



The Electric Bus Revolution

June 10, 2021

Clean Air Partnership





TransformTO Climate Action Plan

In July 2017, Toronto's City Council unanimously approved the TransformTO Climate Action Plan.



Current

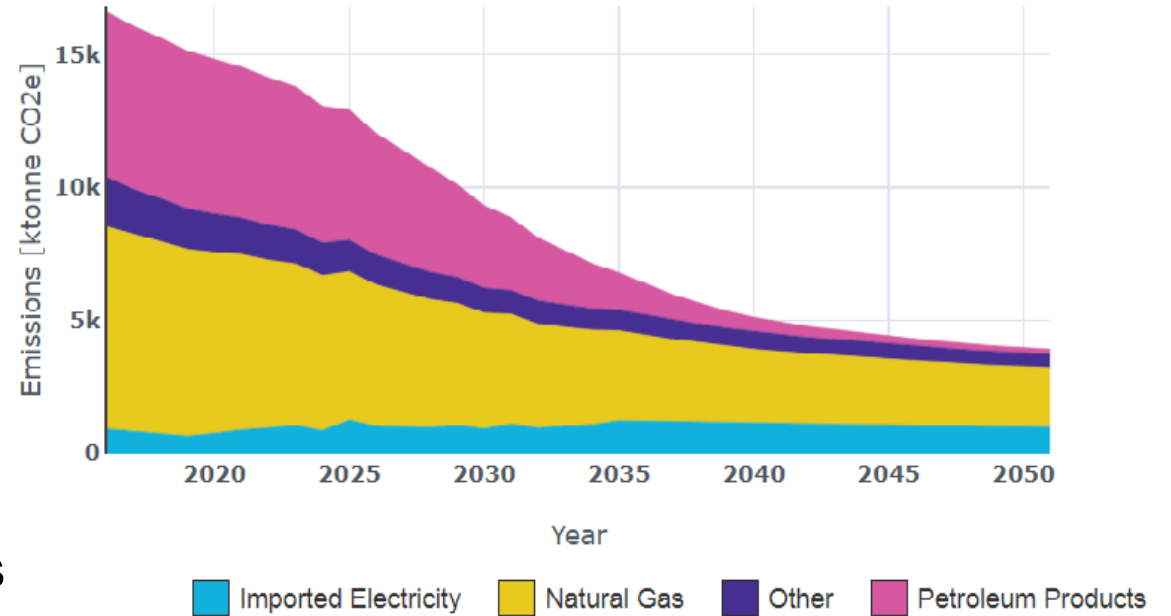
TransformTO Target:

Reduce greenhouse gas (GHG) emissions

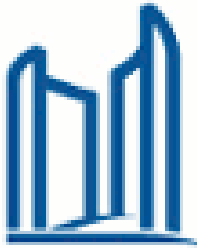
- 30% by 2020
- 65% by 2030
- Net zero by 2050, or sooner

Requires electrification of transportation to eliminate GHGs from combustion of fossil fuels

Low Carbon



City → TTC Emissions Targets



TransformTO Target:

Net Zero by 2050, or sooner



TTC Target:

Steady-state procurement of zero-emissions buses by 2025 in line with the C40 Fossil-Fuel-Free Streets Declaration, and an all zero-emissions bus fleet by 2040.





