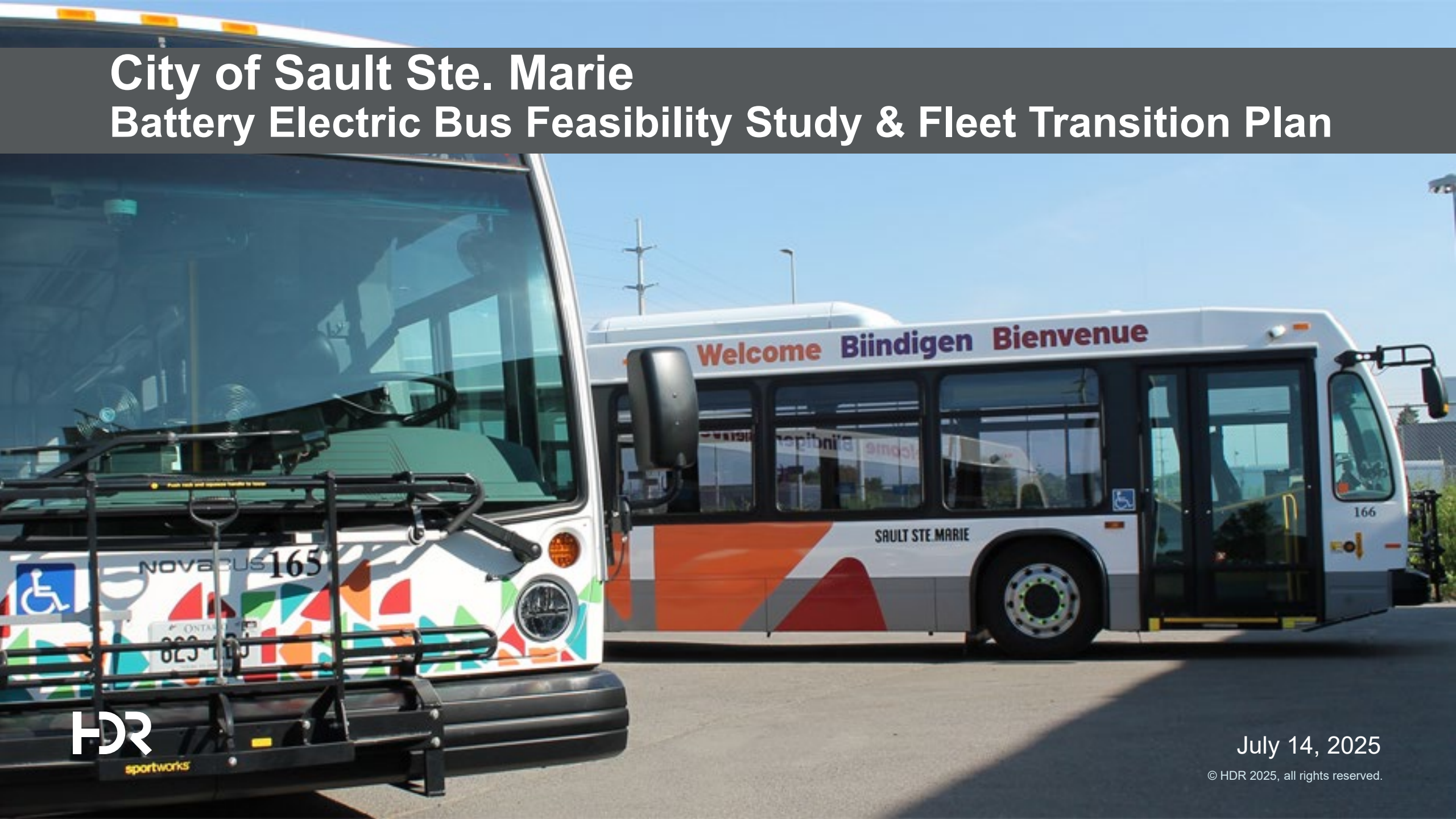
City of Sault Ste. Marie
Battery Electric Bus Feasibility Study & Fleet Transition Plan



