

# The Complexities of a Green Fleet Strategy for Mid-Size Municipalities

Municipal Engineers  
Association



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**Burlington**

# Agenda



1. Background



2. Fleet Transition Plan



3. Emission Reductions



4. Transition Costs



5. Infrastructure & Other  
Implementation Challenges



# Background & Objectives



**Burlington's Green Fleet Strategy (2008) was updated with the following:**

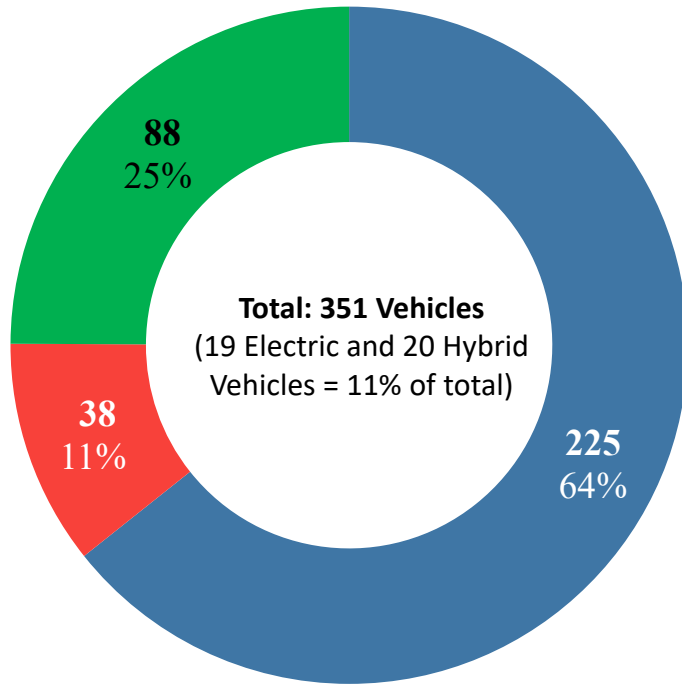
1. Comprehensive analysis of existing fleet
2. Benchmark green fleet strategies and industry best practices
3. Develop a roadmap for fleet in alignment to the City's 2040 goal of carbon neutrality
4. Assess existing facility infrastructure to accommodate future green fleet