Estimated Benefits

GHG Emissions

Reduced by 200,000 metric tonnes per year

Net Fuel Savings

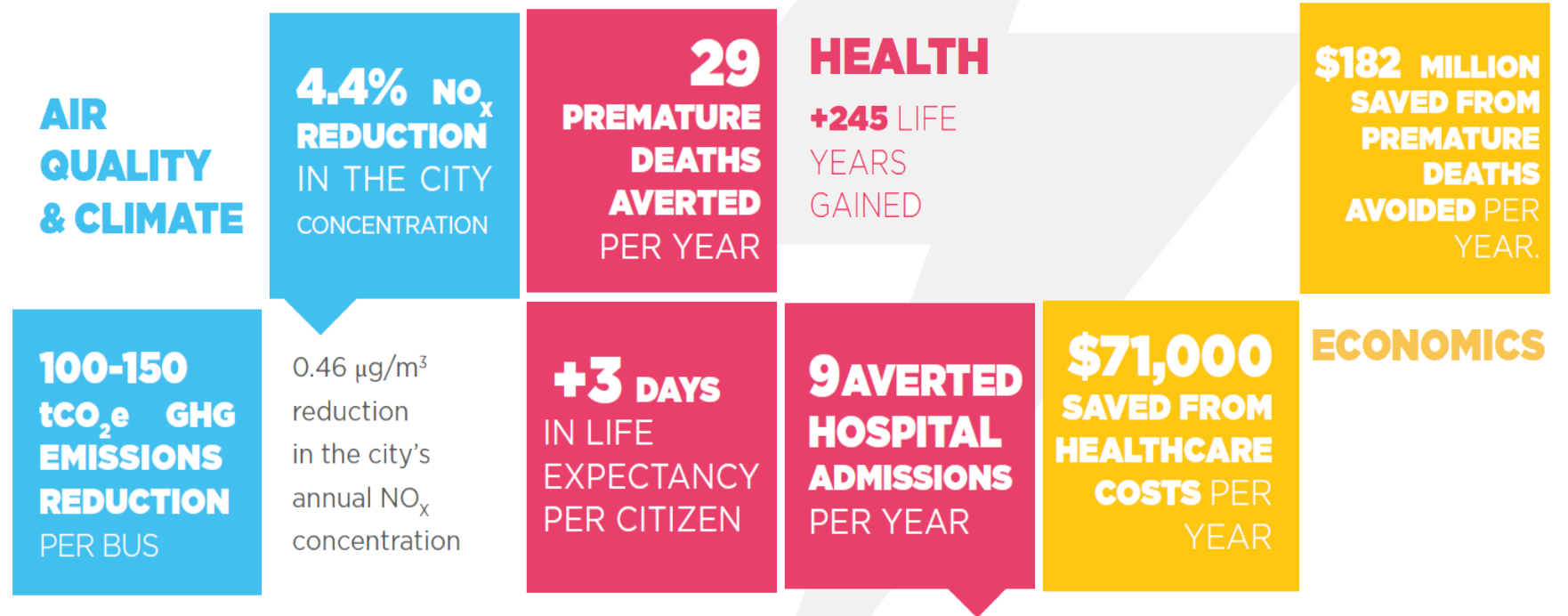
Reduced by \$50 - \$60 million per year

Noise Pollution

Reduced by 60% - 80%

Local Air Quality

2040: Electrification of the whole city fleet (4,068 buses, including school buses)

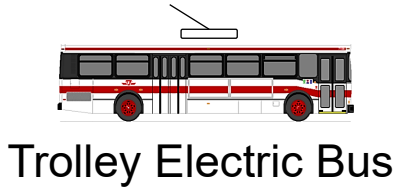