July 14, 2025

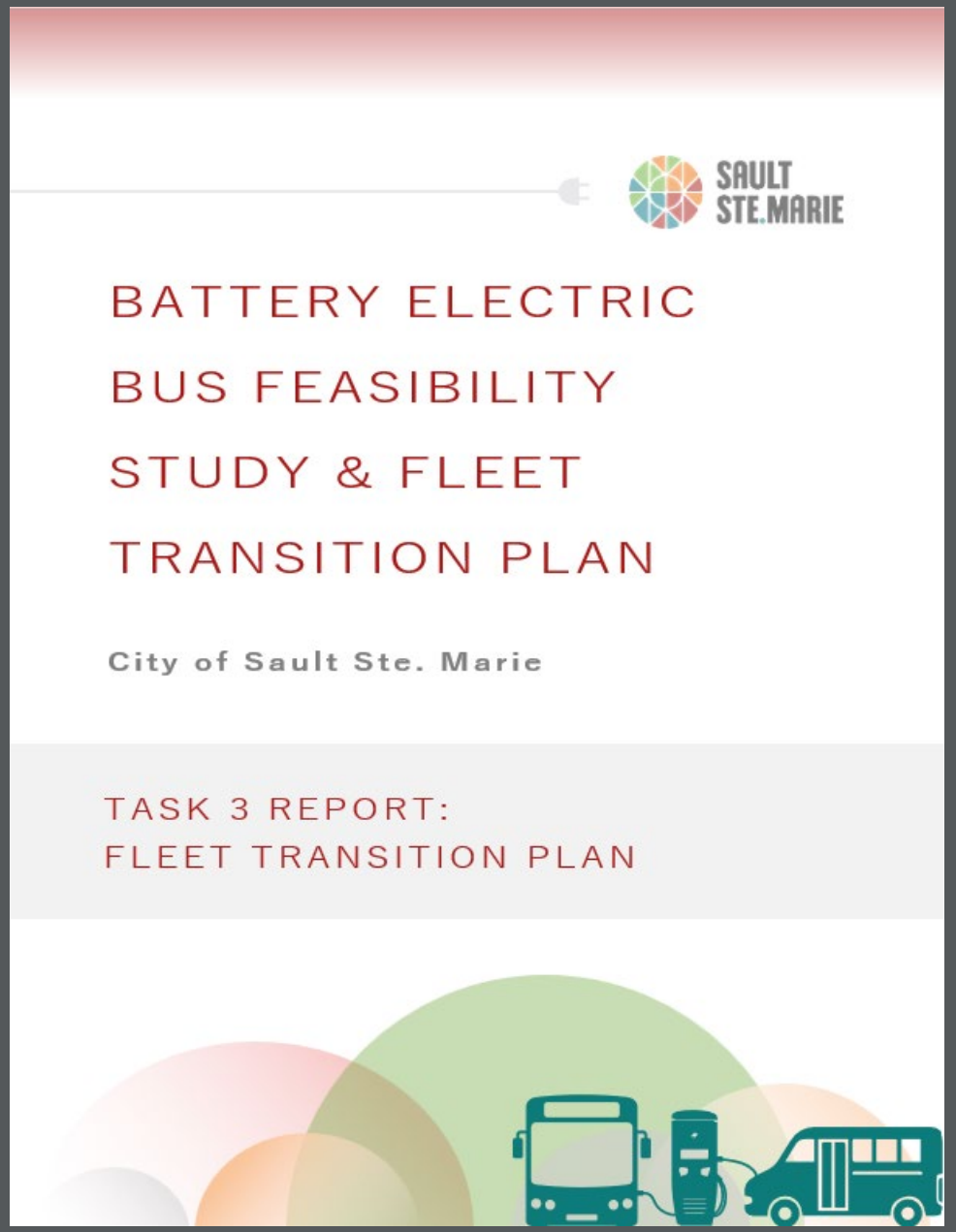
AGENDA

01 Objectives

02 What is a Fleet Transition Plan?

03 Fleet Transition Plan

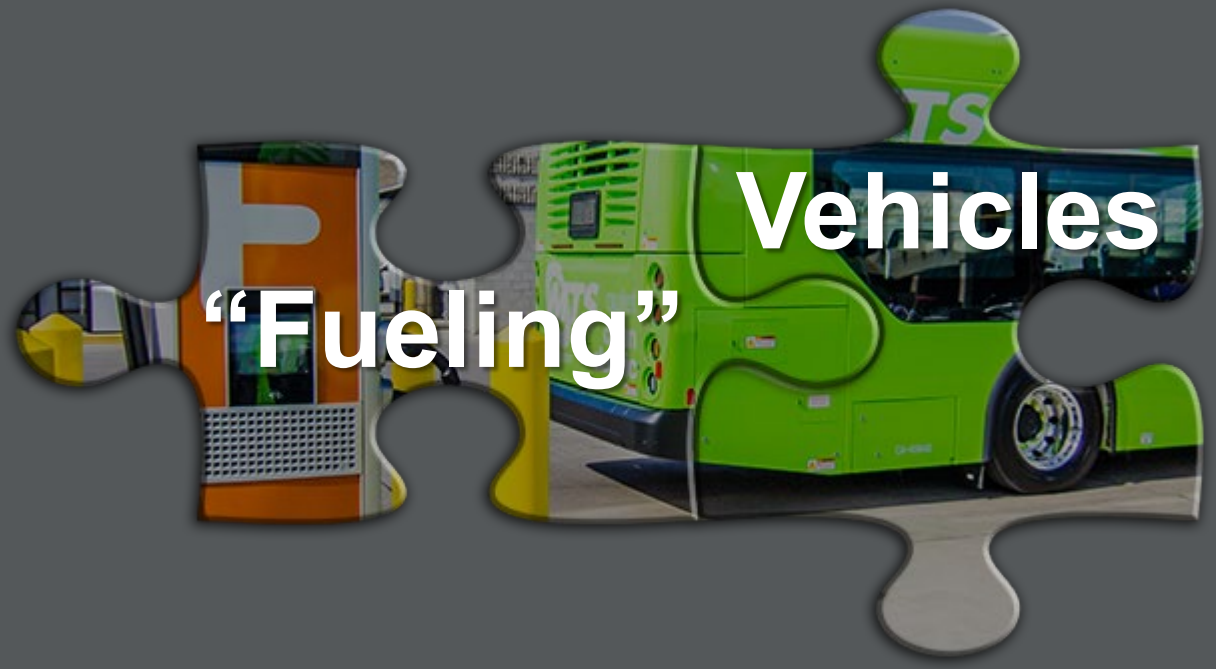
04 Key Takeaways & Next Steps



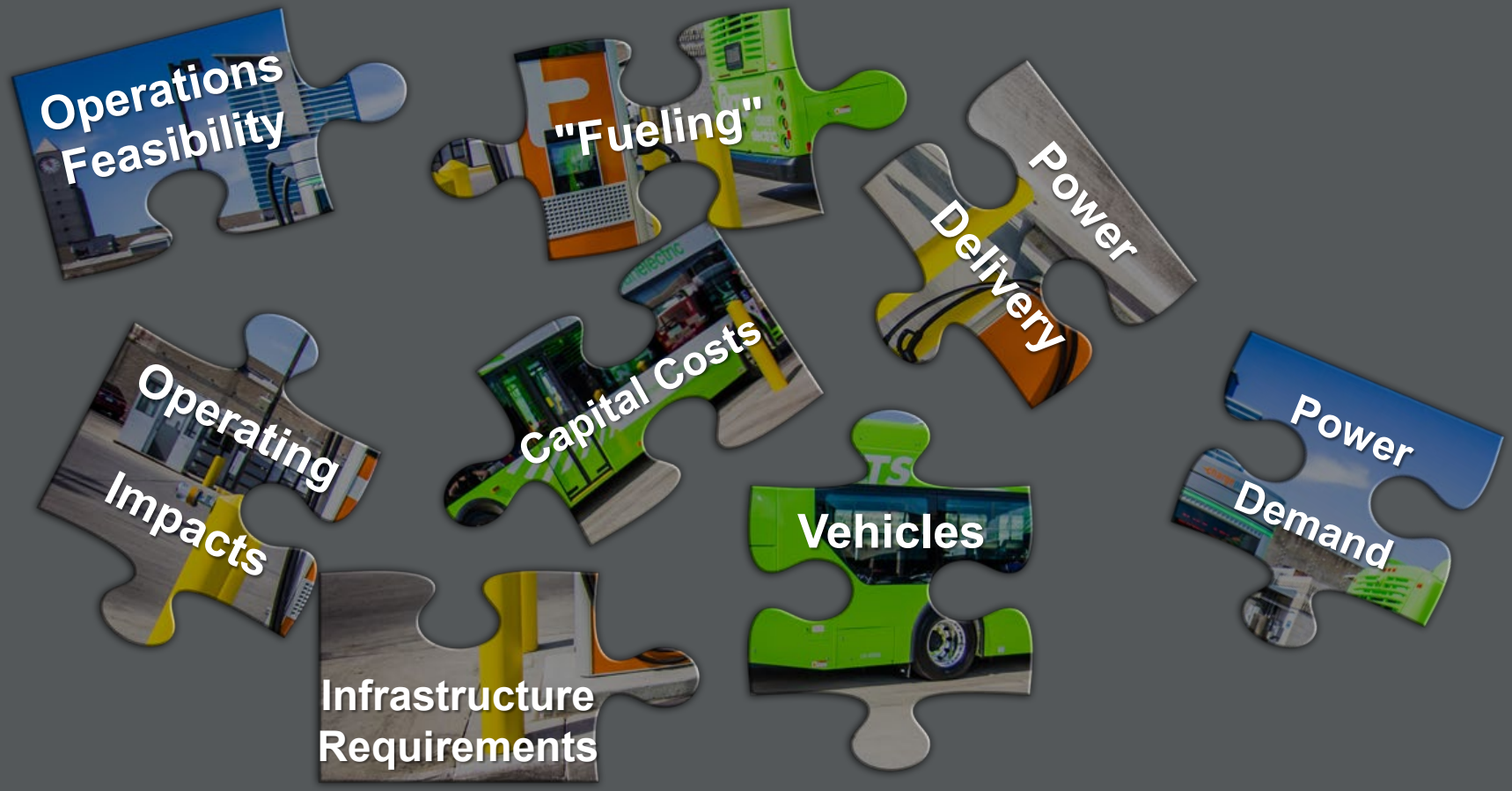
Objectives:

