



# City of Vancouver

## Fleet Asset Management Plan (AMP)

### Development and Results

Evan Dacey P.Eng., PMP  
Craig MacDonald E.I.T., MSc.

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# Project Overview

# Project Context

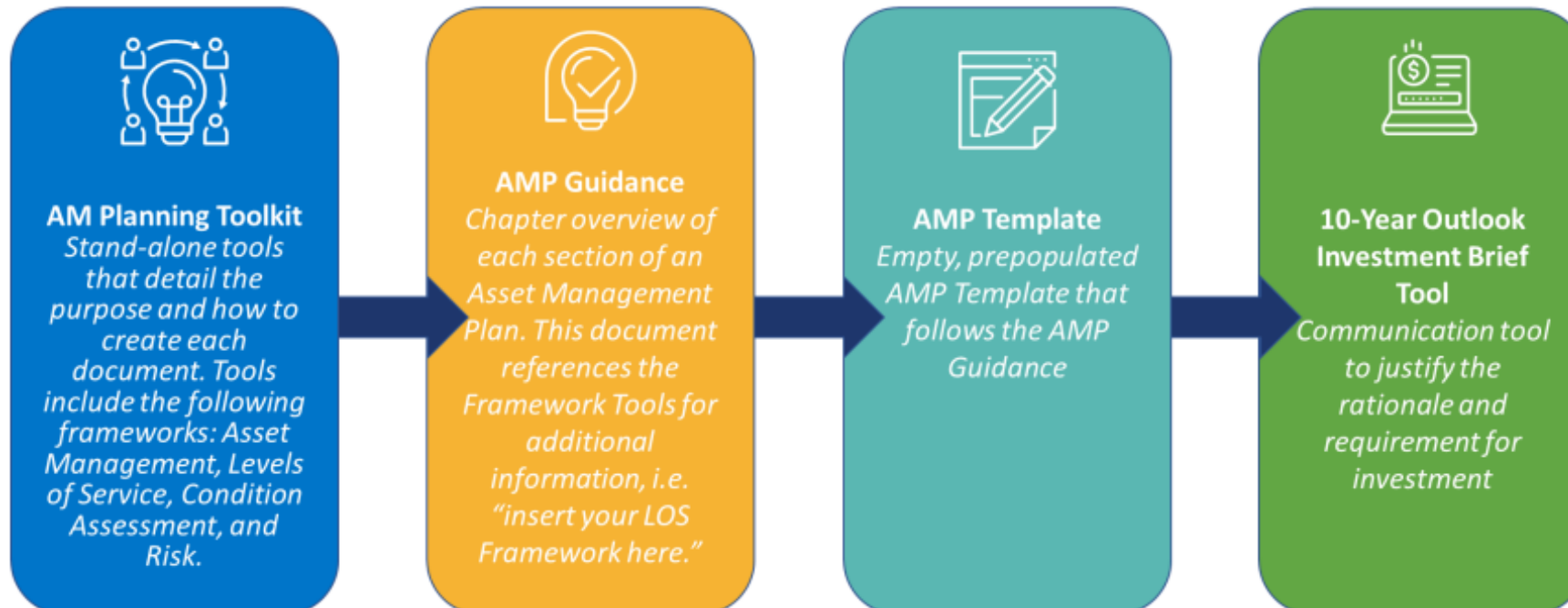
- AMP fits into the City's Engineering Services Department's broader framework for asset management planning
- Fleet is one of many AMPs that were developed to improve planning for the City's infrastructure assets

## Other AMPs:

- Water
- Sewers
- Traffic & Electrical Operations
- Green Infrastructure
- Bridges
- SCADA
- Sidewalks & Pavements

# Fleet AMP

- This was the first AMP Fleet has developed
- Created over the course of 2022 and finalized early 2023
- AMP development will be an on-going iterative process



