YVR Fleet Asset Management Challenges and Opportunities Towards Net Zero 2030

SWIFT 2025

130 Light Fleet vehicles

Car

Pickup truck

Van

240 Heavy Fleet vehicles

Airside rescue and firefighting

Snow blower

Articulated tractor

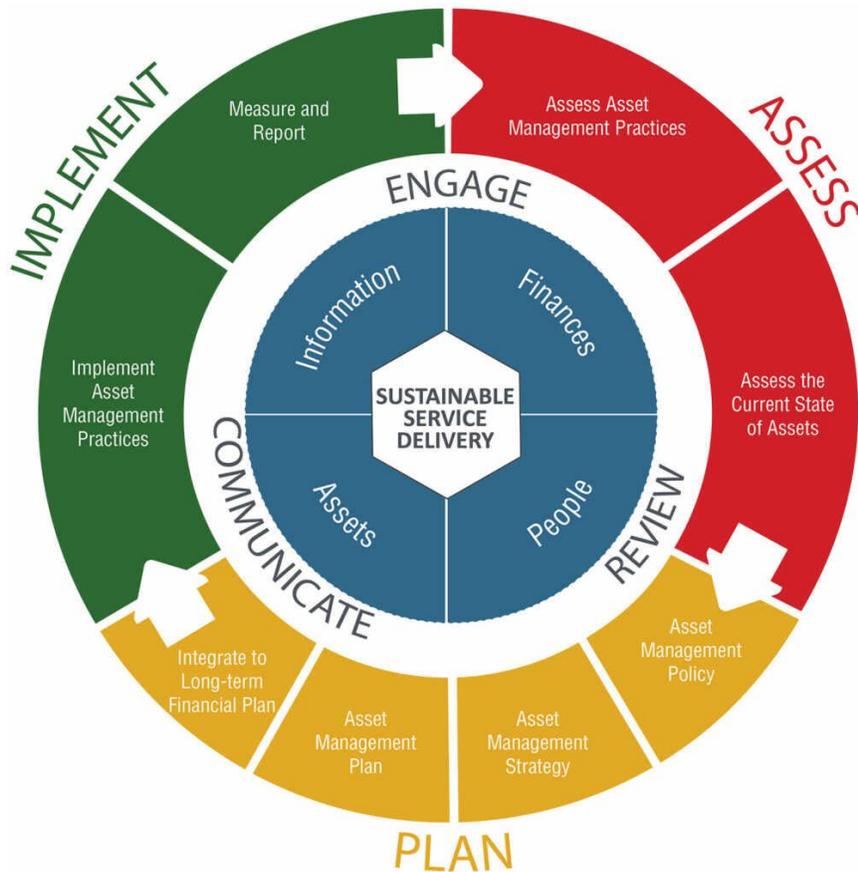# 110 Attachments & Trailers

Snowplow

Hot Mix Transporter

Trailer

Asset Management

- Structured approach to planning, operating, maintaining and renewing assets to deliver sustainable, safe, reliable and cost-effective service throughout their life cycle

- ISO 5500, BC Sustainable service delivery framework

- Operational needs
- Criticality
- Accountability
- Resources

SLA

- Asset Inventory Master Data
- Life Cycle Asset Delivery Data
- Transactional O&M Data

3 Levels of Data

Asset Management Plans

SLA-Cross functional cultural change

APPENDIX

Table 1 – Fire & Rescue Equipment Requirements to Support YVR Stated Objectives

Equipment Type	Equipment Quantity
Command Vehicle	1
Rescue Vehicle	1
Crash Truck	5
Medical Response Vehicle	1
Rapid Intervention Vehicle (RIV) (Airstairs)	1

Table 2- Fire & Rescue Staffing Requirements to Support YVR Stated Objectives

Availability Requirement	Staff Roles	Staff Quantity
Fulltime	Captain	1
Fulltime	Lieutenant	2
Fulltime	Firefighter	15

Table 3- Airside Operation Equipment Requirement to Support YVR Stated Objectives