- Plan for how battery electric buses could be introduced
  - Supported by data-driven analysis
- Supports *Community GHG Reduction Plan* and net-zero by 2050
- Understand transition costs
- Prepare for funding opportunities

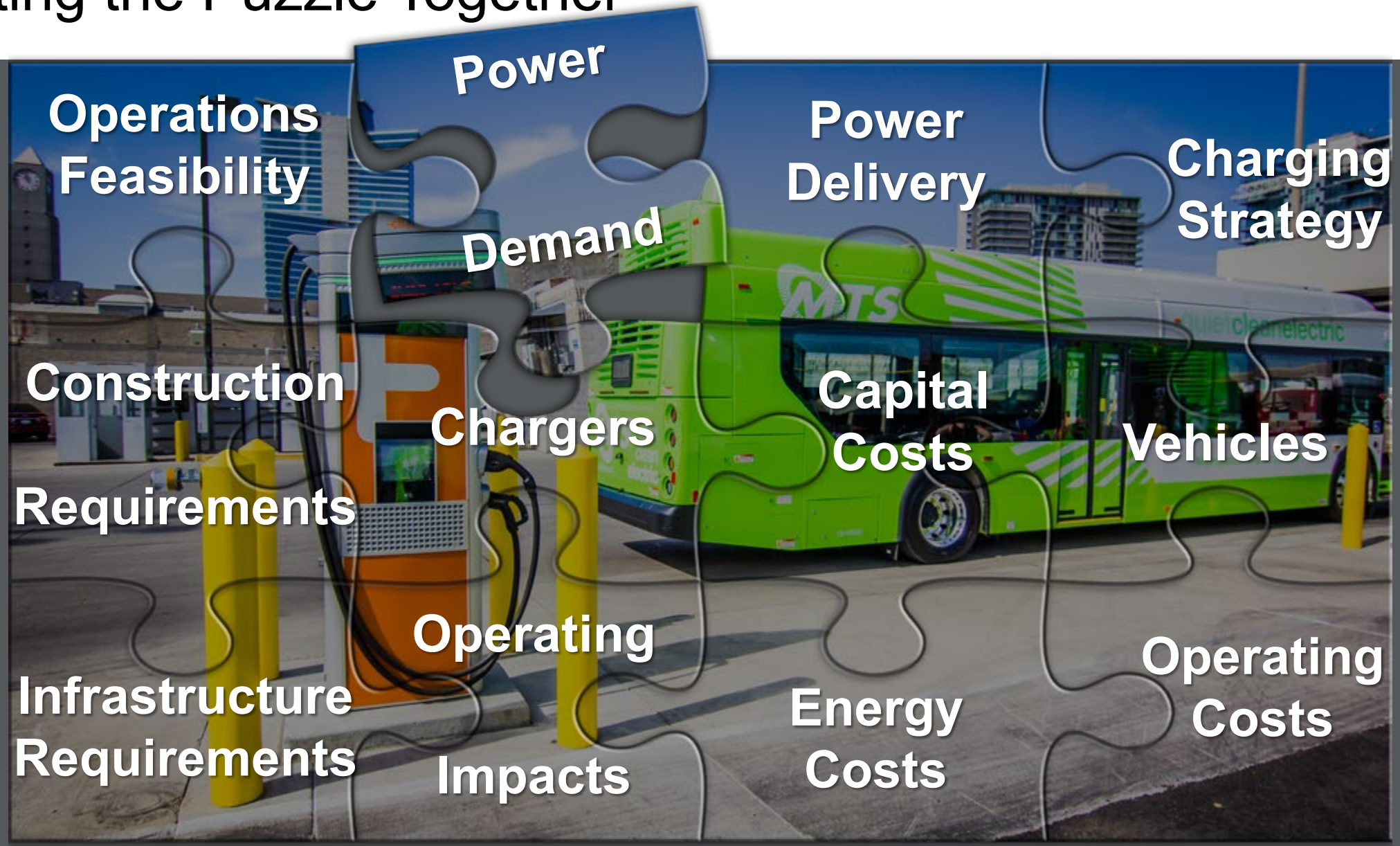
What is a Fleet Transition Plan?
Common Perceptions