# Asset Management Plan Structure

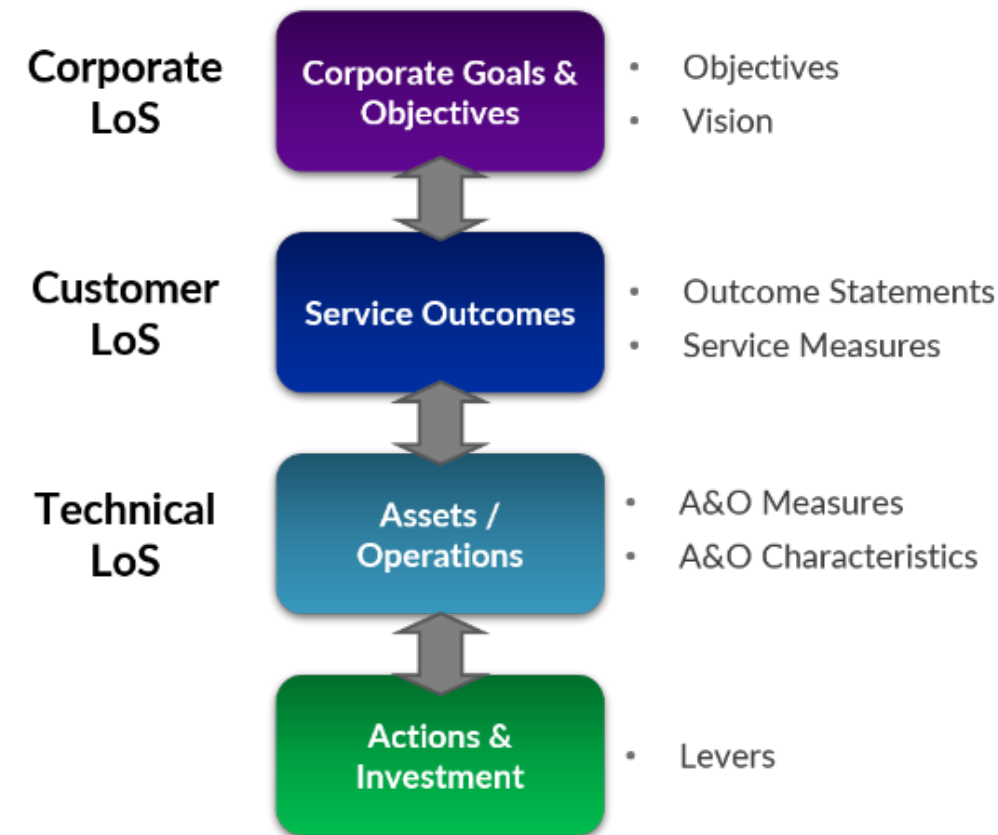
- AMP brought together:
  - Key objectives for service delivery (LoS),
  - An overview of the current state of assets,
  - Trends and risks impacting asset performance,
  - Forecasts of investment needs (4-Year Capital Plan & 10-Year Capital Strategic Outlook),
  - Strategies and actions for managing and investing in assets

# AMP Results – Levels of Service

# Levels of Service (LoS)

- Specific, quantifiable measures for service/performance targets
- Understanding key values aligned with corporate and service area goals helps set LoS indicators
- Identified LoS indicators during workshops conducted with Fleet Management and Operations staff

