

Fleet Procurement Scenarios Presentation

3/15/2023 – Board of Directors Meeting



OUTLINE

Purpose: Provide an overview of the project and the results of the analysis to catalyze the discussion on LTD's preferred future fuel/technology

01 | Project Background

(Project Timeline and Short-Listed Fuel/Technology)

02 | Methodology

(Overview, Scenario, Analyses Inputs)

03 | Results

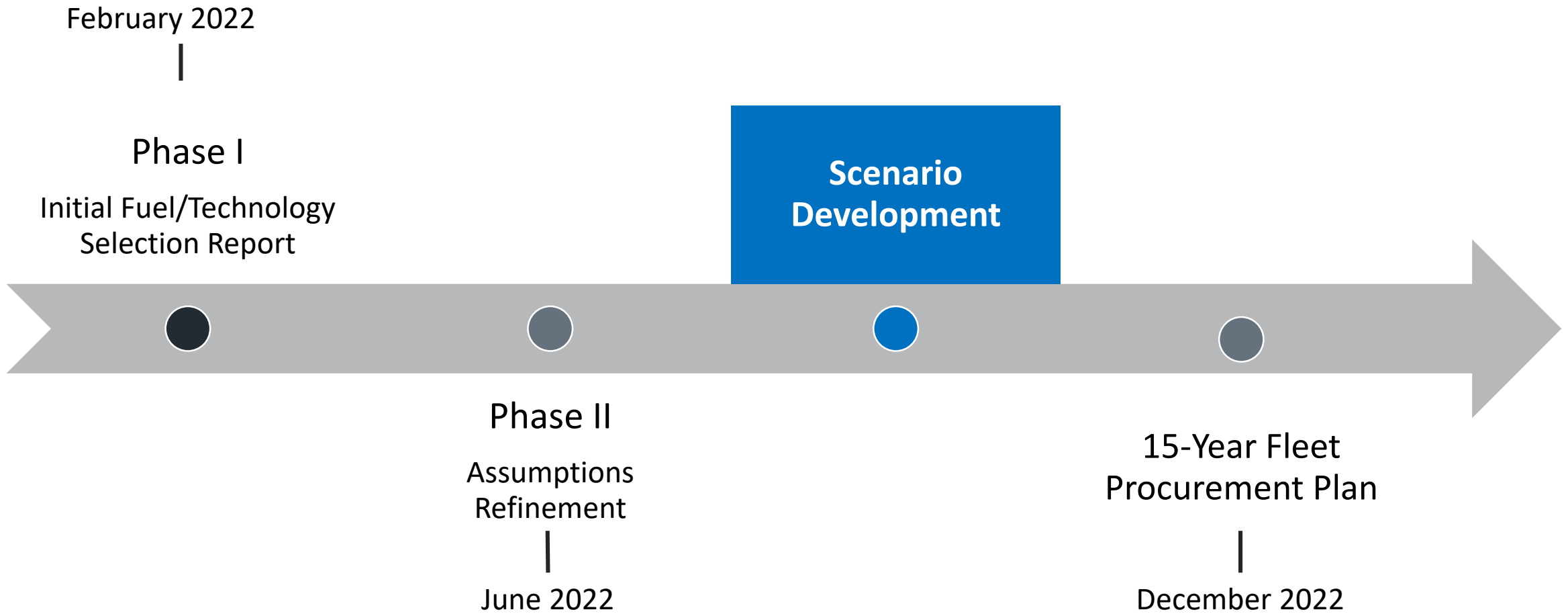
(Existing Fleet, Proposed Procurement Schedule, Emissions Findings, Lifecycle Costs Findings)