What is a Fleet Transition Plan?
Key Considerations



What is a Fleet Transition Plan?
Putting the Puzzle Together



Transit Fleet Transition Plan

Operating Approaches

- **Depot-only charging:**
  - Connect to chargers at the garage only
  - Swap out when depleted
- **Depot and En-route charging:**
  - Add high-speed chargers at strategic locations to charge between runs

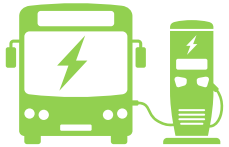
Depot Charging

En-Route Charging

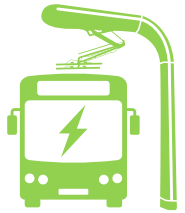
Predictive Route Modelling

Simulated buses in service using mathematical models

Diesel



BEB
Scenario 1: Full Fleet Transition with Depot Only Charging

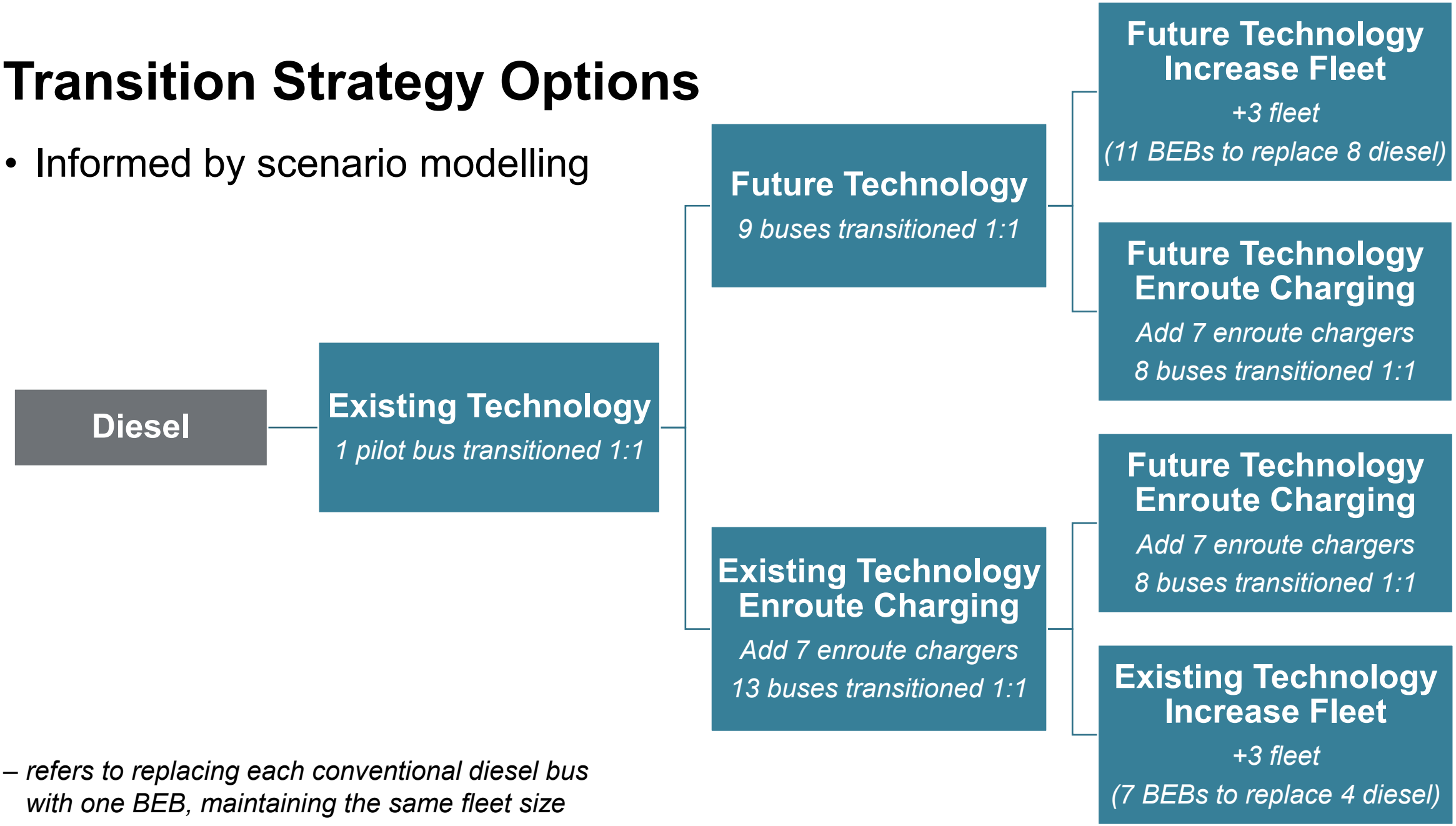


BEB