# Existing Fleet Group & Vehicle Distribution



### Fleet Size by Fleet Groups



■ Corporate ■ Fire ■ Transit



Corporate

Asset Value

**\$28.8 million**



Fire

Asset Value

**\$24.4 million**

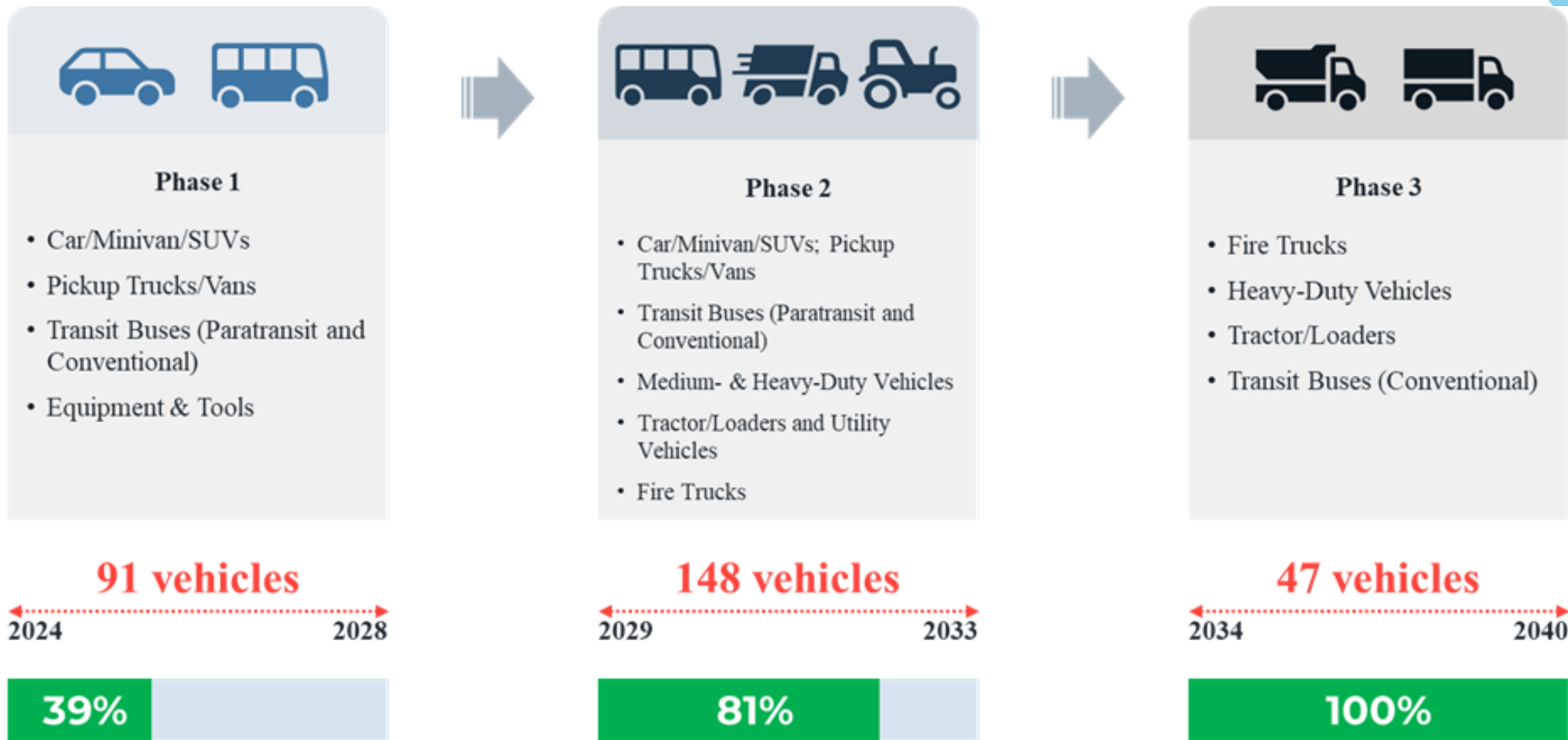


Transit

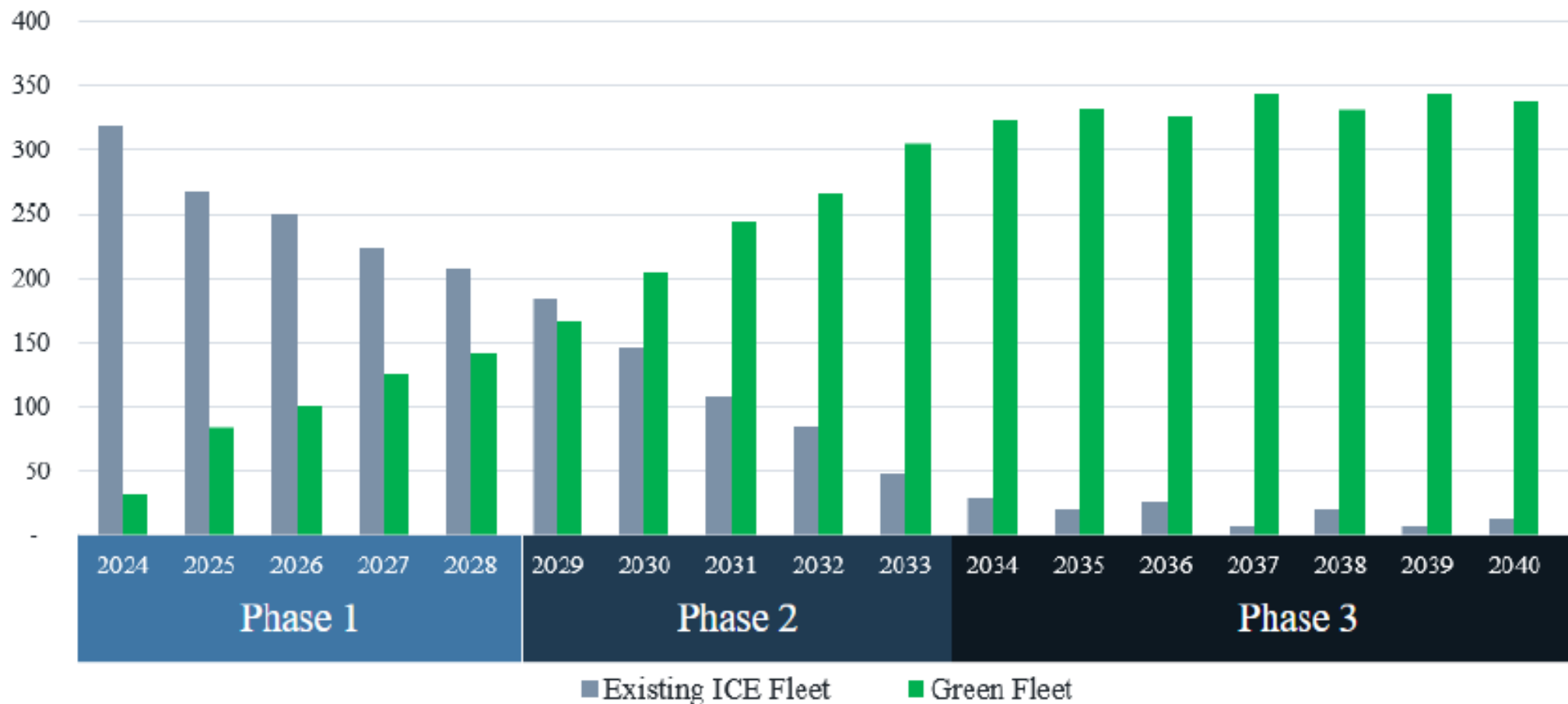