04 | Summary

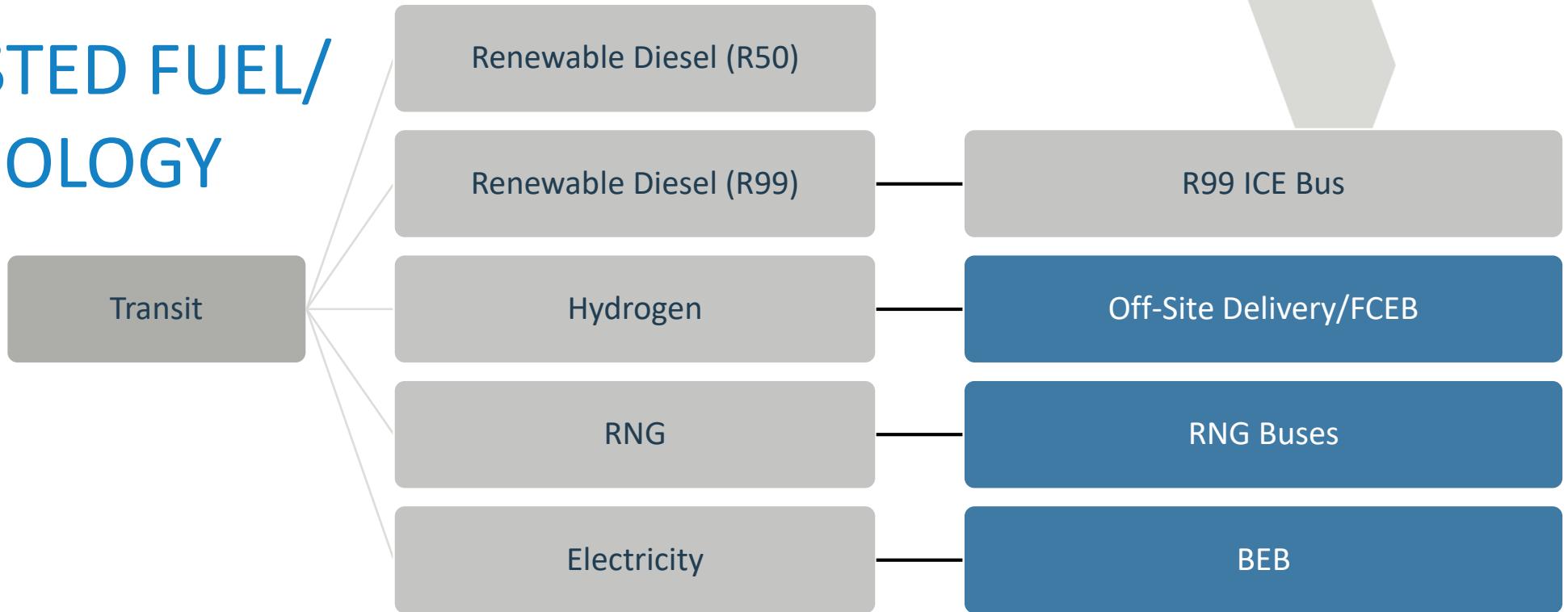
05 | Staff Next Steps

PROJECT BACKGROUND

PROJECT TIMELINE

