

CVP PROGRAM CARD

PROJECT

Retrofitted Ice Resurfacer

Project Information

Make/Model: Zamboni 525 (retrofit)

Use Case: Ice Resurfacer

Vehicles: 2

Vehicle Information

Powertrain: Battery-Electric Vehicle (Retrofit)

Vehicle Range: 7.5 km

Battery Capacity: 28 kWh

Tracking Information

Project Dates: March 2024 – March 2025

Location: Thompson/Okanagan

Scan the QR code to learn more about CleanBC Go Electric



Operation and Performance

9.8 km
Average Daily Distance

4,877 km
Distance Driven

495
Days Driven

23.0 km
Max Daily Distance

8.8 km
Average Daily Implied Range

6.57 km/h
Average Speed

1.4 h
Average Daily Drive Time

0.4 %
% full charge days ending with SoC < 10%

Operations & Reliability

The retrofitted electric ice resurfacers (REIRs) were able to complete necessary daily operations. The REIRs traveled over double the implied range when necessary by charging between cleans.

Most maintenance issues for the REIRs are now fixed within the same day. City of Vernon reported it took about 2-3 months for the necessary knowledge to be built – including which parts to keep in stock – for the REIRs' downtime to decrease to similar levels as the propane powered ice resurfacers.

People & Training

Drivers appreciate the benefits offered by the REIRs. After an initial adjustment period, many drivers preferred the REIRs as they have more features, are quieter, and noticeably improved the air quality in the rinks.

The REIRs improve driver accessibility. The REIRs do not require changing heavy 50–60-pound propane tanks, which must be replaced outdoors including in the winter.

Emissions Savings

7238 kg
Avoided CO₂ – Operational

43 g/km
Average CO₂ Emissions per km

Fuel Cost Savings

\$2,773
Fuel Cost Savings

\$0.57/km
Fuel Cost Savings per km

Charging & Energy

264 kWh/100 km
Energy Consumption While Driving

79 %
Average End of Day SoC

274 kWh/100 km
Energy Consumption While Driving + Idling

96 %
Average Start of Day SoC

28 kWh
Average Daily Charged Energy

11.7 h
Average Daily Charge Time

“The ice resurfacer electric conversion was a good transition for operators to shift from internal combustion engine to electric motors. As a result of our experience with the vehicles funded through CVP, we plan to purchase more ZEVs in the future.”



Transport
Canada

Transports
Canada

PROJECT Retrofitted Ice Resurfacers

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Transport
Canada

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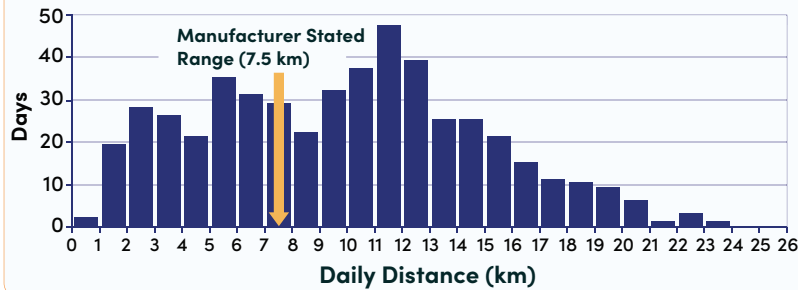
Scan the QR code to access
the Project Data Analysis
Dashboard



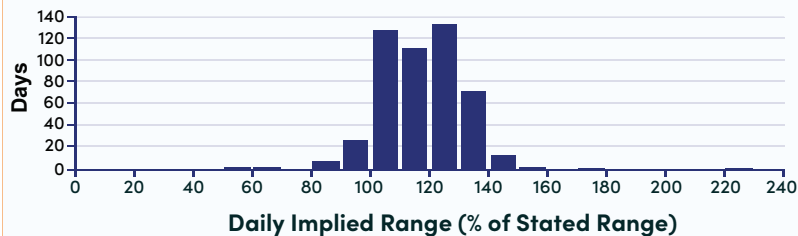
What is Implied Range?

Implied range is an estimate of the maximum potential distance a vehicle could travel on a full charge. We calculate this by dividing the kilometres travelled on a day by the percentage of charge used.

Histogram of Daily Distance Driven



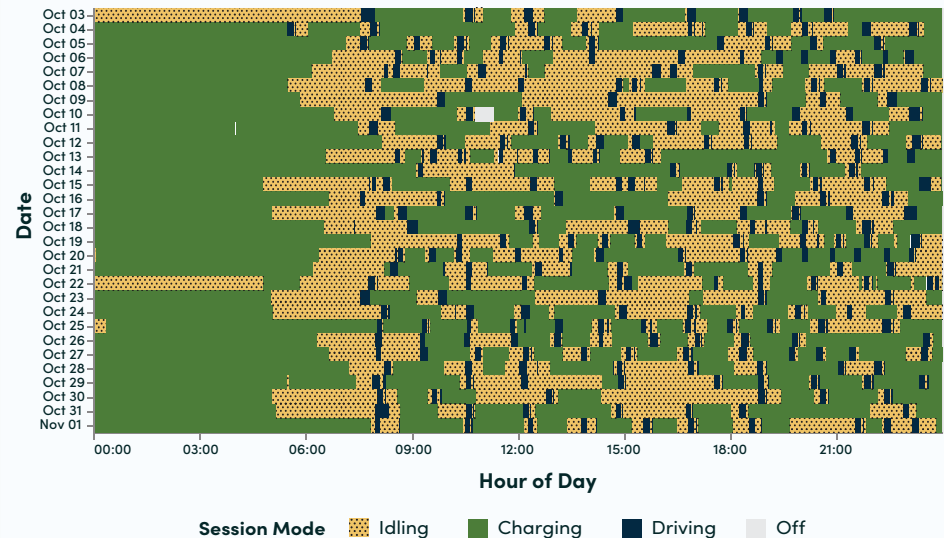
Histogram of Daily Implied Range



In this project, the implied range mostly fell between 100 and 130 percent. Implied ranges below 90 percent and above 140 percent occurred rarely. This translates to a commonly observed implied range between 7.5 km and 9.75 km, with implied ranges rarely seen below 6.75 km and above 10.5 km.

Frequent day time charging allowed the REIRs to exceed both their implied and manufacturer stated ranges in a day. The average daily distance traveled was 9.8 km. This translates to 131 percent of the manufacturer stated range. A combination of overnight and daytime charging allowed the REIRs to regularly exceed this distance and double it on some days.

Operating Modes (October 2024)



The REIRs were recorded as charging whenever they were plugged in. This means that while on some days we can see the REIRs were charging for over 18 hours in a day, they did not need to be plugged in that long to achieve a full charge or accommodate their daily workload.