Asset Value

**\$45.1 million**

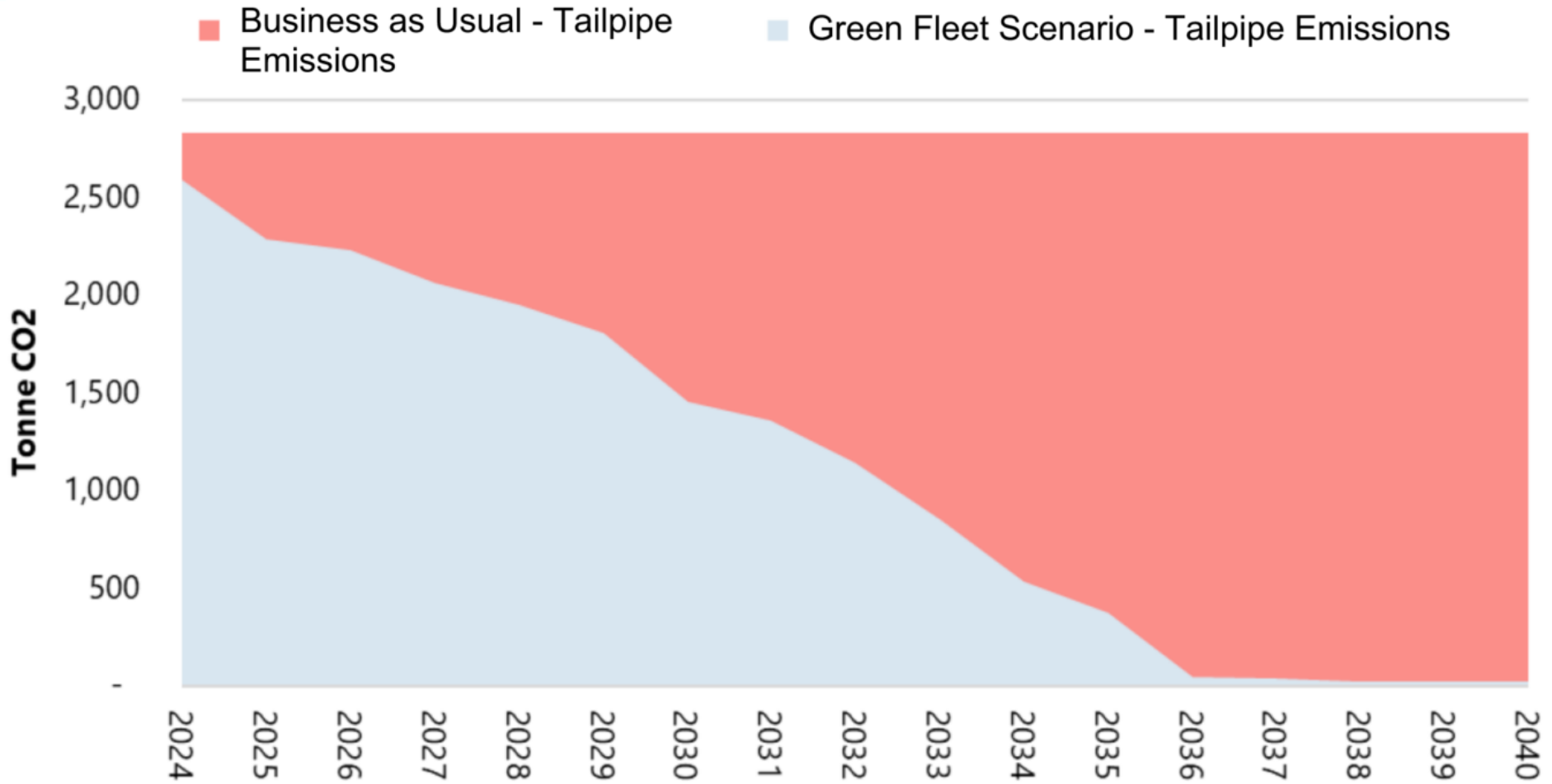
# Fleet Transition Plan – Assuming future technology