9 averted respiratory hospital admissions per year.



TTC's Path to Zero Emissions

HIGH
EMISSIONS



1

2



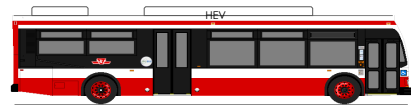
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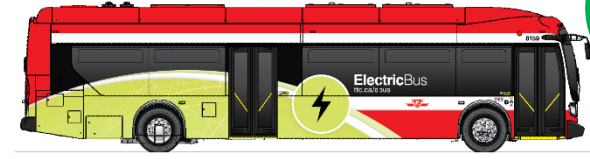
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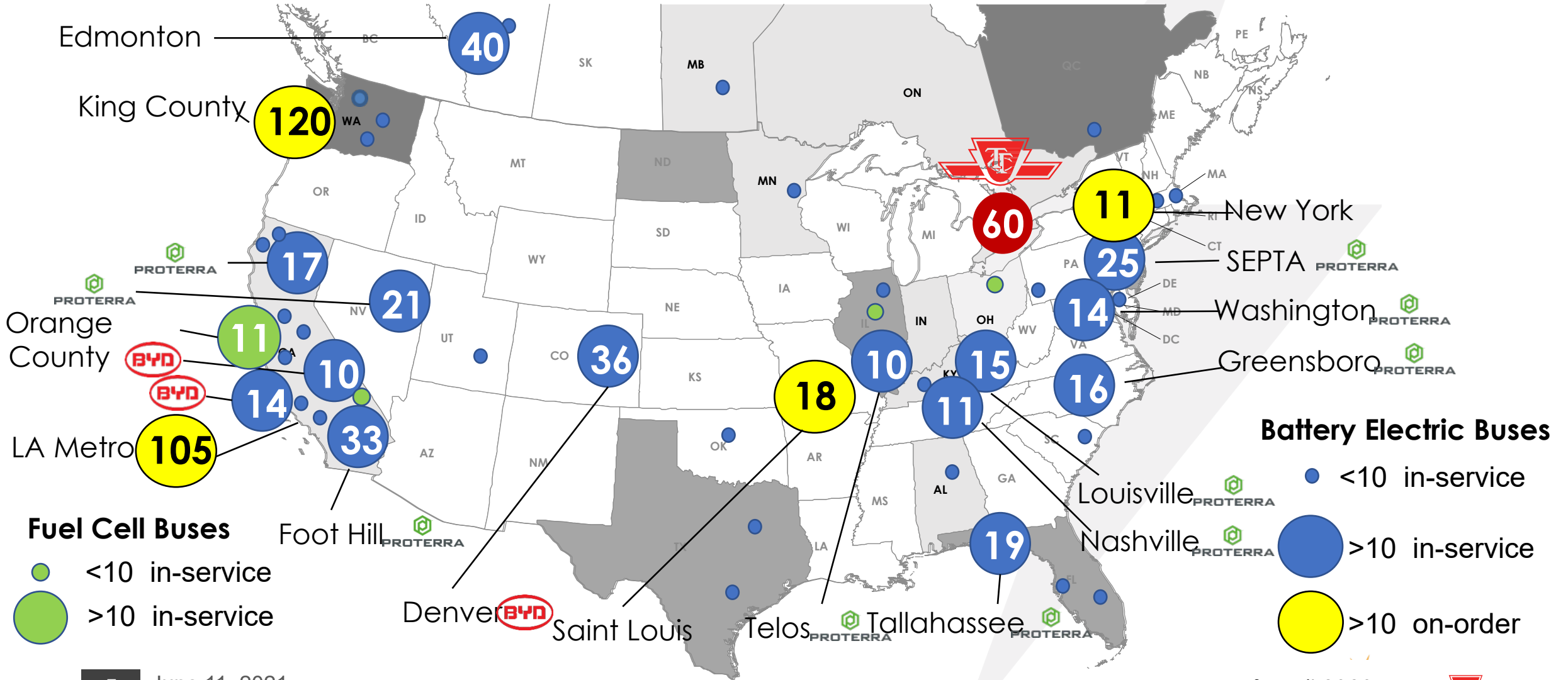
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ZERO
EMISSIONS