Scenario 2: Full Fleet Transition with Depot + Enroute Charging

	Baseline	*Scenario 1A: Existing technology*	*Scenario 1B: Future technology*	*Scenario 2A: Existing technology*	*Scenario 2B: Future technology*
Peak Fleet Requirement	18	29	21	21	18
Charger Requirement	-	10 depot (29 dispensers)	7 depot (21 dispenser)	7 depot (21 dispenser)	6 depot (18 dispenser)
				7 enroute	7 enroute
Level of Investment	$	$$$	$$	$$$$	$$$

Transition Strategy Options

- Informed by scenario modelling



1:1 *– refers to replacing each conventional diesel bus with one BEB, maintaining the same fleet size*

Transition Strategy Options

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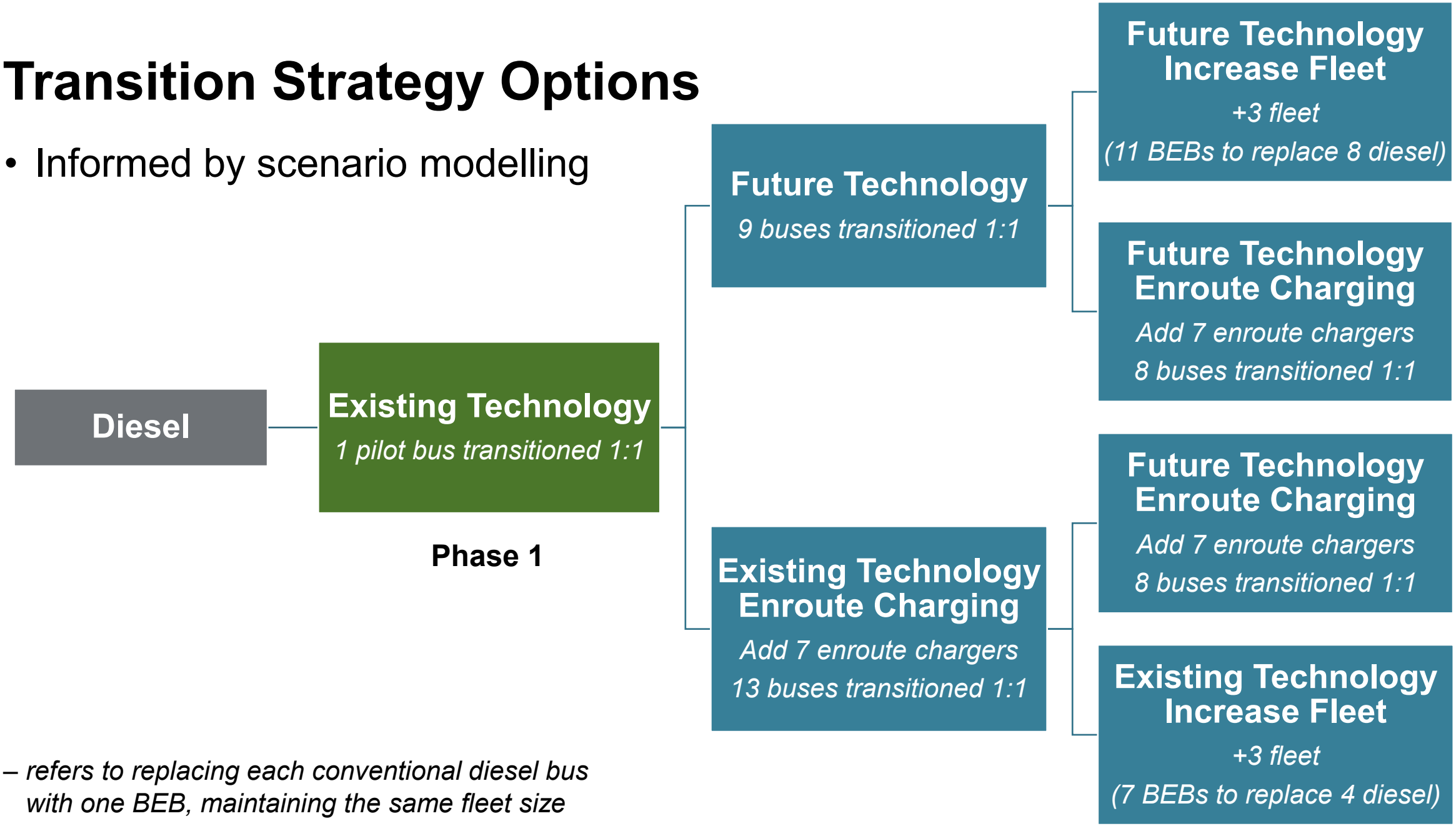