## Levels of Service Hierarchy



# Levels of Service – Values and Indicators

## Values and LoS indicators identified during workshops

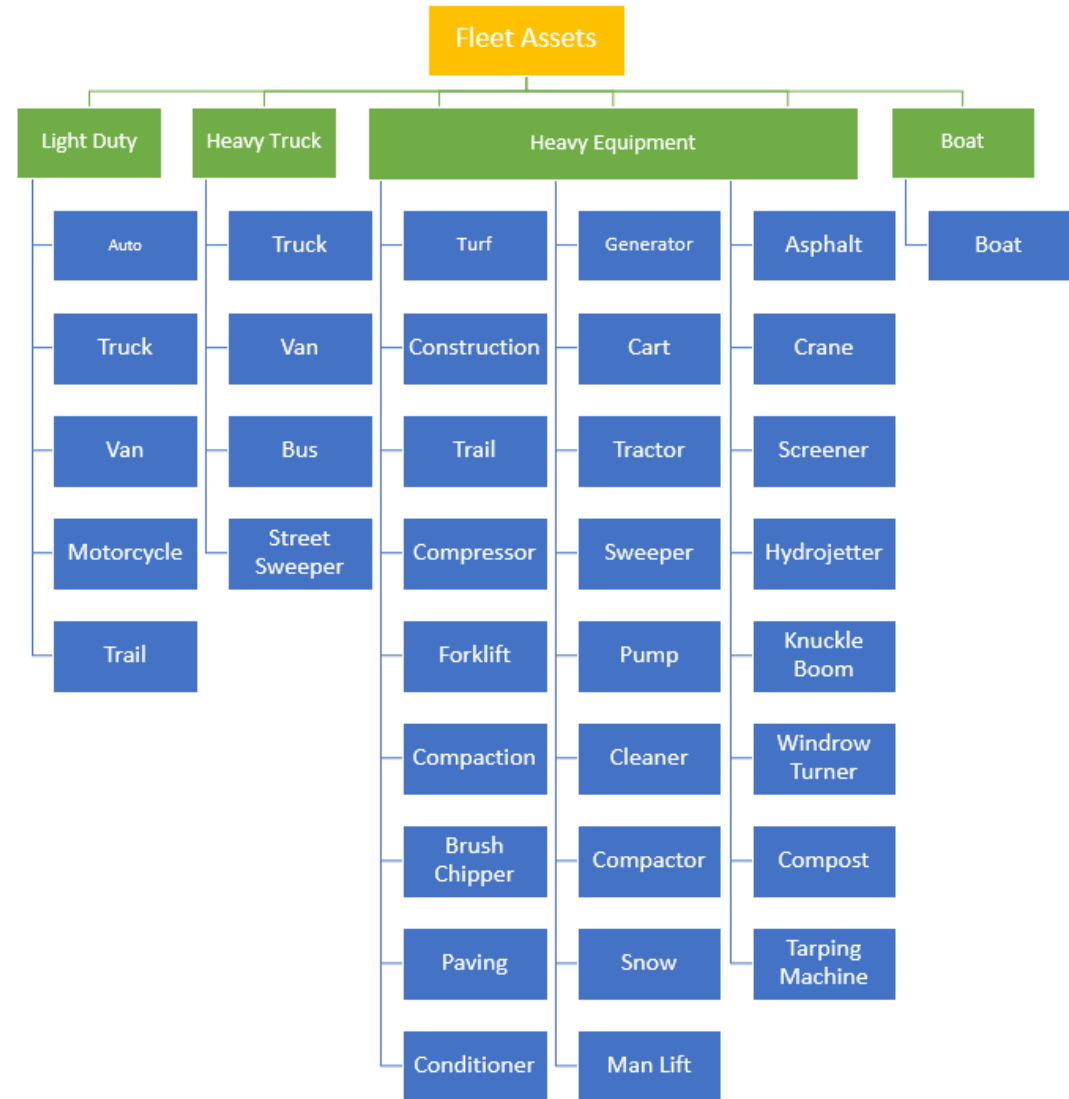
Value	LoS Indicator	Desired Targets
<b>Reliability</b>	<ul style="list-style-type: none"> <li>Uptime percentages</li> <li>Number of units available per day</li> </ul>	<ul style="list-style-type: none"> <li>91% Uptime</li> <li># of units available per day (will vary by User Group)</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>Percentage of safety-related PM tasks completed per year</li> </ul>	<ul style="list-style-type: none"> <li>100% of safety-related PM tasks completed per year</li> </ul>
<b>Responsiveness + Customer Service</b>	<ul style="list-style-type: none"> <li>Turnaround time in outfitting</li> <li># of complaints or positive feedback from User Groups</li> </ul>	<ul style="list-style-type: none"> <li>X% of outfittings where turnaround time exceeded target time</li> <li>X# of units available per day (will vary by User Group)</li> </ul>
<b>Sustainability</b>	<ul style="list-style-type: none"> <li>Annual fleet emissions</li> <li>Percentage of fleet that uses renewable fuels</li> <li>Percentage of the kilometres driven by on-road City zero emissions vehicles</li> </ul>	<ul style="list-style-type: none"> <li>10,750 tCO<sub>2</sub>e reductions or a 60% overall reduction in emissions for Fleet by 2030</li> <li>100% of the Fleet using renewable fuels by 2050</li> <li>50% of the kilometres driven will be by zero emissions vehicles by 2030</li> </ul>
<b>Value for Money</b>	<ul style="list-style-type: none"> <li>Capital dollars spent overall</li> </ul>	<ul style="list-style-type: none"> <li>\$35M dollars per year spent overall</li> </ul>



# AMP Results – Current State

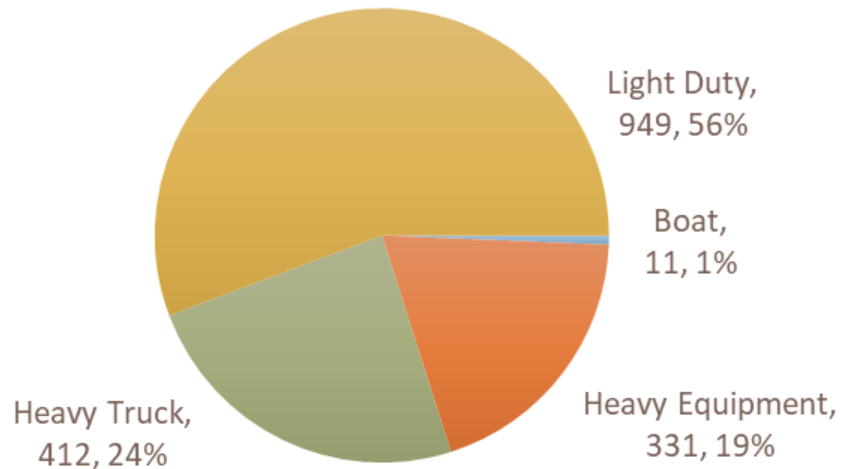
# Current State

- An investigation of the assets in the current portfolio was conducted
- This included analysis of:
  - Number of assets,
  - Valuation of assets,
  - Condition metrics, and
  - Emissions