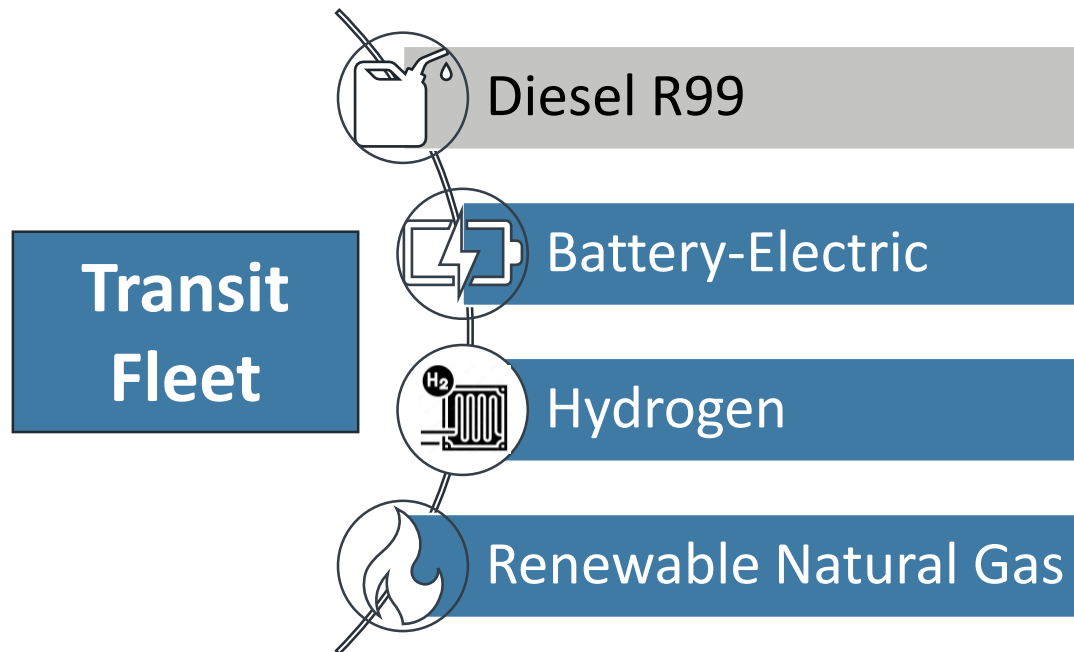


SHORT-LISTED FUEL/ TECHNOLOGY

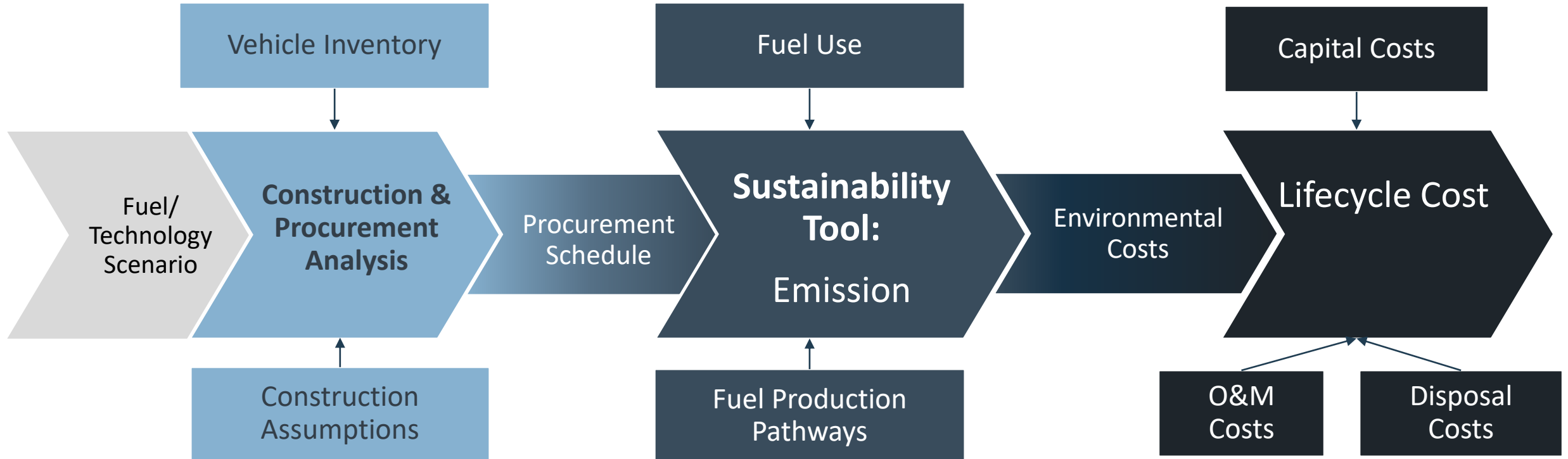


METHODOLOGY

