upgrade to the facility itself, the distribution line does have enough power. Therefore there are no transformer or utility-side upgrades needed. If these were needed then it would take more time.

**2) The lack of interoperability standards between the chargers and the vehicles.** The company experienced several issues between how the chargers spoke to the vehicles. In the light-duty space there are interoperability standards that help to resolve these issues. Interoperability refers to the ability of different EVs to seamlessly charge with any charger (not just the hardware but also the software). Interoperability is critical to ensuring broad, consistent access to charging stations, and is what will allow electric vehicle manufacturers to have confidence in station compatibility as new models come to market. Over time, it is hoped that these issues will be resolved with more standardization.

**3) Vehicle costs are high without incentives; post-purchase incentives.** Currently, when stacking the Quebec incentives with the federal incentives you can get up to \$200,000-\$300,000 off the vehicle purchase price. **If the electric tractor is coming out to between \$560,000-\$600,000, that could knock off 35%-50% of the purchase price. This brings the price of the battery truck similar to the price of its diesel equivalent.** The cost differential between larger vehicles like class 7 and 8 tractors is higher compared to their zero-emission versions. Therefore, without the incentives, the company would not have been able to build the necessary business case to purchase these vehicles in the first place. The other challenge is that Quebec's vehicle incentives are post-purchase, meaning they were waiting six months to be able to redeem the value of the incentive. Best practices have point-of-sale incentives where the incentive is redeemed at the point of purchase. The federal iMHZEV program and Nova Scotia's vehicle incentive program are both point-of-sale.

### How did you understand the right infrastructure for your project?

When the company decided they wanted to purchase electric trucks they issued a request for proposal for both vehicles and charging infrastructure. From the vehicle perspective, different OEMs gave their information and they were able to assess what was needed. From the charging infrastructure perspective, they allowed vendors to visit their sites to do an evaluation.

Prior to providing a quote, the vendors had an opportunity to evaluate the company's current site requirements. Some vendors did a much better job of understanding the company's existing depot set-up and situation, and provide solutions for what they needed.

In addition, the company had to engage with Hydro Quebec early on. Even without any major upgrades it would take about six months for Hydro Quebec to complete the interconnection process in Montreal. This was longer than expected. In this facility they have three 150 kW chargers each paired to three dispensers, and this totalled about \$800,000-\$900,000. Primary costs were from the hardware and installation of the chargers. In the Montreal facility there were some minor upgrades such as panel upgrades, but there was no transformer upgrade required and all of the upgrades were at their site. There were no upgrades needed with the utility. Relative to the project, the panel upgrade was only around \$40,000.

They have found the technology for these chargers are already growing outdated due to the pace of technological advancements. The chargers in the Montreal facility are serial chargers, meaning they charge the vehicle to a certain level and then they move to charging the next vehicle. The next chargers the company will be purchasing for their Quebec City facility will be parallel chargers, which allows for multiple vehicles to all charge at the same time, but will spread the total power output amongst the vehicles.

In Quebec City, they are being quoted at six months for a service upgrade to the facility and to have more power. The Quebec City location has enough power coming to the distribution line, but they do need more electricity into the building. This is why they don't need a transformer and the timeline for the service upgrade is comparatively not as long.

### Did you hire any new staff or did current staff change their day-to-day operations for this transition?

The transition has been done with the company's current staff and they did not hire any new people. The OEMs and charging infrastructure providers were very helpful in terms of assessing their needs and what vehicles and charging infrastructure they would need to meet their duty cycles. They also provided training for staff in terms of using the vehicles and the charging infrastructure.

For example, Volvo came on site with lots of documentation to support the company in the transition. Internally, the company already had a process for route selections. Since the routes themselves were not changing they would incorporate the electric trucks into the appropriate routes. While it's a small bit of extra work they had to do, they found they were not building routes to fit the trucks. They would instead find the right truck to fit that route.

### What programs and incentives did you use?

As a part of their business case development, the company also looked at relative payback periods. **Before the Clean Fuel Regulation (CFR), the company was looking at a payback period of 3.5-4.5 years. With the CFR, the company is looking to shave off an additional year.** This includes infrastructure costs.

As mentioned before, when stacking the provincial incentives with the federal incentives it can remove up to 35%-50% from the upfront purchase price of the vehicles. This can help bring the price down to very similar levels to the diesel equivalents. The only challenge has been Quebec's post-purchase incentives which means the company has to pay for the vehicle upfront and wait for the redeemed incentive, which took months. On the light-duty side and with the smaller commercial vehicle classes, the delta between the gasoline or diesel vehicle and the zero-emission option is not that big.

While the company was aware of different infrastructure incentive programs, they did not apply to any due to the complexity of requirements. In addition, different incentive programs had different requirements. The company is continuing to evaluate these programs for future projects.

### What insights would you pass on to other fleets looking to electrify?

#### 1) Every fleet is going to be a bit different in terms of what makes sense and what doesn't make sense.

While the choice for battery-electric made sense for their fleet that focuses on last-mile and middle-mile deliveries, it might not be the best choice for other fleets. For example, about 70% of their Montreal routes could work with battery electric, but that might be 30-40% in Saskatchewan.

**2) Engage with the utility early.** It took six months (which was longer than originally planned) to do minor service upgrades with Hydro Quebec in Montreal. Despite the upgrade being minor, delays happened due to limited hardware availability. Depending on the scale and size of the upgrade needed it could take even longer. This is particularly so if there is a transformer upgrade needed or a utility-side upgrade required. For the company's next project in Quebec City, Hydro Quebec is quoting them at six months.

**3) Transition the fleet and address "low hanging fruit" first.** For the company, they focused on their Montreal depot where there was no large service upgrade needed at the facility. This allowed for a quicker and lower cost testing period than if they had focused on a facility that would have needed more substantial upgrades (like in Quebec City). Not only that, but the company also focused on their Montreal facility where there are provincial vehicle incentives that can be stacked with the federal incentives, and there are shorter routes in more urban/dense areas. **This meant that 70% of their routes are electrifiable today.** This gives a wider breadth of options in terms of testing the vehicles in a variety of duty cycles.