Zero Emissions Buses in North America

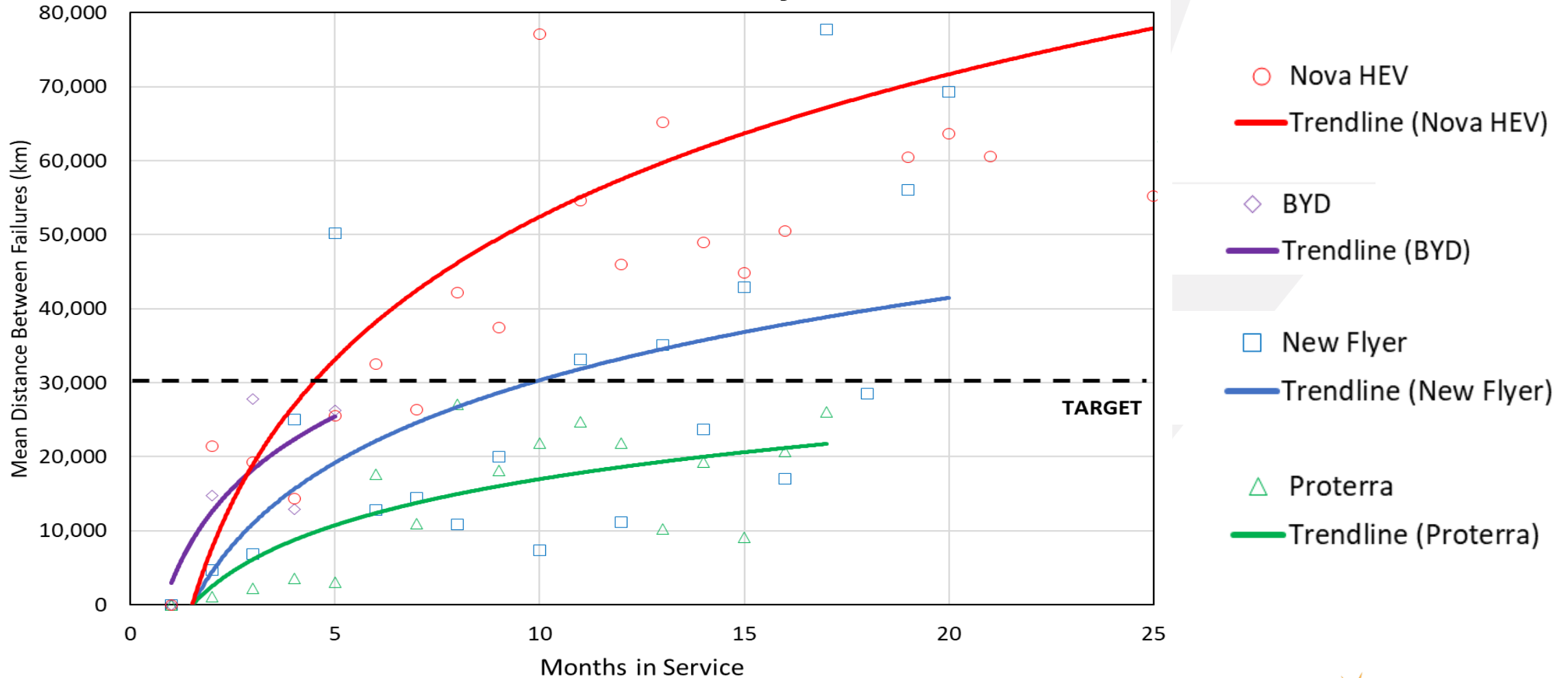




Performance To-Date

Battery-Electric Buses			Baseline
BYD K9M	NFI XE40	Proterra E2	Nova HEV

Vehicle Reliability