METHODOLOGY OVERVIEW & SCENARIO



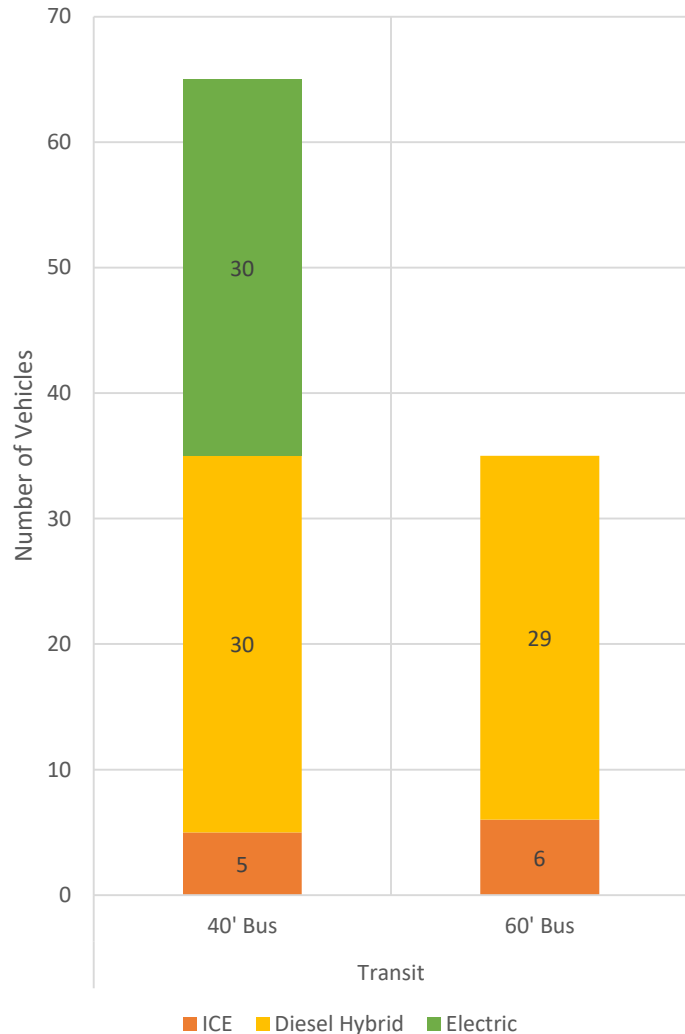
EMISSIONS AND LIFE CYCLE COST ANALYSES