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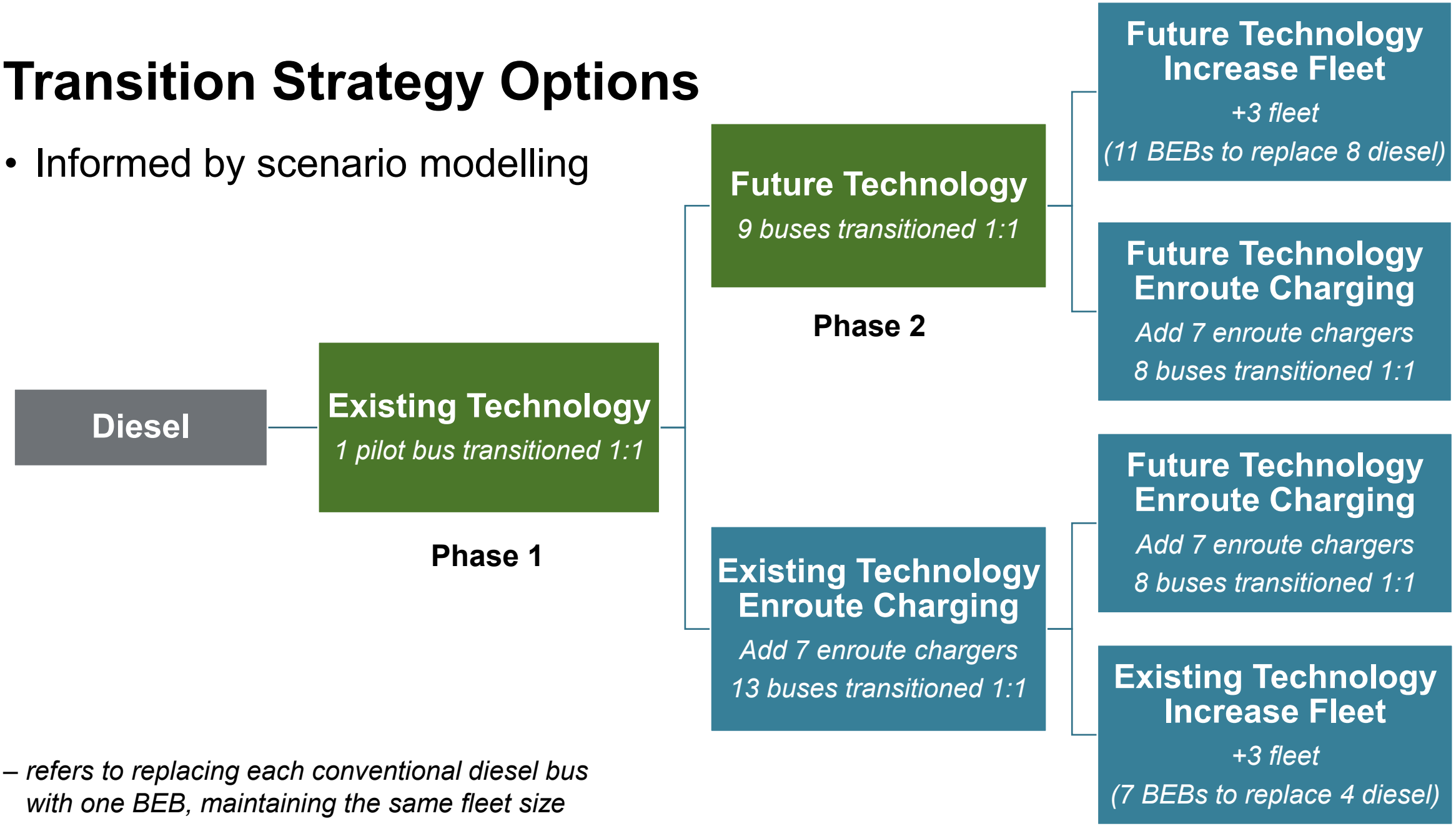

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Transition Strategy Options

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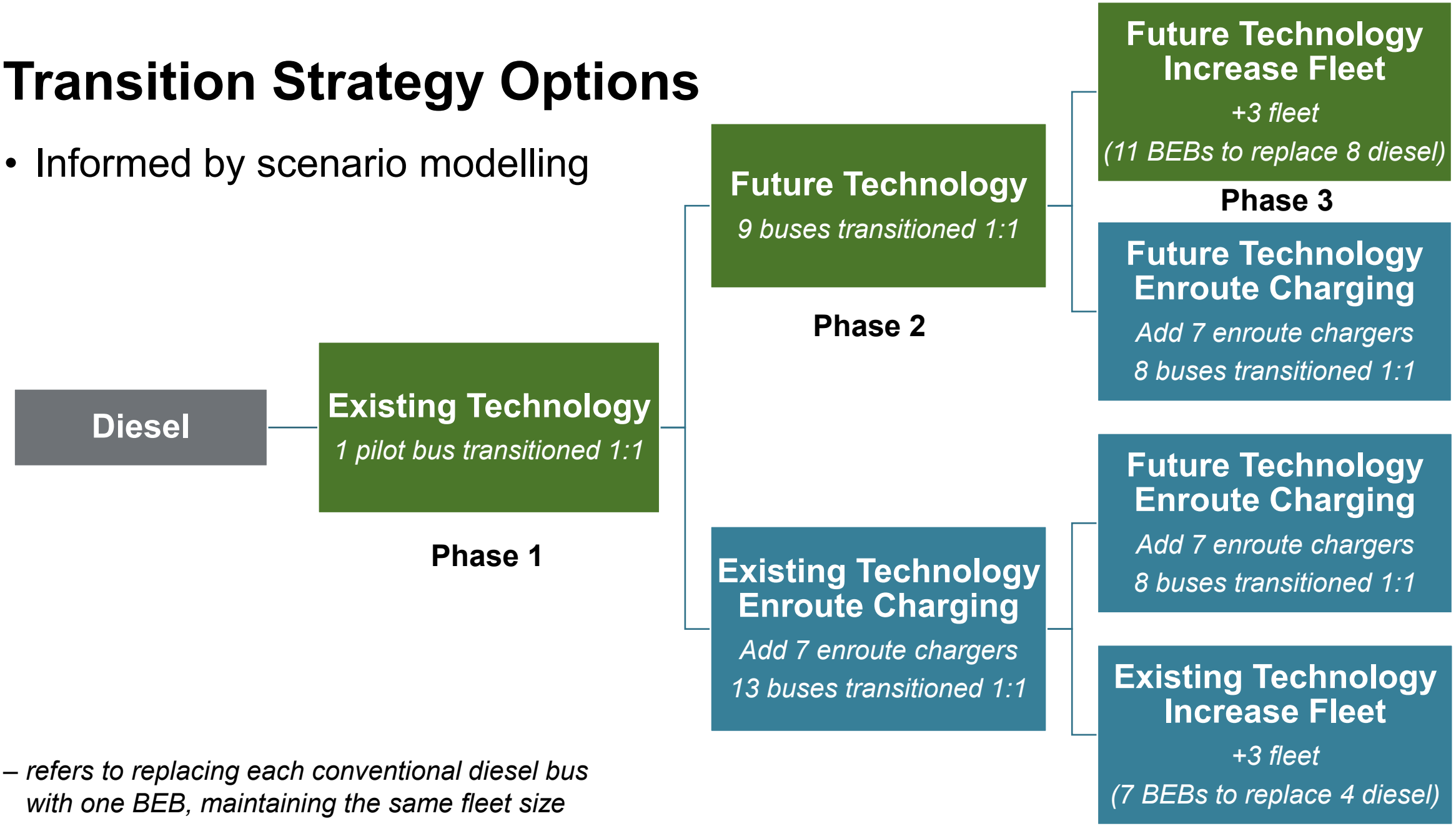