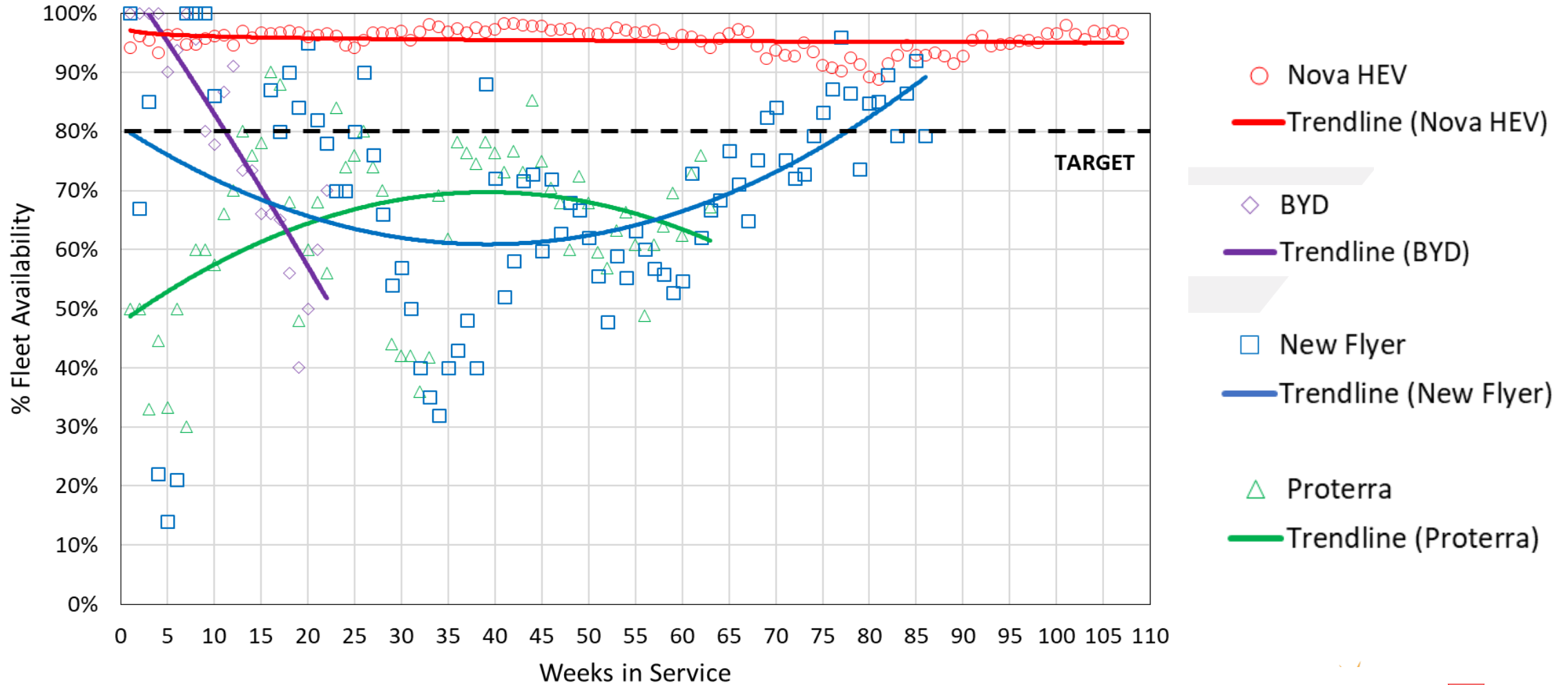




Performance To-Date

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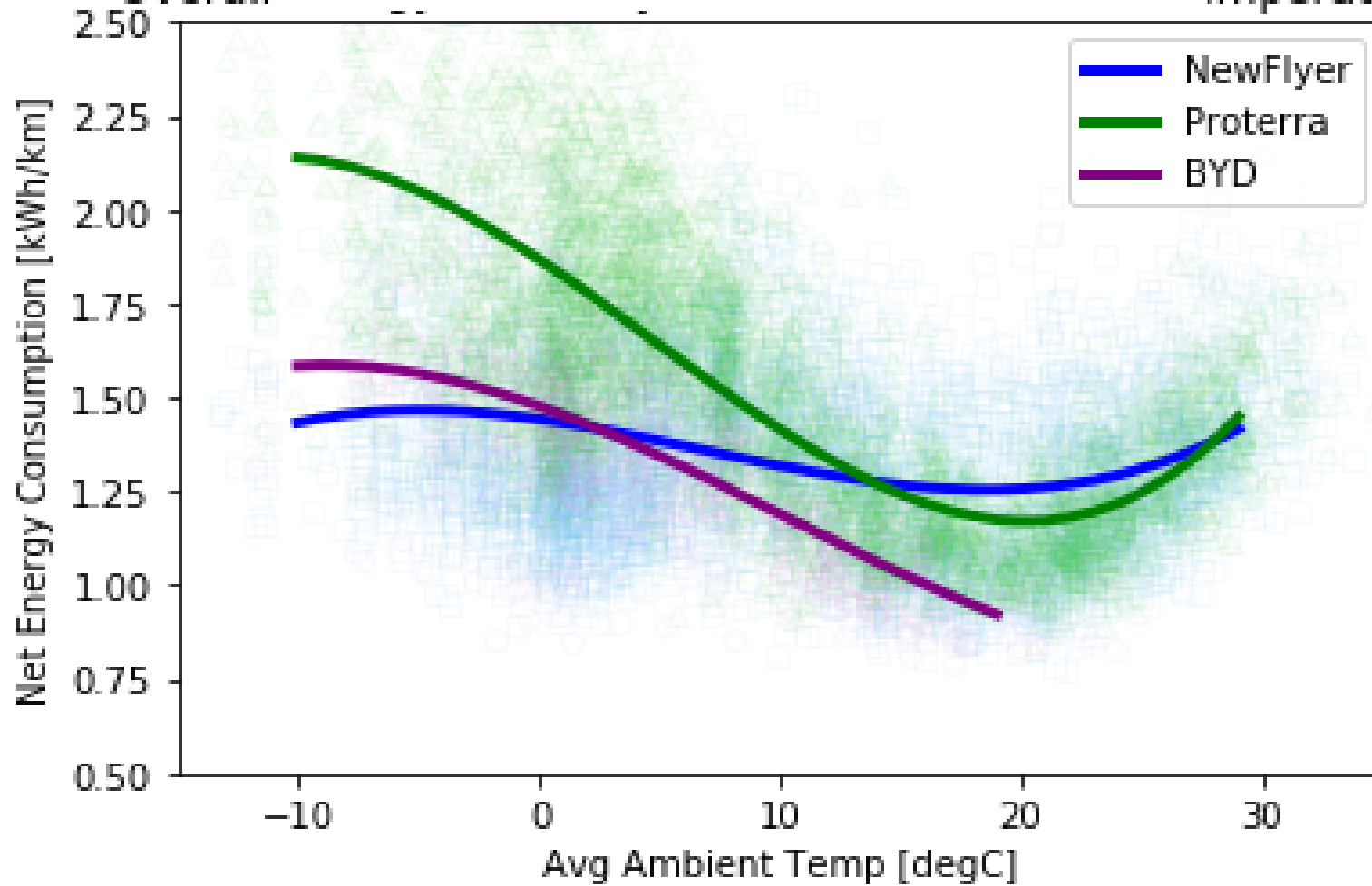
Vehicle Availability