# Fleet Transition Plan – Assuming availability



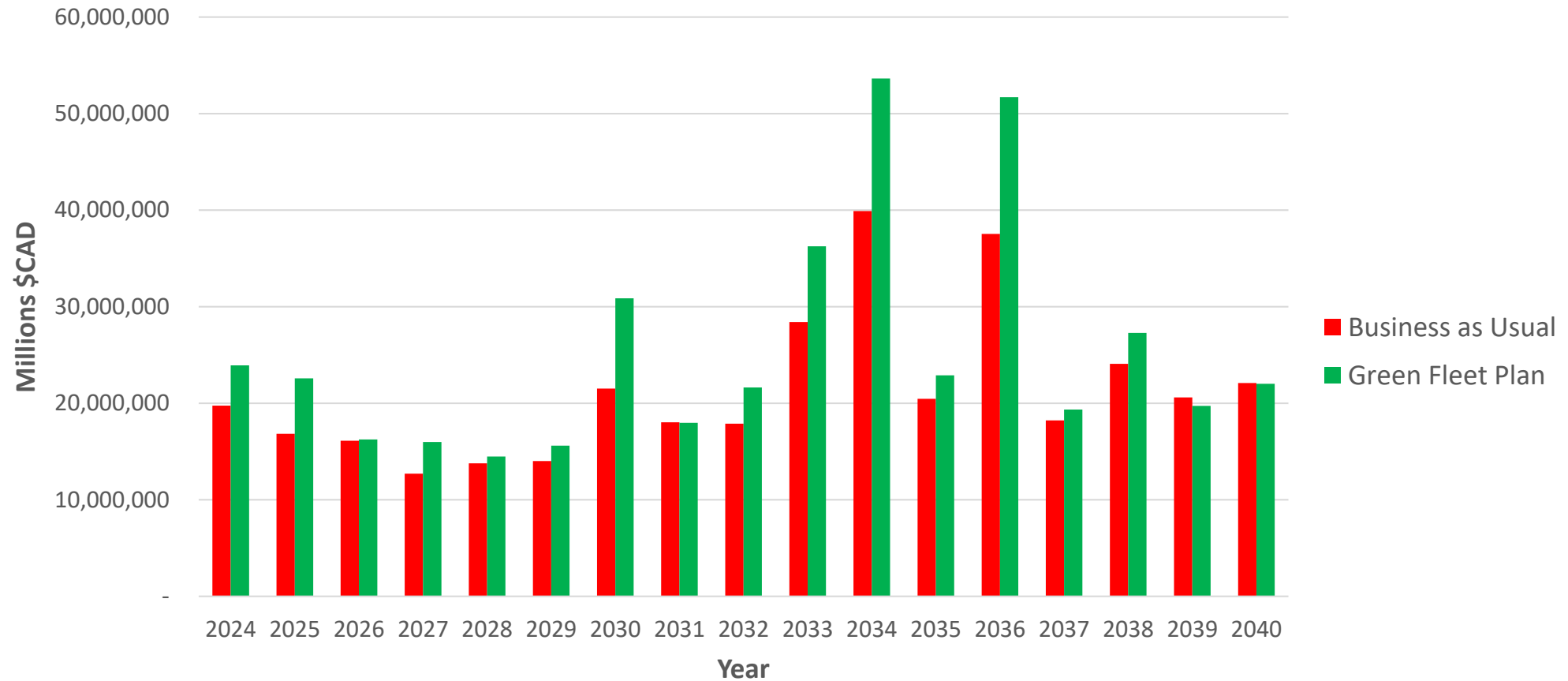
# CO2 Emission Reduction to 2040



# Transition Cost Comparison to 2040



Budget Forecast - Green Fleet Plan vs Business as Usual





# Estimated Total Costs to 2040

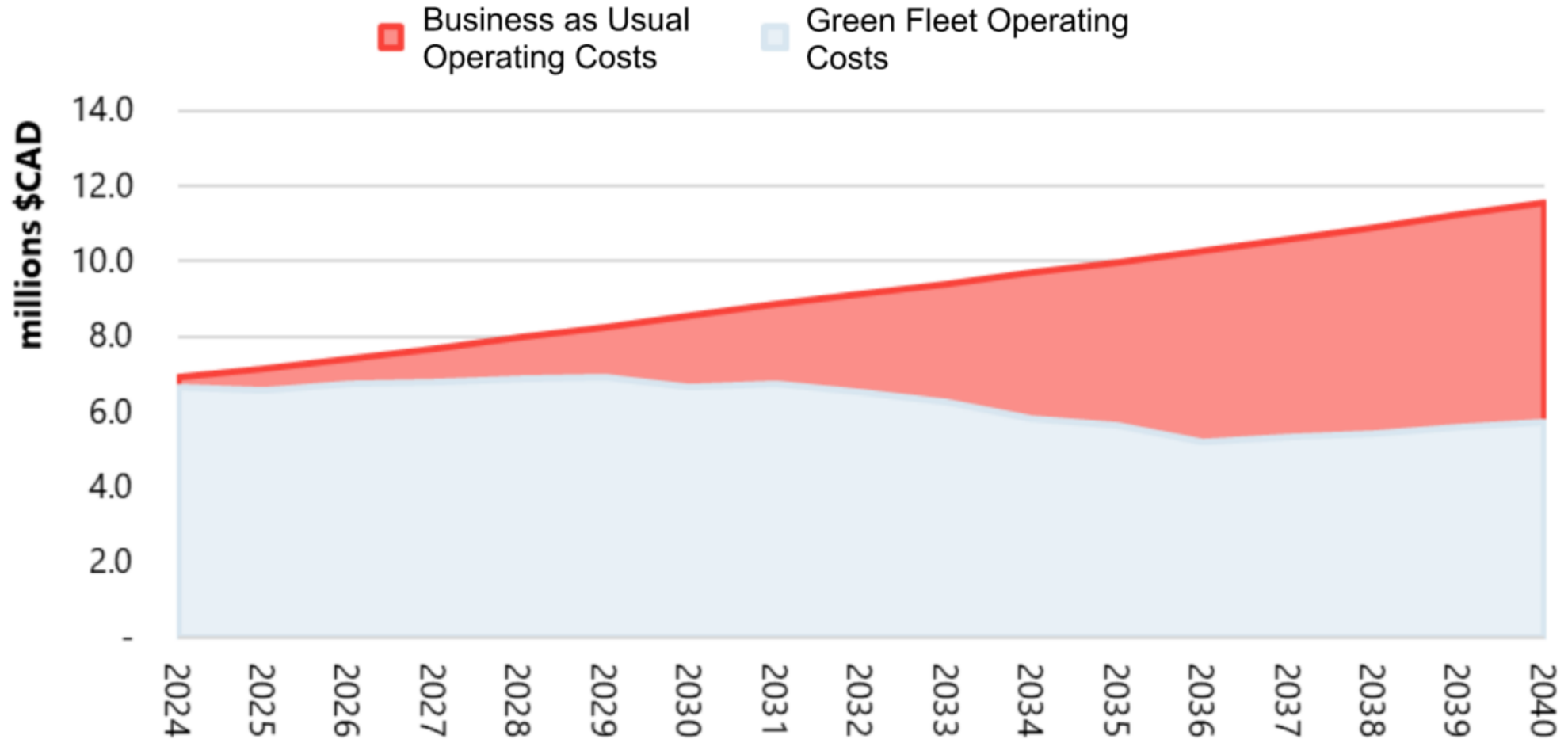


Capital and Operating Cost Summary		
Cost Summary	Business as Usual Scenario	Green Fleet Scenario
<b>CAPITAL COSTS</b>		
Gross Fleet Renewal Cost	206,155,015	317,332,762
Gross Infrastructure Cost	-	9,187,602
<b>Sub-total</b>	<b>206,155,015</b>	<b>326,520,364</b>
<b>OPERATING COSTS</b>		
Gross Fleet Maintenance Cost	84,475,611	68,725,464
Gross Fleet Fuel Cost	61,667,434	31,990,064
Gross Fleet Charging Utility Cost (Demand Charges)	-	90,939
Gross Fleet Infrastructure and Staff Operations Costs	425,983	2,226,527
Gross Fleet Carbon Tax	9,219,124	2,632,130
<b>Sub-total</b>	<b>155,788,152</b>	<b>105,665,124</b>
<b>Total - Without External Funding (2023 Dollars)</b>	<b>361,943,167</b>	<b>432,185,488</b>
<b>Gross Cost Difference –Green Scenario versus Business as Usual</b>		<b>+19.4%</b>
<b>Total - With External Funding (2023 Dollars)</b>	<b>361,943,167</b>	<b>423,197,974</b>
<b>Gross Cost Difference – Green Scenario versus Business as Usual</b>		<b>+16.9%</b>

Phase	Business as Usual	Green Fleet
1	\$79M	\$93M
2	\$99.8M	\$122M
3	\$182M	\$216M