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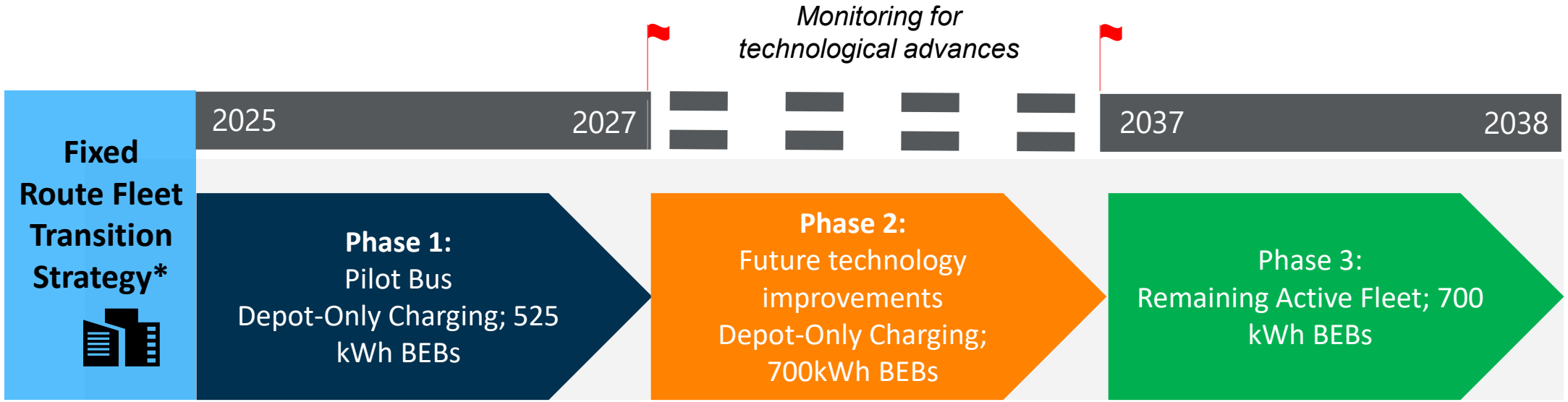
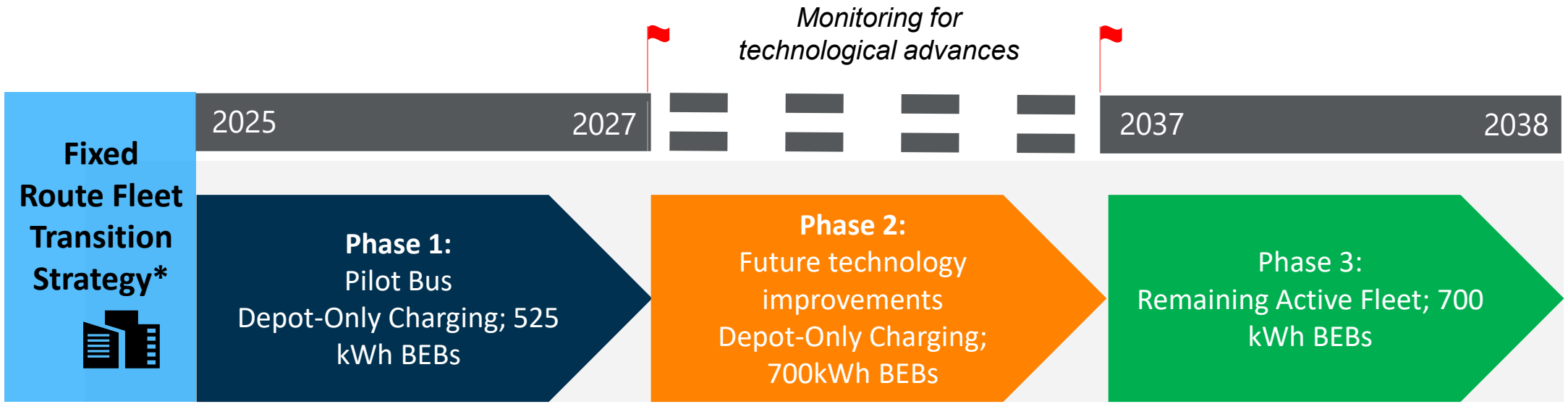
Transit Fleet Transition Phasing



*Phase years are indicative, based on anticipated vehicle lifecycle/retirements, and may shift as needed.