Performance To-Date

Energy Consumption

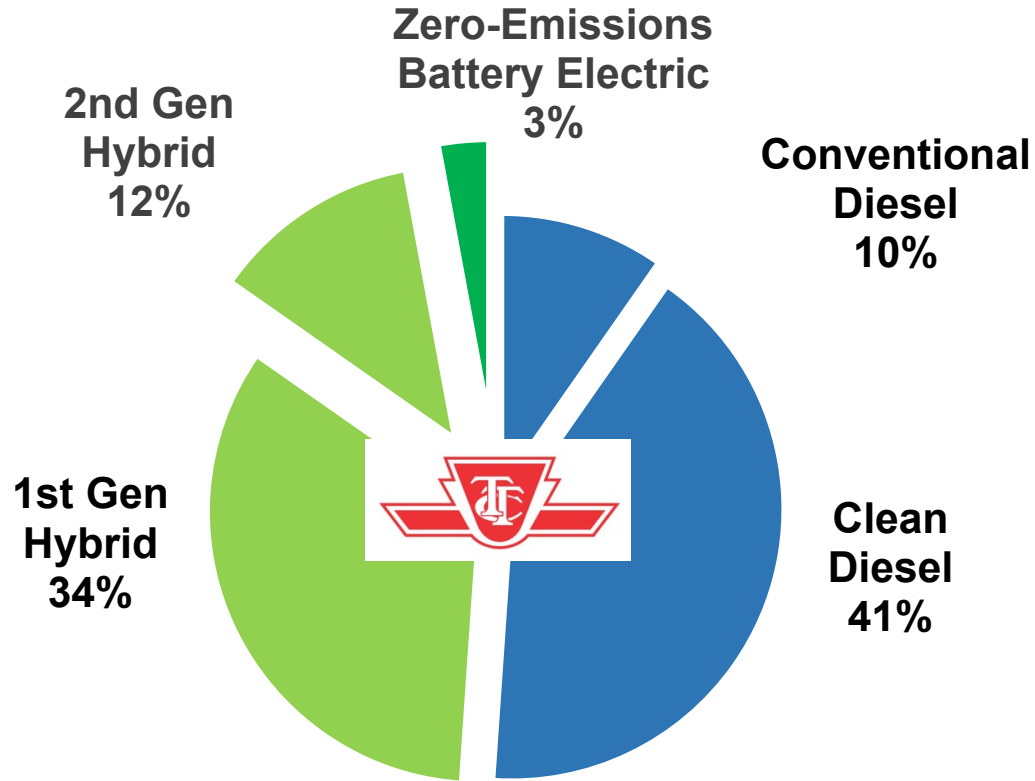


Battery-Electric Buses			Baseline
BYD K9M	NFI XE40	Proterra E2	Nova HEV
!	✓	!	Not Evaluated





