



## EV CASE STUDY:

# Full Diesel-to-Electric Transition for One of Canada's Largest Retailers

## Overview

When one of Canada's largest retailers began exploring electric yard trucks, the goal was simple: **to cut emissions without cutting performance, a critical step toward achieving net-zero emissions by 2040.**

They needed proof that an all-electric fleet could deliver the same reliability, uptime, and throughput as diesel, all while making financial sense.

NSSL led the project from strategy to execution, showing exactly what a full EV transition looks like when it's built on real data, driver input, and operational precision.

## Challenge

This retailer's East Gwillimbury location is a high-volume distribution center servicing time-sensitive freight. The site was working to meet quarterly spend targets while preparing for long-term sustainability commitments, knowing a full EV transition would require a significant upfront investment in trucks, chargers, and infrastructure. Located in a cold-weather region, the site also needed to understand how temperature and seasonal conditions would impact vehicle performance and charging reliability. Leadership believed in the initiative, but they needed quantifiable metrics to present to finance and operations executives, "proof" that the switch could drive downstream savings in fuel, maintenance, and equipment utilization over time. That's where NSSL stepped in, helping model the return on investment and build the operational roadmap that made the transition financially and operationally viable.

## 1. The NSSL Approach

### PILOT FIRST, SCALE SECOND

To ensure the investment was grounded in real-world results, this large retailer partnered with NSSL to launch a controlled pilot at their busiest Ontario DC in Ajax—a site ideal for testing both Low Voltage and High Voltage EV configurations under demanding conditions. The Low Voltage units operated continuously for 14-15 hours, while the heavier High Voltage specification trucks ran for up to 30 hours straight. The pilot also studied the frequency and efficiency of opportunity charging to understand how charging behavior impacted uptime and productivity. The objective wasn't just to prove the trucks could run—it was to stress-test the model under actual operating conditions and identify any variables that could affect long-term performance or ROI. The insights gathered through this process became the foundation for the NSSL Data-Driven Playbook, a proven framework guiding future rollouts. By the time leadership gave the green light, there would be no surprises or curveballs that could stand in the way of success.





## Pilot Results

Metric	Diesel Baseline	EV Results	Delta
Fleet Size	6 Diesel Units	<b>6 Electric Units</b>	100% EV
Average Uptime	97%	<b>99%</b>	+2%
Fuel Cost per Week	\$4,466	<b>\$408 (electric equivalent)</b>	-91%
CO <sub>2</sub> Emissions	674 metric tons/year	<b>Zero Tailpipe Emissions</b>	-100%
Moves per Hour	5.5	<b>5.5</b>	On-par

With the pilot data validated and performance gains proven, it laid the groundwork for a full transition to electric trucks. The next step was turning insights into visibility. By connecting every truck, charger, and move into Shuntware®, this large retailers gained a unified view of its electric fleet, transforming raw performance data into actionable intelligence through the EV Dashboard.

▶ **“The drivers adapted quickly – performance was seamless, uptime improved, and the feedback’s been overwhelmingly positive.”**  
– General Manager Operations (Canada)

## 2. EV Dashboard Integration

Post-launch, the EV Dashboard in Shuntware® provided live visibility into..

-  Battery state of charge and charge cycle data
-  Energy consumption per trailer move
-  CO<sub>2</sub> reduction and sustainability metrics
-  Uptime and fleet utilization trends

# NSSL

EVERY MOVE COUNTS



Current State, that same data fuels the operation of a fully electric yard. Insights from Shuntware® now drive daily decisions, from optimizing charge schedules and route assignments to forecasting power demand and maintenance intervals. What began as a pilot to validate EV performance has evolved into a data-driven ecosystem where every move, charge, and metric contributes to sustained efficiency, uptime, and measurable cost savings.

## Closing Statement

This project represents North America's next step toward sustainable yard operations, driven by data, precision, and partnership. With NSSL leading the transition, one of Canada's largest retailers became the first site in its network to operate a fully electric fleet, proving that environmental responsibility and operational excellence can go hand in hand.

## Key Takeaways



**NO PERFORMANCE DIPS**  
throughput and reliability maintained



**HIGHER UPTIME**  
predictive maintenance and simplified scheduling



**FULL VISIBILITY**  
via EV Dashboard and Shuntware® integration



**POSITIVE DRIVER ADOPTION**  
strong feedback on comfort and handling



**SCALABLE MODEL**  
template for future one of Canada's largest retailers EV conversions

▶ **"Economically and operationally, NSSL delivered exactly what we needed.**

They helped us justify the investment with clear data, managed every step of the rollout, and proved that going electric could make sense on both the balance sheet and in the yard."

— Operations Manager