Transit Fleet Transition Phasing



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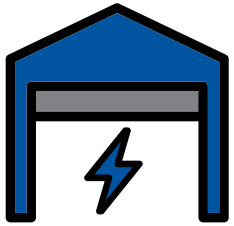
Additional Options Phase 2 and Beyond
• Re-evaluating enroute charging • Exploring fuel cell electric (hydrogen) buses • Service adjustments / reblocking to align to BEB capabilities

Facility Assessment – Transit Depot Facility

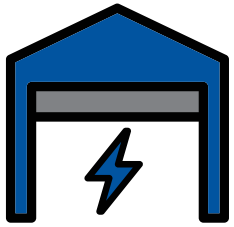
Phase 1: Pilot

- Charger installed on existing transformer
- Load = 0.3 MW



Phase 2: Future technology improvements

- Transformer upgrade required
- Load = 1.4 MW



Phase 3: Remaining fleet

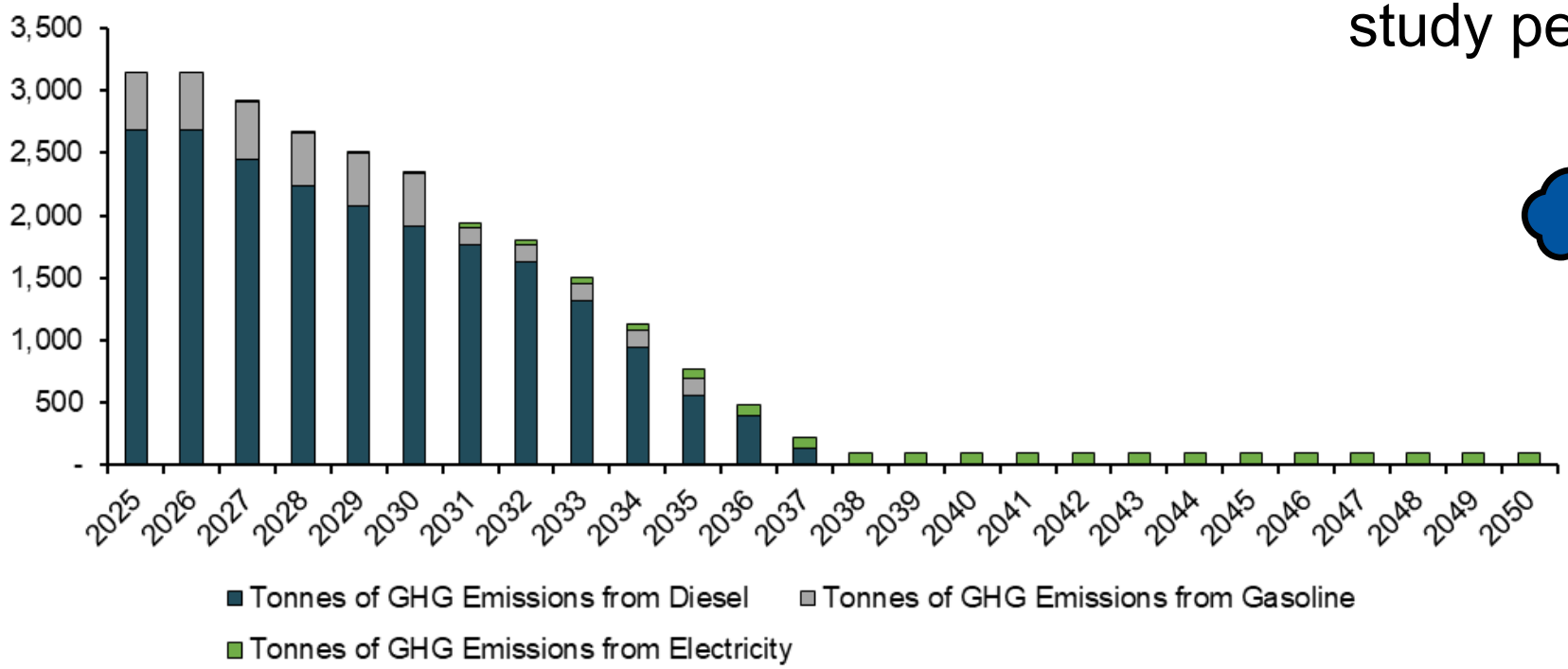
- New service required
- Load = 2 MW

Fleet Transition Costs

Transition to battery electric buses costs an additional **$28.6M** (exclusive of funding)

Net Present Value, 2025$	Diesel	BEB
Life Cycle Capital Costs	**$29.2 M**	**$78.0 M**
Conventional Fleet	$26.3 M	$67.0 M
Paratransit Fleet	$2.9 M	$3.5 M
Related Infrastructure	-	$7.4 M
Life Cycle O&M	**$235.8 M**	**$215.6 M**
Operations	$157.8 M	$157.0 M
Maintenance	$45.2 M	$42.2 M
Propulsion	$32.8 M	$16.4 M
Total	**$265.0 M**	**$293.6 M**
Difference		**$28.6 M**

Emissions Reduction Impact



55,000 tonnes emissions reduction over the study period

95%+ reduction by the end of the transition

Key Takeaways and Next Steps

Key Takeaways

BEB Feasibility Study & Transition Plans provides:

- Implementation plan that considers operating conditions and resource allocation
- Phased timelines for vehicle and infrastructure procurement
- Financial planning & cost estimates

Next Steps

Additional considerations:

- Leverage plan to apply for additional funding (e.g., ZETF, CPTF, etc.)
- Consider implementing 1 pilot BEB
- Continue to monitor for technological advances