Progress Made To-Date



**41% Less
GHG**

**Since
1990 Baseline**



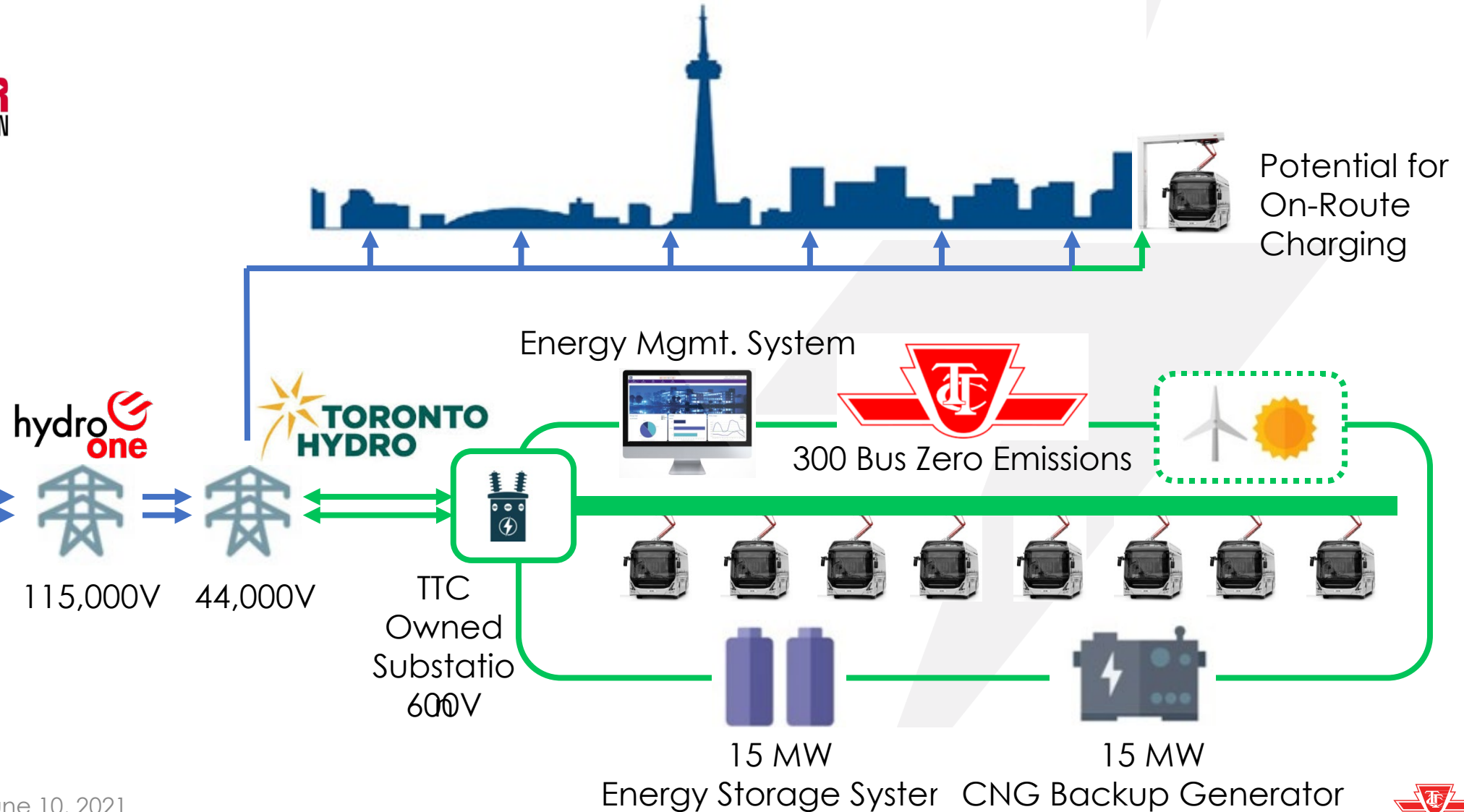
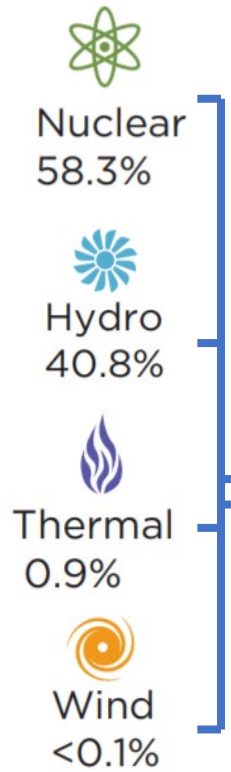
TTC's Next Procurement

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Hybrid	0	298	39	-	-	-	-	-	-	-	337
eBus	0	0	100	133	167	170	170	170	175	190	1,275
Total	0	298	139	133	167	170	170	170	175	190	1,612



⚡ Electrification Infrastructure

ONTARIO POWER
GENERATION



All-Electric Bus Procurement Program

Pre 2020

Construction of charging infrastructure at three garages for testing

Electrification Infrastructure

2020

2021

2022

2023

2024

2025

2040

Issue RFP for ~300 eBuses

Q4

Design & Production Startup

Delivery of First eBus 1 of 300

Q3

Production & Delivery

Delivery of Last eBus 300 of 300

Q1

eBus Testing

Continue Head-to-Head Testing

Continue to purchase eBuses

Garage Study & Preliminary Design

Negotiate TTC-OPG-THESL

Implement Charging Systems

Q1

Implement Charging Systems

TTC-OPG-THESL MOU Signed Q2

Principal Agreement to be Finalized in Q3/Q4

Commission Next Wave of eBus Charging Systems

OPG – Ontario Power Generation
NFRP – Negotiated Request for Proposal
THESL – Toronto Hydro Electric System Ltd.

Decision Required

Major Milestone

Importance of Partnerships

Funding and Implementation Partners



Industry Partners: Knowledge Share



TTC-OPG-THESL Framework for Agreement



Scope, timing, funding, coordination, and oversight



Co-invests, designs, builds, owns, maintains and operates the electrification infrastructure at TTC sites