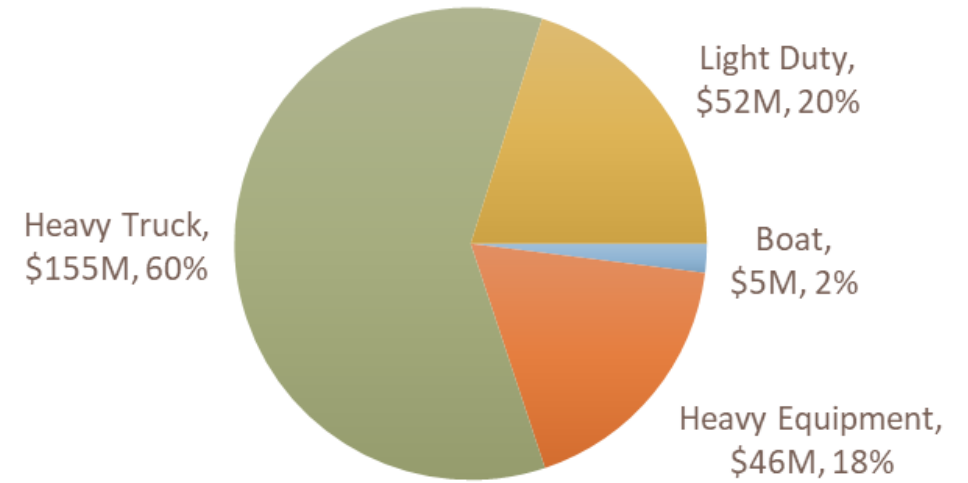
# Current State – # of Assets and Value

- Over 1,700 assets
- Largest asset class is light duty vehicles
- Nearly \$260M portfolio
- Majority of portfolio value is heavy trucks