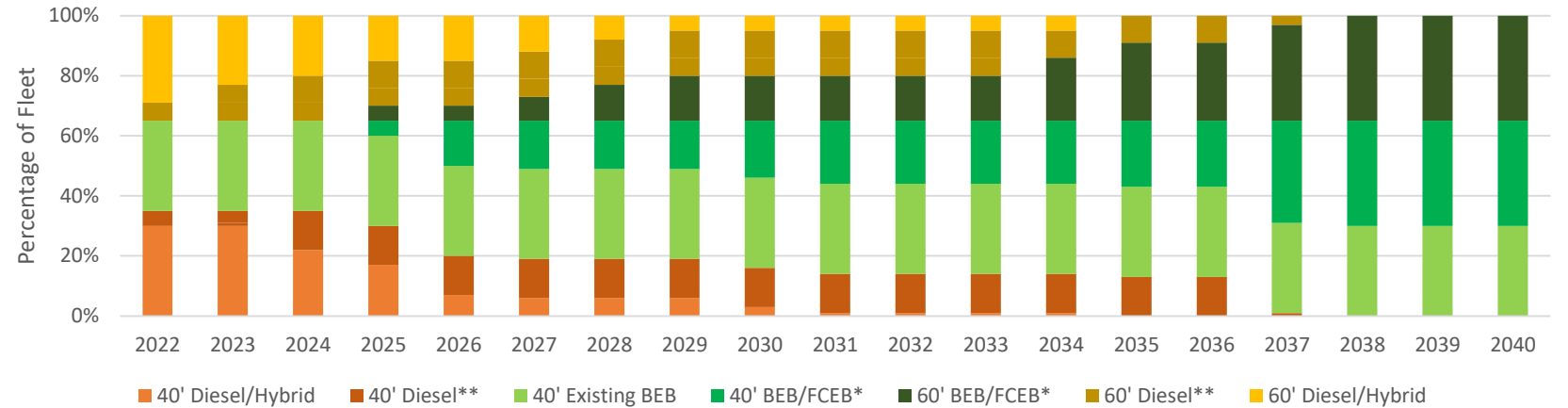
RESULTS

TRANSIT FLEET

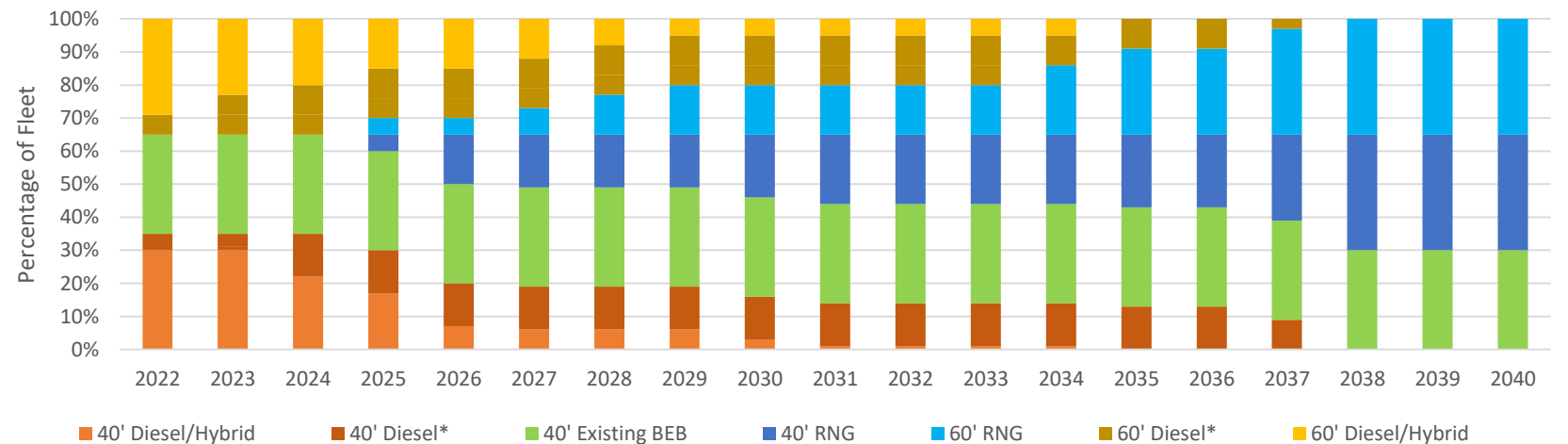
Existing Fleet