Provides reliable electrical supply to TTC sites



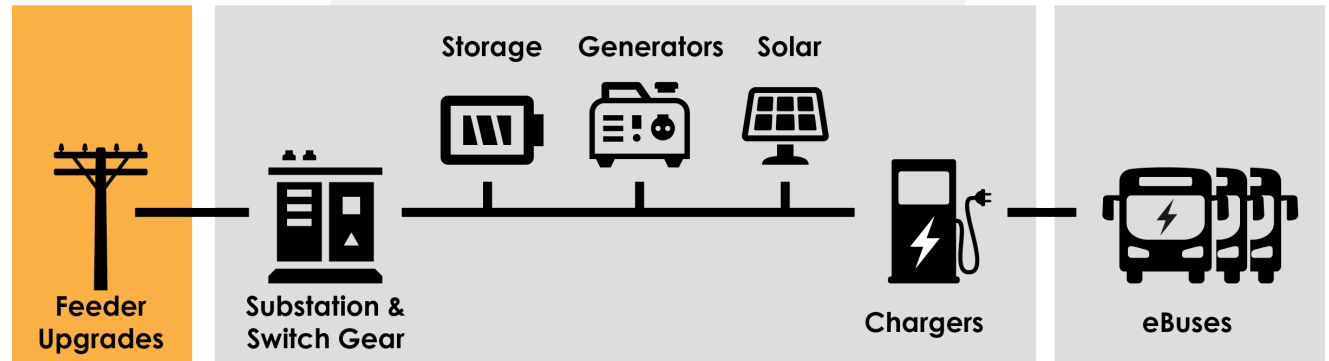


TTC-OPG-THESL Powering the Future of Transit



Roles and Responsibilities

- Provides reliable electrical supply to TTC sites



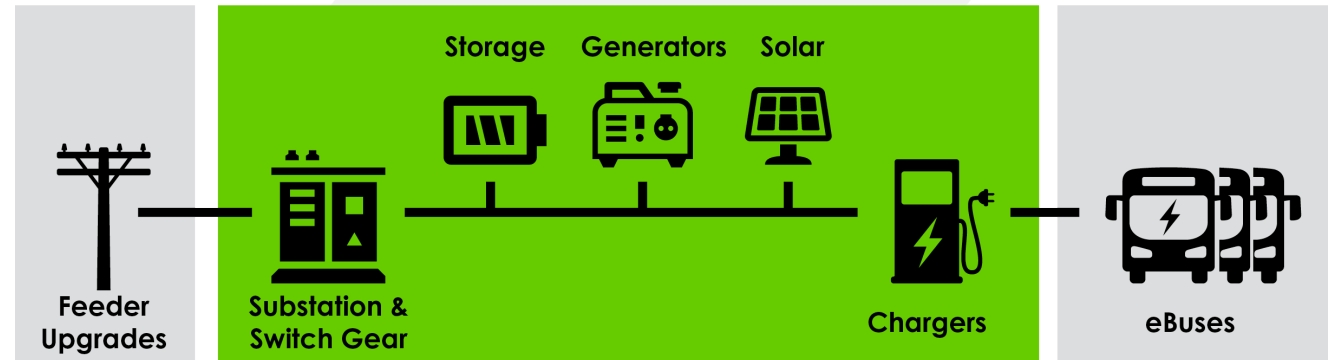


TTC-OPG-THESL Powering the Future of Transit



Roles and Responsibilities

- Co-invests, designs, builds, owns, maintains and operates the electrification infrastructure at TTC sites

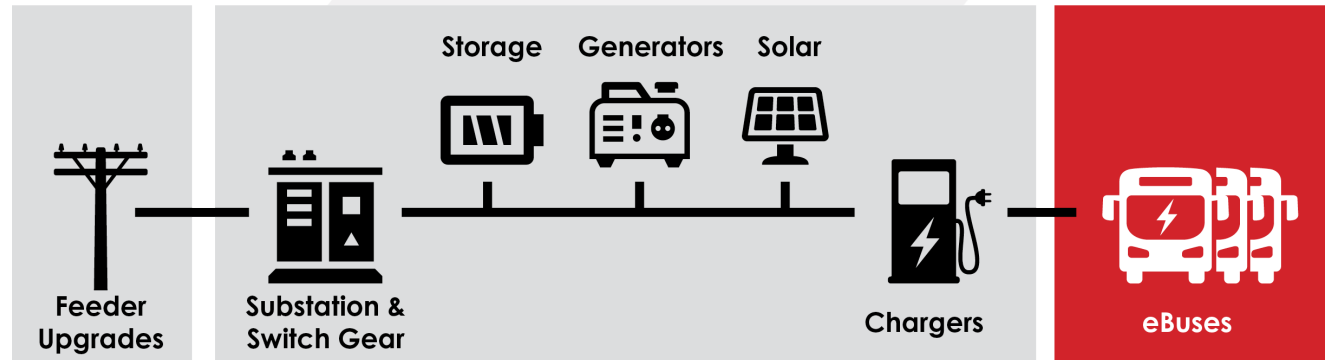


TTC-OPG-THESL Framework for Agreement



Roles and Responsibilities

- Scope, timing, funding, coordination, and oversight
- Operations focus on delivery of bus service



Thank you

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