■ Boat ■ Heavy Equipment ■ Heavy Truck ■ Light Duty

**# of Assets**

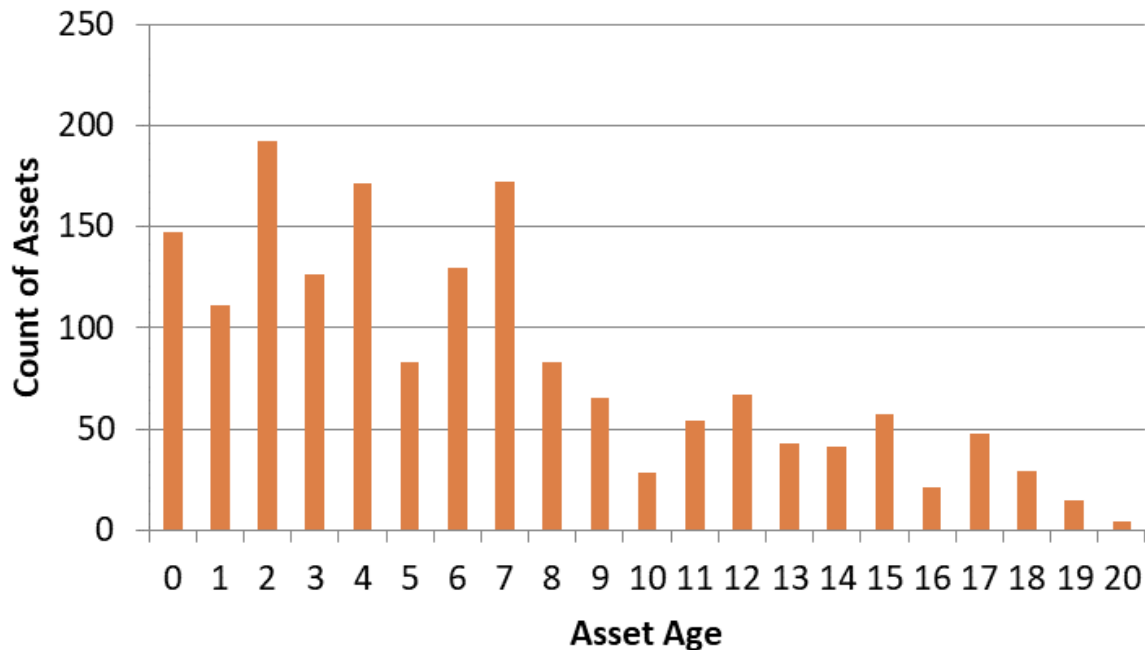


■ Boat ■ Heavy Equipment ■ Heavy Truck ■ Light Duty

**Asset Valuation**

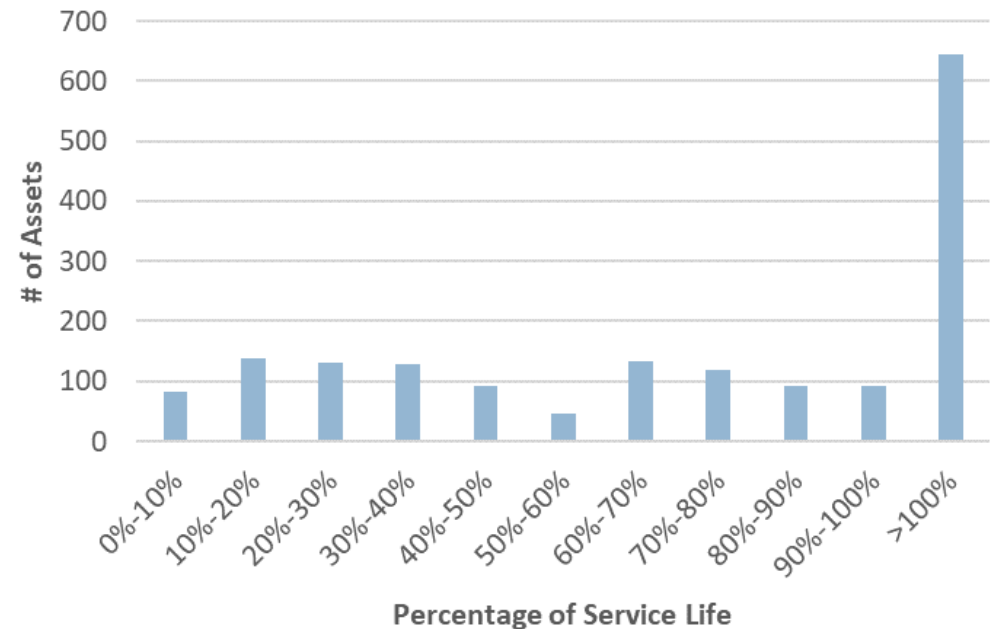
# Current State – Asset Age

- Majority of Fleet assets are 5 years old or younger



**Age of Assets**

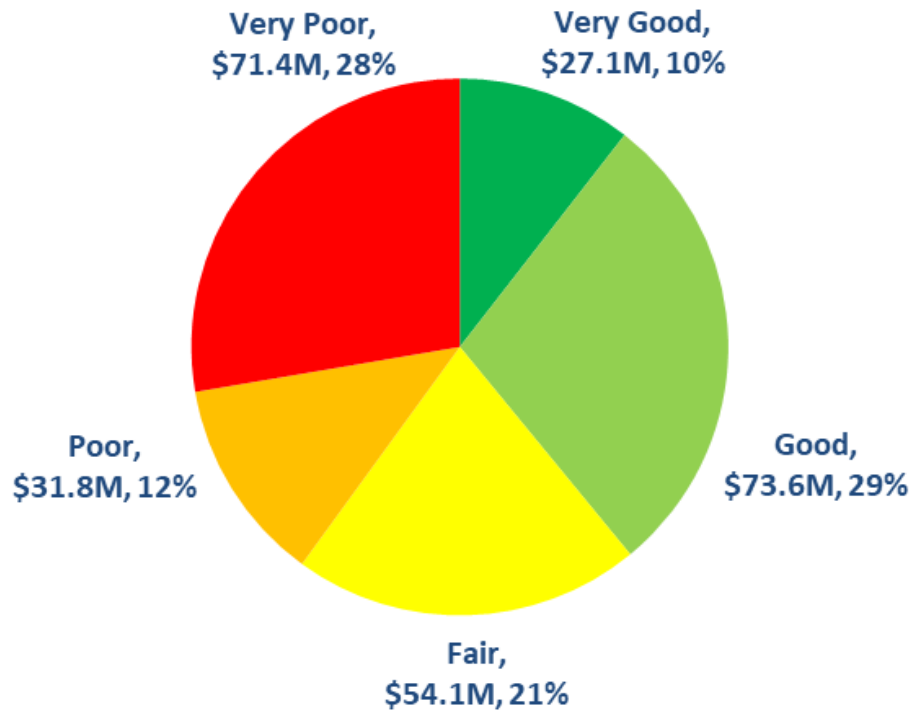
- While average age of portfolio is low, 38% of assets are at or beyond their service lives.