# Operating Costs to 2040



# Infrastructure & Facility Planning



	Phase 1: 2024 – 2028	Phase 2: 2029 - 2033	Phase 3: 2034 - 2040
<b>Facilities and Infrastructure</b>	<ul style="list-style-type: none"><li>• Upgrade on-site utility infrastructure to accommodate Battery &amp; Hybrid EV passenger electric vehicles, light duty vehicles and zero emission buses.</li><li>• Expand on-site charging infrastructure to accommodate capacity for expected Phase 2 zero emission electrical charging requirements</li></ul>	<ul style="list-style-type: none"><li>• Continue to upgrade utility infrastructure to accommodate incoming Phase 2 electric vehicle procurements.</li><li>• Expand charging infrastructure to accommodate capacity for Phase 2 and Phase 3 expected charging requirements</li></ul>	<ul style="list-style-type: none"><li>• Continue to upgrade utility infrastructure to accommodate incoming Phase 3 electric vehicle procurements.</li><li>• Assess infrastructure upgrades to accommodate fleet growth beyond the year 2040.</li><li>• Review &amp; update infrastructure &amp; facility plans</li></ul>



# Challenges Recap and Misc.



1. Cost: Vehicles, Charging/Fueling/Vehicle Mtce, Storage Facility & Insurance
2. Vehicle and Equipment Availability
3. Technology/Performance for Medium/Heavy Vehicles
4. Battery & Software Maintenance
5. Limitation/Difficulty of Upfitting
6. Right to Repair



# Thank you and Questions



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