Proposed Replacement Schedule BEB/FCEB

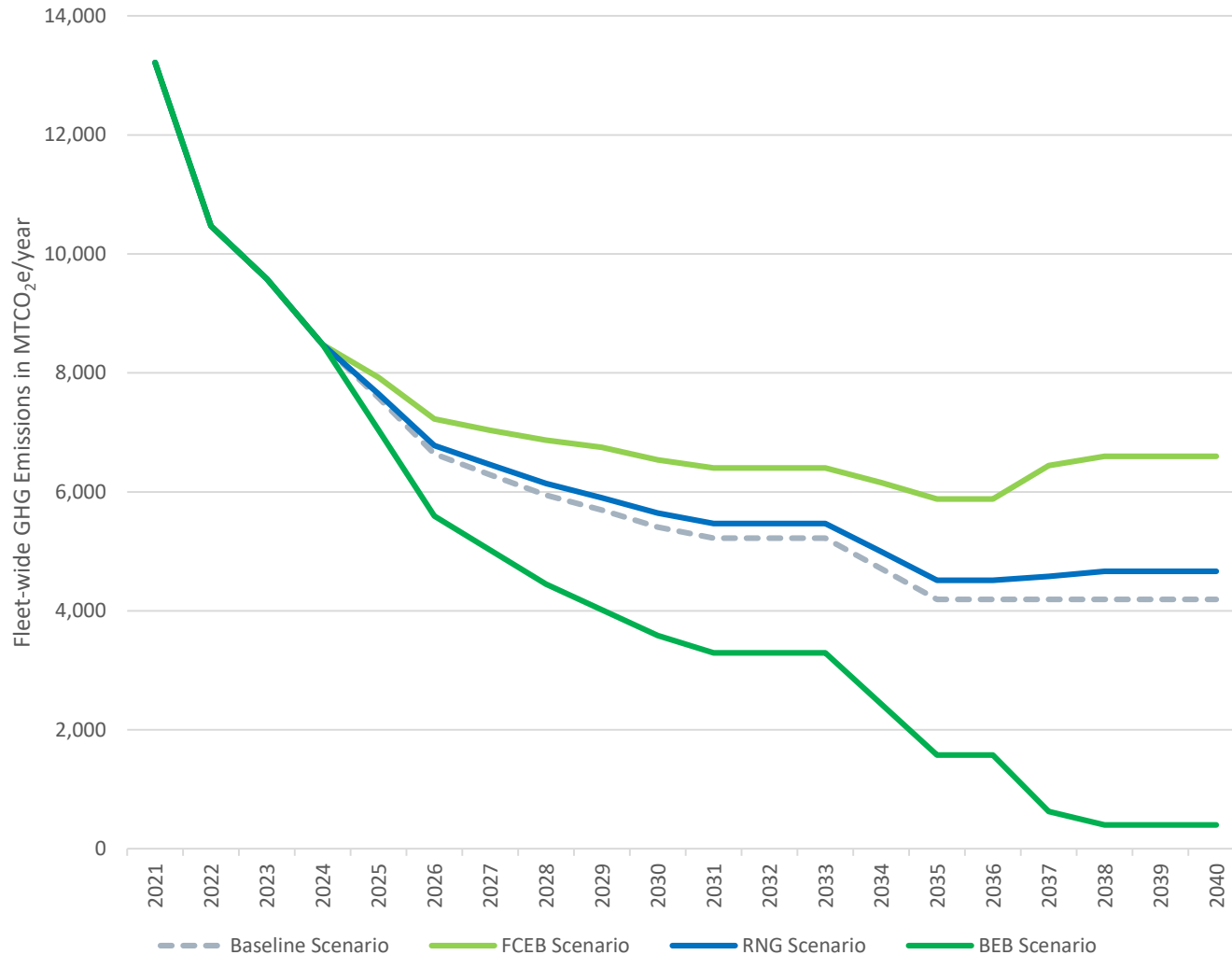


Proposed Replacement Schedule RNG