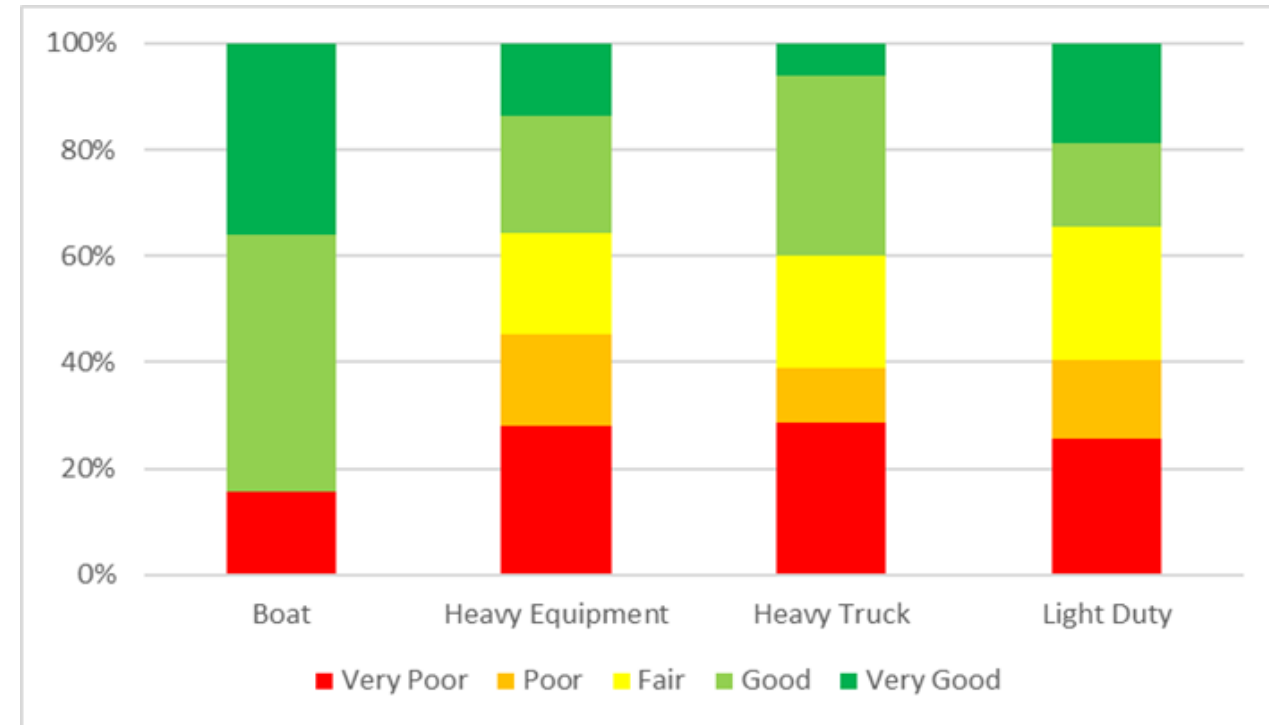
**% of Expected Service Life**

# Current State – Asset Condition

- Average condition of the portfolio is “Fair”
- Fairly similar average condition across different asset classes