Fleet Category	Equipment Type	Equipment Quantity
Winter Fleet	Vactor	1
	Plows with Tow-behind Sweepers	5
	Snowplows	3
	Combis (snowplow and broom)	5
	Sprayers	1
	Multi-hogs	5
	Snow Blowers	5
	Pick-up Spreaders	2
Mowing Fleet	Grass Cutters	6
Sweeping Fleet	Street Sweeper	1
	High-speed Front Mount Sweeper	1
ASO Fleet	Airside Safety Officer (ASO) vehicles	4

- Clarified user specifications and reduced scope -> Efficiency

- Cross-functional involvement fosters best practices and innovation -> Street Sweeper, EV conversion

- Reporting culture -> from perception to measurement

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3 Levels of Data

Asset Management Plans

O&M Transactional Data

- Digital parts procurement through SMT -> Usage analysis, predictive maintenance, AI?

- Digital AFM work request directly into our EAM software-> Transparency, Maintenance costs, Asset performance/reliability

- Telematics (GPS Device) -> real time monitoring (integration to Digital Twin), passenger bus real time ETA, right sizing (shared vehicle pool), emissions data
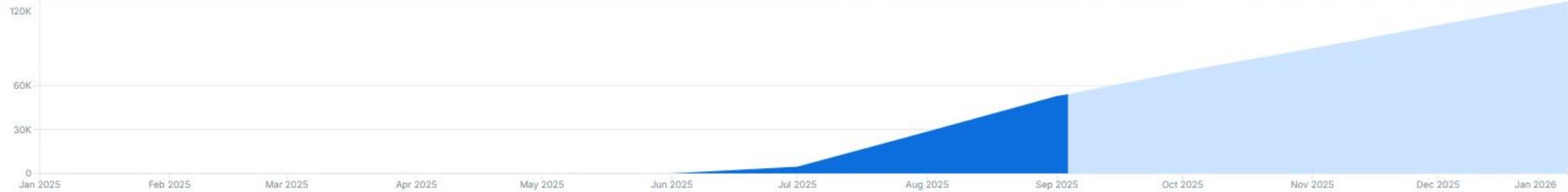
Sustainability Report ☆

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Total Emissions

〰 📊

● Current   ● Projected ⓘ

54,225 kg   **117,666** kg

120K

60K

30K

0
Jan 2025 | Feb 2025 | Mar 2025 | Apr 2025 | May 2025 | Jun 2025 | Jul 2025 | Aug 2025 | Sep 2025 | Oct 2025 | Nov 2025 | Dec 2025 | Jan 2026

Vehicles   Tags

🔍 Search 5 vehicles

Vehicle	Emissions ▼	Avg. Emissions	Distance
176	13,490 kg	1.126 kg/km	11,984 km
174	13,115 kg	1.091 kg/km	12,025 km