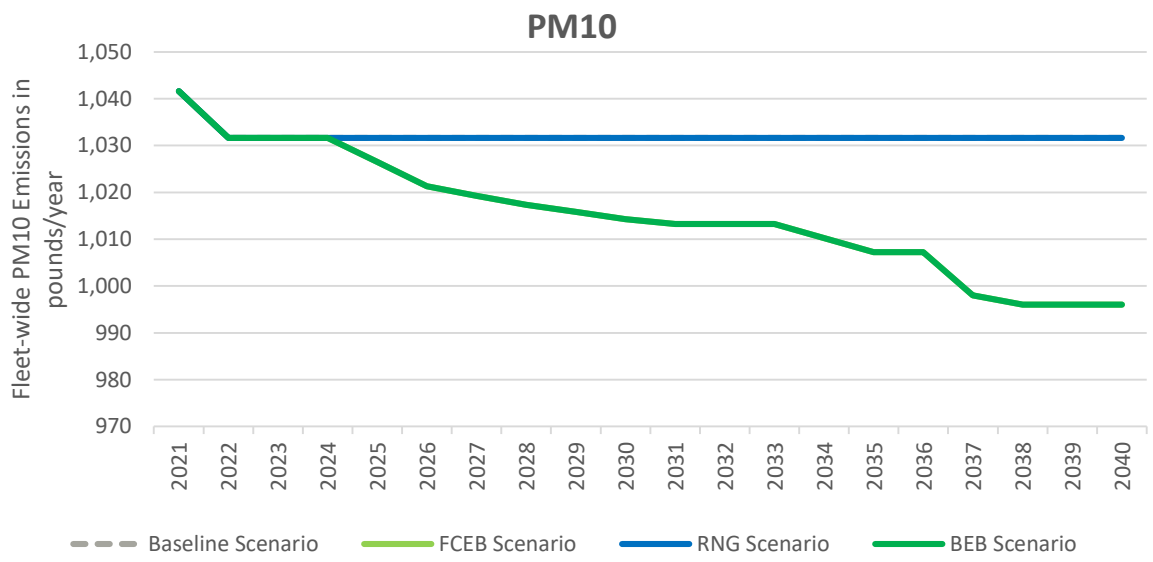
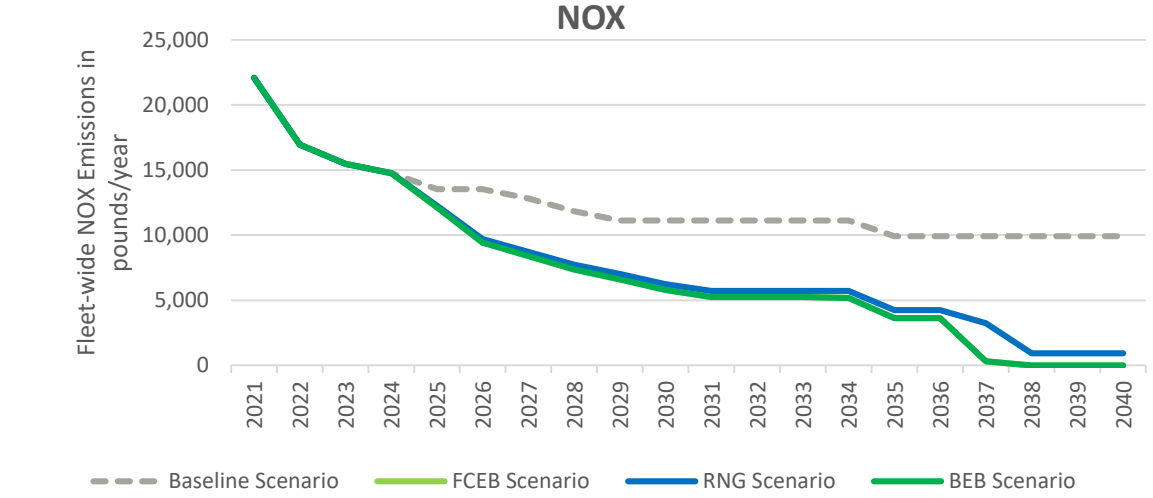
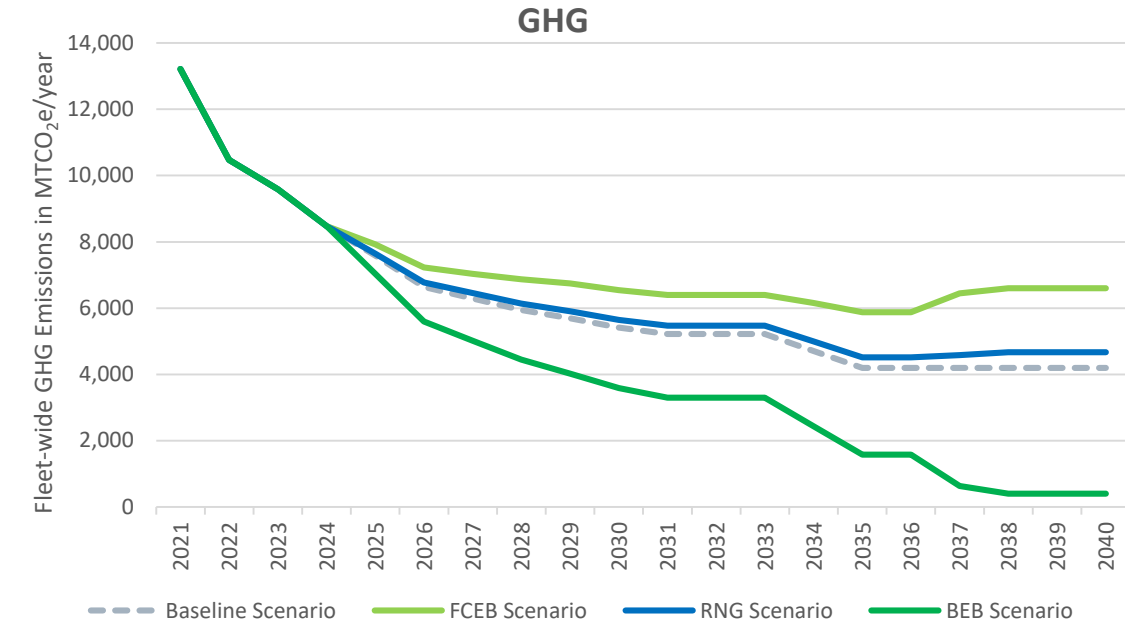
TRANSIT FLEET