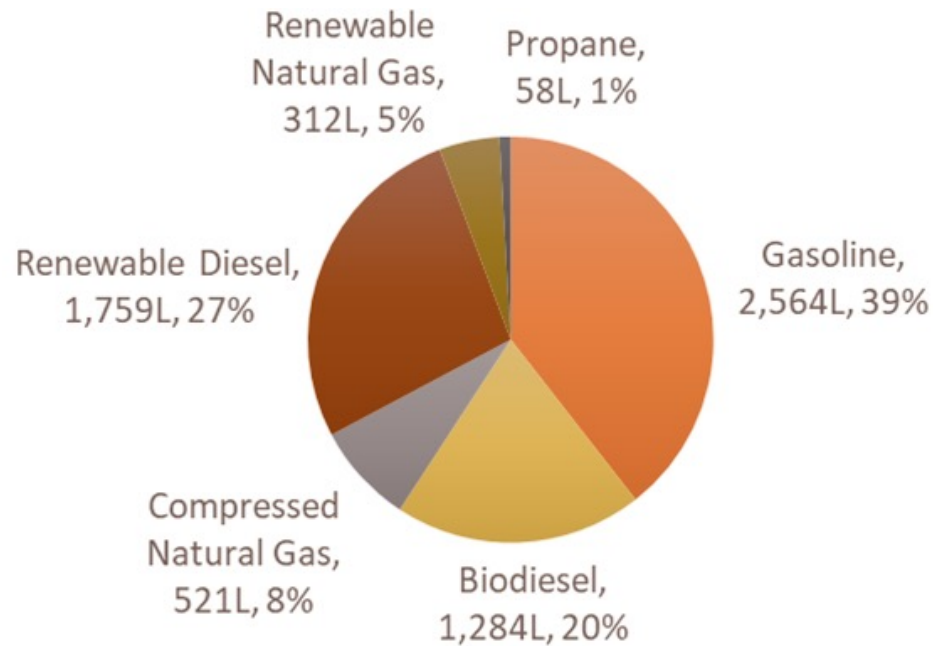
**Condition of Portfolio**



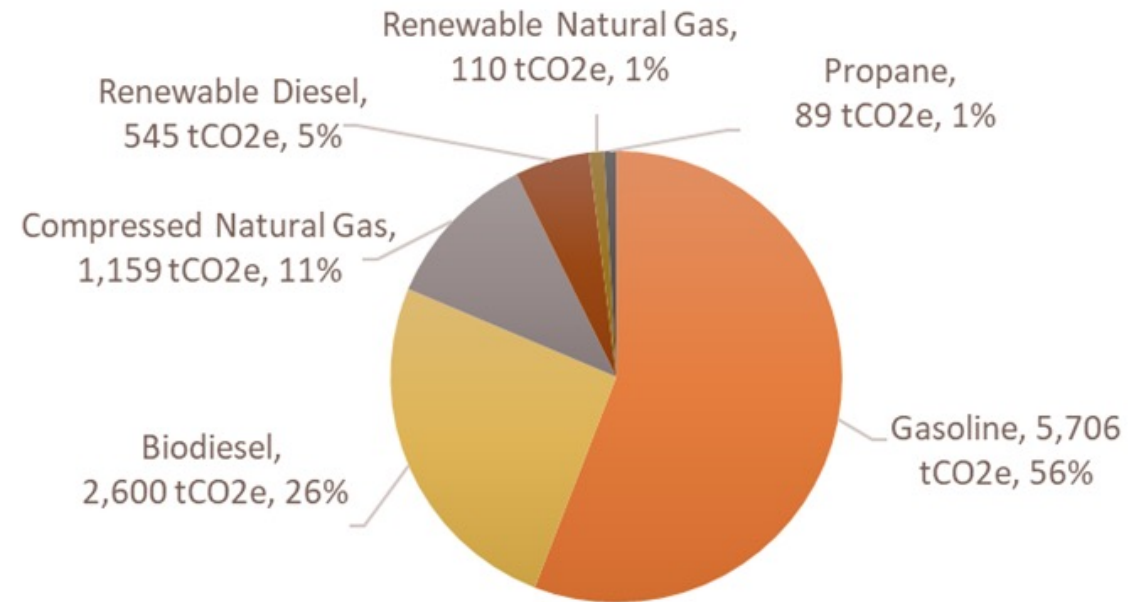
**Condition by Asset Type**

# Current State – Emissions

- Gasoline is the largest fuel source, but makes up less than half of all fuel use
- Gasoline makes up more than half of all emissions



**Fuel Use – Volume (1,000 L's)**



**Fuel Use – Emissions (tCO2e)**

# Current State - Risk

- During workshops with management and operations staff, key risks and mitigation measures were identified

Risk	Likelihood Score	Consequence Score	Mitigation Measure	Residual Likelihood Score	Residual Consequence Score
Supply Chain Delays	4	3	Increasing stocks of critical parts Identifying alternative suppliers	3	2
Operations Staffing Shortages	5	4	Improve operations staff scheduling systems. Increase staffing levels	4	3
Shrinking Budgets and Growing Work Requirements	5	4	Funding new growth so its not done through leases. Working with customers to develop business plans and budget for new growth	3	3
Projects Going Over Budget	4	3	Increased project controls in conjunction with other mitigation measures above	3	2

# AMP Results – Investment Forecasting





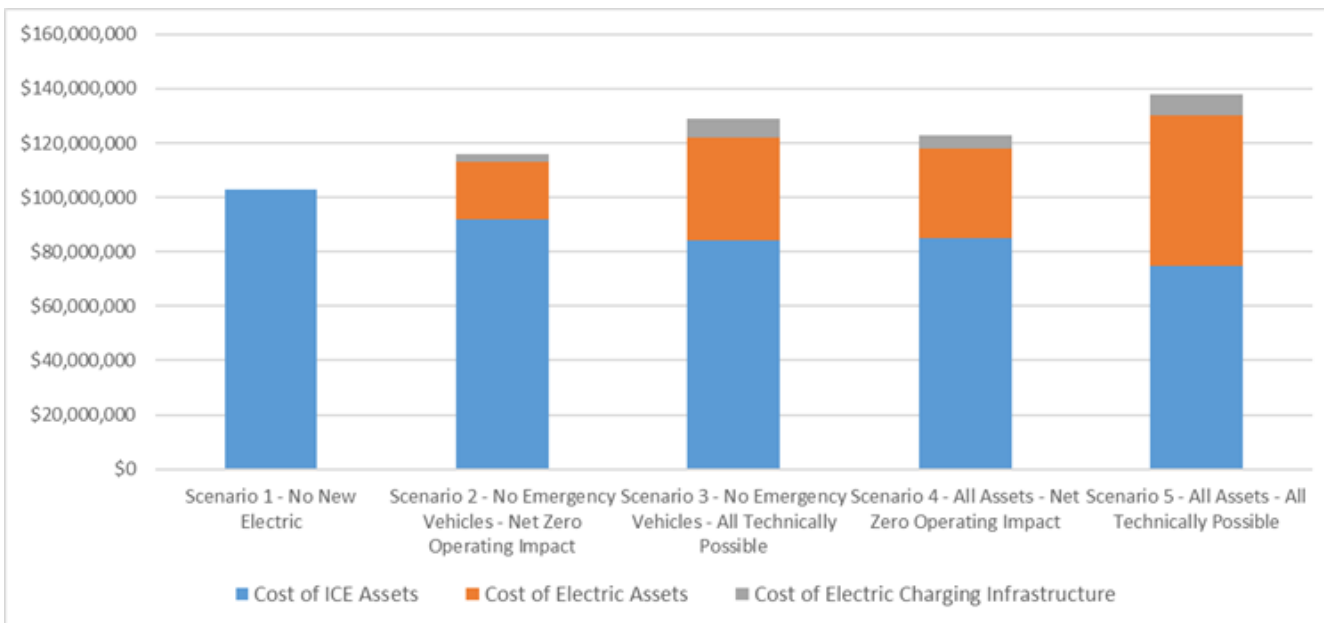
# Investment Forecasting - Scenarios

Five scenarios were chosen to be explored:

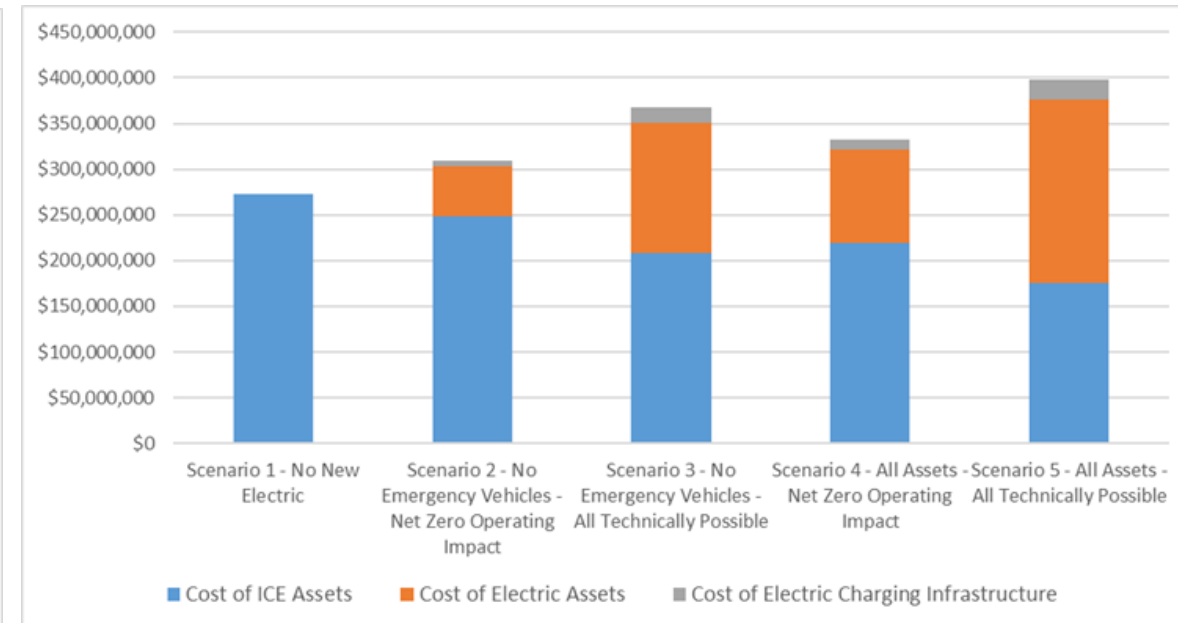
Scenario #	Scenario Description	2023-2026 Capital Plan			2023-2032 Capital Strategic Outlook		
		# of Assets Acquired	# of ZEV Assets Acquired	ZEV Acquisition %	# of Assets Acquired	# of ZEV Assets Acquired	ZEV Acquisition %
Scenario 1	No New Electric	597	0	0%	1,446	0	0%
Scenario 2	No Emergency Vehicles - Net Zero Operating Impact	597	174	29%	1,446	375	26%
Scenario 3	No Emergency Vehicles - All Technically Possible	597	223	37%	1,446	569	39%
Scenario 4	All Assets - Net Zero Operating Impact	597	263	44%	1,446	716	50%
Scenario 5	All Assets - All Technically Possible	597	314	53%	1,446	895	62%

# Investment Forecasting - Results

- Scenarios involving the transition of all vehicles which are technically possible, have the highest capital costs
- To meet emissions targets, Fleet will require additional investment in charging infrastructure, as well as funding to scale up operations



**Capital Plan 4-Year Capital Investment Needs**



**Capital Strategic Outlook 10-Year Capital Investment Needs**

# AMP Results – Improvement Planning

# Improvement Planning

- A workshop was conducted with management staff to identify initiatives to improve AM practices and outcomes

Topic	Initiative	Priority H, M, L	Time
<b>Levels of Service</b>	Investigate available levers to sync staff resources with fleet growth.	H	ASAP - 1 year
<b>Risk Review &amp; Assessment</b>	Better understand the cost of mitigation measures and the residual risks of addressing the risks discussed in the risk workshop.	M	1-3 years
<b>Analysis and investment planning</b>	Determine a strategy for funding new growth (moving away from leases).	H	ASAP - 1 year
	Determine a strategy to help user groups understand the impacts of new vehicle requests/expanded fleet sizes (as part of developing their business plans or otherwise).	H	ASAP - 1 year
	Better understand the impacts of the ZEV-transition on operating and maintenance costs including training and operation of parallel systems.	L	3-5 years

# On-going Development

- The AMP will be reviewed and updated every 4 years as part of the Capital Planning process and will include a review of target LoS, the state of assets, future forecasting, strategies and actions, and financial planning.
- The AMP can be updated when changes are made to the Corporate Plan or Engineering Strategic Plan.

# Questions?