EV Suitability ☆

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Summary

- ■ **Excellent** - 100%
- ■ **Good** - 0%
- ■ **Okay** - 0%

100% of your fleet is suitable for electrification

Your Electrification Criteria

Showing vehicle suitability based on the following criteria

✎ Edit

⌘ **Lifetime Usage**
Vehicles with **> 160,934 km** driven total

⛽ **Avg. Fuel Efficiency**
Vehicles that typically return **> 9 L/100km**

◩ **Avg. Daily Range**
Vehicles that typically drive **< 322 km** per day

↑ **Max Daily Range**
Vehicles that always drive **< 483 km** per day

$ **Est. Annual Fuel Savings**
Vehicles that can save **> C$ 12,777** in fuel

◩ **Est. Annual Emissions Savings**
Vehicles that can save **> 91 kg** CO_2

< 📅 30 days >   ① Tags ▾

🔍 Search results

Vehicle	Lifetime Usage	Avg. Fuel Efficiency	Avg. Daily Range	Max Daily Range	Est. Annual Fuel Savings	Est. Annual Emissions Savings	Electrification Suitability ▼
176	✓ 385,334 km	✓ 42 L/100km	✓ 169 km	✓ 272 km	✓ C$ 34,160	✓ 69,132 kg	**Excellent** ▬▬▬▬▬▬
173	✓ 359,705 km	✓ 41 L/100km	✓ 137 km	✓ 248 km	✓ C$ 27,396	✓ 47,672 kg	**Excellent** ▬▬▬▬▬▬
175	✓ 441,803 km	✓ 44 L/100km	✓ 161 km	✓ 293 km	✓ C$ 34,449	✓ 69,716 kg	**Excellent** ▬▬▬▬▬▬
174	✓ 335,986 km	✓ 41 L/100km	✓ 162 km	✓ 247 km	✓ C$ 32,497	✓ 65,766 kg	**Excellent** ▬▬▬▬▬▬

- Operational needs
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3 Levels of Data

Asset Management Plans

AMP – Asset Management Plan Draft

Fleet Assets

86	12.07	3.24	$78M
Count of Asset	Average Age	Average Condition Score	Total Replacement Cost

Asset Owner

All ▼

Function

Summer
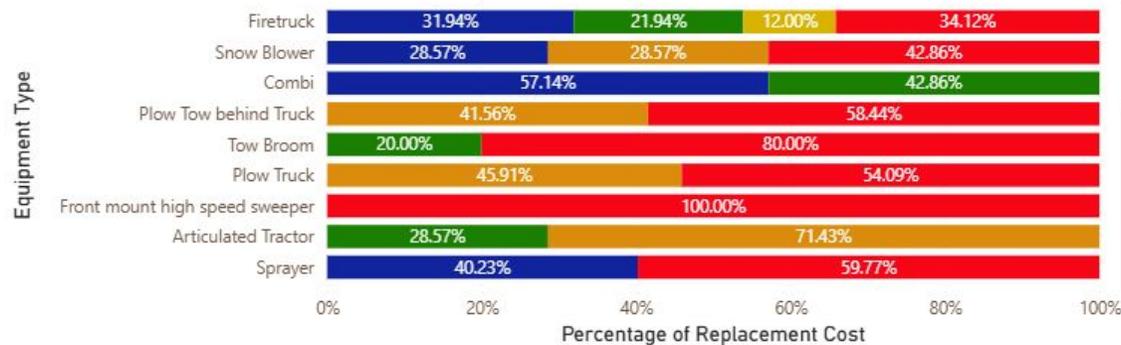Summer + Winter
Winter

Asset Risk Matrix

Condition Score	Condition Rating
1	Excellent
2	Good
3	Fair
4	Poor
5	Very Poor

Criticality

	Minor	Moderate	Major	Catastrophic
Excellent	$763,980	$1,019,163	$9,963,040	$9,750,878
Good	$415,000	$2,670,076	$3,358,538	$6,398,130
Fair	$1,237,598			$3,627,084
Poor	$1,695,000	$1,608,750	$7,406,793	
Very Poor		$2,016,131	$16,929,305	$9,600,000

Risk Level

High
Low
Medium

Performance Distribution by Replacement Cost

Condition ● Excellent ● Good ● Fair ● Poor ● Very Poor

Equipment Type	
Firetruck	31.94% / 21.94% / 12.00% / 34.12%
Snow Blower	28.57% / 28.57% / 42.86%
Combi	57.14% / 42.86%
Plow Tow behind Truck	41.56% / 58.44%
Tow Broom	20.00% / 80.00%
Plow Truck	45.91% / 54.09%
Front mount high speed sweeper	100.00%
Articulated Tractor	28.57% / 71.43%
Sprayer	40.23% / 59.77%

Percentage of Replacement Cost

Performance Distribution by Asset Age

Condition Rating ● Excellent ● Good ● Fair ● Poor ● Very Poor

Number of Asset

Percentage of Expected SL

Challenges & Benefits of Fleet Asset Management

- ### Challenges:

  EAM software configuration and training

  Cross-functional process implementation

- ### Benefits:

  Financial predictability & Risk Management

  Cost reduction while improving service performance

  Pathway to innovation: Predictive maintenance, Hydrogen, Electrification

Toyota Mirai - Hydrogen