Annual GHG Lifecycle Emissions



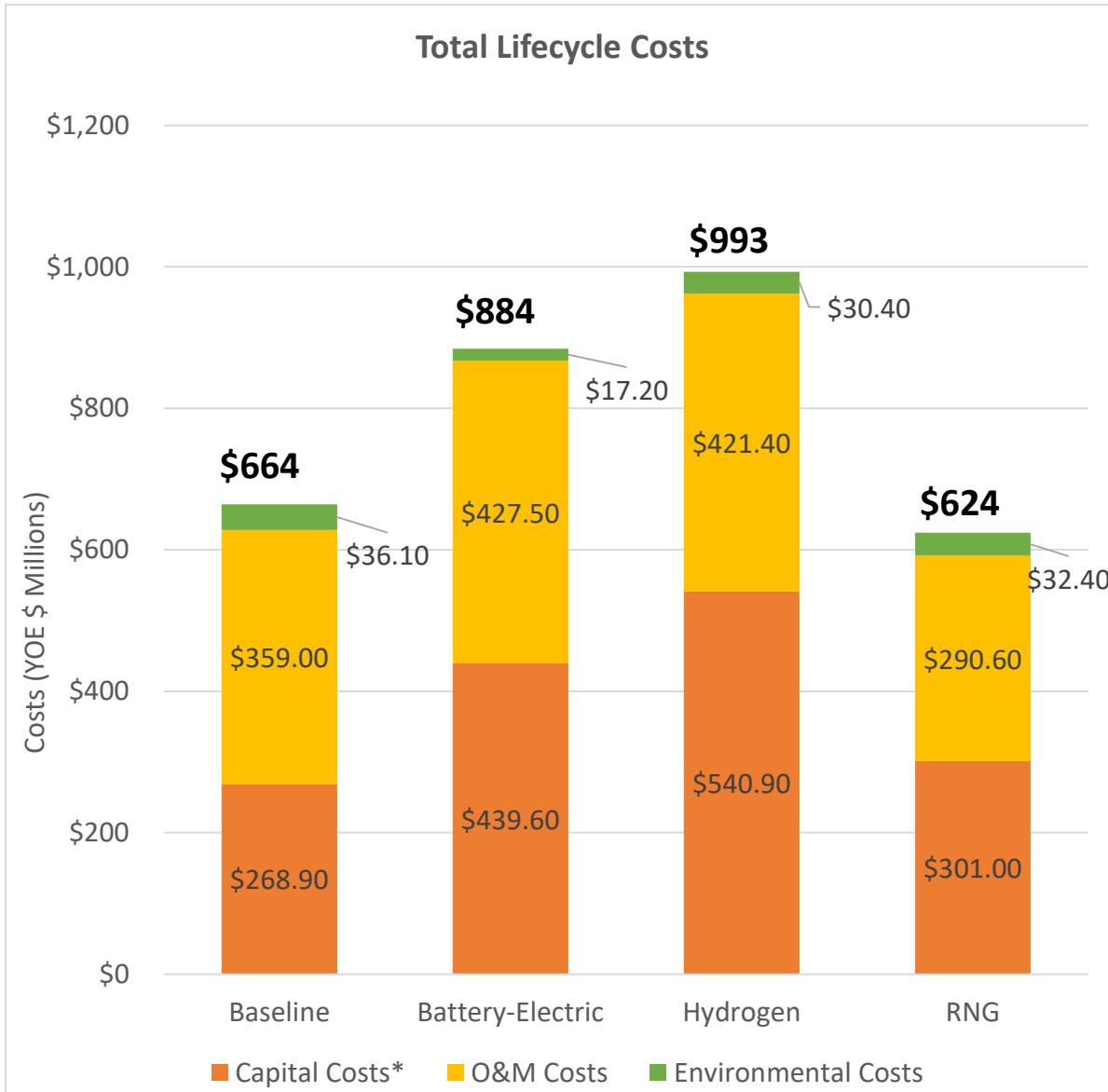
- All scenarios will result in GHG reduction over time because fuel production is getting greener
- Emissions reduction in 2040:
 - Baseline: -60% from 2021
 - Hydrogen: -37% from 2021
 - RNG: -55% from 2021
 - BEB: -96% from 2021
- Better emissions reduction compared to the baseline scenario is only achievable in the BEB scenario

TRANSIT FLEET



- All scenarios will result in fewer NOX emissions compared to the baseline scenario
- BEB and FCEB fully eliminate tailpipe emissions but not brake and tire wear

TRANSIT FLEET



*Capital costs include disposal costs

- Baseline R99 Diesel scenario has the lowest lifecycle costs
 - Highest environmental costs
 - Lowest O&M costs
- FCEB has the highest lifecycle costs (50% more than baseline), due to the higher capital and diesel costs
- RNG has the lowest lifecycle cost (9% lower than the baseline), due to the lower O&M and environmental costs
- BEB has the overall lowest environmental costs.
 - The saving from cheaper electricity is offset by higher maintenance costs

SUMMARY & CONSIDERATIONS

SUMMARY

Indicators	TRANSIT			
	R99 Diesel	RNG	Battery-Electric	Hydrogen
Emissions				
GHG Emissions			✓	
Local Air Pollutants			✓	✓
Costs				
Environmental Costs			✓	
Capital Costs	✓			
Operating Costs		✓		
Total Costs		✓		

ADDITIONAL CONSIDERATIONS

Indicators	Transit			
	R99 Diesel	RNG	Hydrogen	Battery-Electric
Vehicle Availability			Only two OEMs that provide FCEBs	Longer lead-times
Range	-	-	-	Significantly shorter than ICEVs and FCEBs
Fueling Time	-	Dependent on technology <ul style="list-style-type: none"> • Slow fill: Overnight • Fast fill: comparable to diesel 	-	2-3 hours dependent of battery capacity
Space Requirements	-	<ul style="list-style-type: none"> • New space for storage and fueling stations 	<ul style="list-style-type: none"> • Large setback required • New space for storage and fueling stations 	<ul style="list-style-type: none"> • New space for storage and fueling stations
Policy	<ul style="list-style-type: none"> • Decreasing support for fossil fuels 			

STAFF NEXT STEPS

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- Continue to explore emerging technologies and fuels for future bus purchases
- Continue to purchase renewable diesel (R99) for our fleet
- Near term vehicle purchases to maintain our baseline scenario of clean diesel

THANK YOU
